From Nuclear War and Overpopulation to Climate Change and Alien Invasions

How Environmental Science Fiction Has Changed Between 1945 and 2020, and How It Is Being Read Academically

Dissertation

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Still, let none of this be an excuse: this dissertation was built on a highly ambivalent relationship with literary and cultural studies, and especially science fiction studies. At times this has hopefully resulted in productive critiques of these fields; at other times, though, it has probably made me too hesitant to read as much scholarship as I should have. This in turn made the process of finding the questions worth being answered slower than it perhaps could have been. The result, I fear, is that this dissertation is quite scattershot and unfocused; for this I can only apologize.

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When confronted with a theory or model it is natural to ask: is it accurate? Keeping performativity in mind reminds us also to ask: if the model is adopted and used widely, what will its effects be? What will the use of the model do?… The notion of performativity prompts the most important question of all: What sort of a world do we want to see performed?

Donald MacKenzie, *An Engine, Not a Camera*

For reading a text is never a scholarly exercise in search of what is signified, still less a highly textual exercise in search of a signifier. Rather it is a productive use of the literary machine… The question posed by desire is not "What does it mean?" but rather "How does it work?"

Gilles Deleuze and Félix Guattari, *Anti-Oedipus*

The ideal proportion of a scientifiction story should be seventy-five per cent literature interwoven with twenty-five per cent science.

Hugo Gernsback, July 1926 Editorial for *Amazing Stories*

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1. Introduction: The Emergence of Environmental Science Fiction

The impending ecological disasters that we are faced with will, with some likelihood, prove to be the fulcrum of human history, certainly of the post-war period.[1] That sentence deserves some unpacking, if only to be as clear as possible. By impending ecological disasters I refer, of course, primarily to the climate crisis, but also to certain related issues: the threats of a collapse in biodiversity, of ocean acidification, and of a breakdown of the nitrogen and phosphorous cycles. Any of these catastrophic breakdowns in the Earth system would almost surely degrade the habitability of the planet for the vast majority of people alive today, and for untold generations in the future. What's more, these problems influence one another, almost invariably for the worse — a worsening climate will also mean more ocean acidification, both of which will worsen the sixth mass extinction.

The time since 1945 (or thereabouts) has been one of the most unique periods in human history, what environmental historian J. R. McNeill and climate scientist Will Steffen call the Great Acceleration; a period of enormous population and economic growth, environmental change, and, accordingly, patterns of social life. As McNeill and Peter Engelke write (in 2014), "only one in twelve persons now alive can remember anything before 1945. The entire life experience of almost everyone now living has taken place within the eccentric historical moment of the Great Acceleration, during what is certainly the most anomalous and unrepresentative period in the 200,000-year-long-history of relations between our species and the biosphere."[2]

Those generally opposed to what one could call the chauvinism of the present

1 Gefördert durch die Deutsche Forschungsgemeinschaft (DFG) im Rahmen der Exzellenzstrategie des Bundes und der Länder innerhalb des *Exzellenzclusters Temporal Communities: Doing Literature in a Global Perspective – EXC 2020 – Projekt-ID 390608380*.
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2 John R. McNeill and Peter Engelke: *The Great Acceleration. An Environmental History of the Anthropocene Since 1945*, 2014, pp. 4-5.

may flinch at the suggestion that our present moment is such a decisive turning point of human history, arguing, as Frank Kermode did in his study of apocalyptic thinking and literature, that after all *every* generation thinks of their present as the most important time in human history: "We think of our own crisis as pre-eminent, more worrying, more interesting than other crises […] But it would be childish to argue, in a discussion of how people behave under eschatological threat, that nuclear bombs are more real and make one experience more authentic crisis-feelings than armies in the sky. There is nothing at all distinguishing about eschatological anxiety."[3] Yet the case for believing that the Great Acceleration and the looming catastrophe of climate change, are indeed unique — a true anomaly, or at least novelty, not merely a cyclical repetition — is, I think, fairly strong: Steffen, McNeill, and Paul Crutzen have graphed several socio-economic (e.g. world population, primary energy use, fertilizer consumption, water use, dam construction) and earth system (e.g. carbon dioxide levels, ocean acidification, marine fish capture, terrestrial biosphere degradation) trends and shown that in the middle of the 20th century, a global change indeed occurred.[4] If the "pace of human civilization" (to use a somewhat ill-defined notion) markedly accelerated at some point in the second half of the millennium, say, in the 18th and 19th centuries — what people variously call modernity, the anthropocene (or various other -cenes), or the rise of capitalism and industrialization —, then the middle of the twentieth century perhaps presents us with an acceleration of this acceleration.[5]

Alongside this development of a humanity leaving an increasingly large footprint on planet Earth (debates about when "the Anthropocene" began — in 1945, in the 18th century, with the advent of agriculture? — are after all debates about when the footprint of humanity becomes critically noticeable) we can also find the development of sciences that can measure and interpret this footprint. Ideas of ecology, climate, and the environment existed before 1945, of course;[6] as Paul

3 Frank Kermode: *The Sense of an Ending: Studies in the Theory of Fiction*, 1967, pp. 94-95.

4 Will Steffen, Paul J. Crutzen, and John R. McNeill. "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?" *Ambio*, vol. 36, no. 8, 2007, pp. 614—21.

5 Or an increased jerk: the derivative of acceleration, which in turn is the derivative of velocity or speed. While, as Christrophe Bonneuil and Jean-Baptiste Fressoz correctly point out, it is be a fool's errand to mark a "saddle point" on linear graphs of logarithmic functions, logarithmic graphs of population growth do show a second increase in the rate of population growth after 1950, along with a first increase in the 18th century. Bonneuil, Christophe, and Jean-Baptiste Fressoz. *The Shock of the Anthropocene: The Earth, History and Us*, 2016.

6 See, as just two examples among many, the importance of forest conservation for 18th and 19th century European state powers, or the establishment of the first National Park (Yellowstone) in the United States in 1872. See also chapter 3.1 of this dissertation.

Warde, Libby Robin and Sverker Sörlin contend, however, the idea of "the environment" as an academic object of study becomes vastly more prominent after World War II.[7] They note four dimensions of relevance to human expertise of the environment that come to the fore in the second half of the twentieth century. First, an increasing orientation towards the future; ecological concerns are concerns about degradation that is yet to come but which is already assumed or predicted. Second, environmental expertise is increasingly about the aggregation of the work of a lot of scientists working together, indeed across scientific disciplines, as the environment is an "integrating concept". Third, an increased trust in numbers, a focus on quantifiable information, numbers which "provide a trajectory" to the history of the environment; and fourth, the environment as an idea that radically cuts across scale, as "the environment was an idea that linked the very local, or even the microscopic, to a planetary whole".[8] As the authors further argue, it was not a given that "climate" and "environment" should go together; it was not until the 1980s that the scientific communities of climate science and environmental science increasingly worked together, the ultimate result of which was the disciplinary formation of an "Earth System Science", which, following the more general insights of cybernetics and systems theory, regards the Earth as a whole as a single, highly interconnected and feedback-looped system.

Finally, we can discern in this period — alongside rapid changes in the relation between humanity and earth, and a science attendant to the effects of humanity on earth — the massive dissemination of a literature that will be the focus of this dissertation: science fiction. Like the two preceding cultural developments, the establishment of something called science fiction (from here on mostly: SF) too goes back further than 1945, indeed quite clearly so; as we will see in the next chapter, various birth dates have been proposed for the genre (from 1926 to the late 19th century to 1818 to the 17th century and beyond), alongside numerous discussions — influenced by ever-new approaches to genre studies — on whether a discrete date can be given for the development of a genre at all. Almost any definition of or approach to SF would find that by 1945, the genre was already quite firmly in place, which is not to say that it ceased to evolve. What more robustly emerges after 1945 is a SF concerned precisely with ecological changes, and with

7 Paul Warde, Libby Robin, and Sverker Sörlin: *The Environment. A History of the Idea*, 2018.
8 Ibid, p. 17.

the environmental sciences that measure these ecological changes. A lot — not all! — of this SF is in some sense concerned with the two terms that structure the two previously mentioned notions of a great acceleration and that of ecology, respectively: history and science.

SF is quite directly concerned with representing fictional future-tech and emerging science. In the 1920s, Hugo Gernsback, editor of *Amazing Stories*, argued that "scientifiction" (as he briefly tried to call it) ought to be 75% literature, 25% science; almost every SF writer since then would disagree with such a mechanistic definition of what SF should be, the very notion of such a precise mixture of two elements belonging to the realm of science, not art. Yet one of the core interests of the genre, and one of the main ways in which it has been defended as a valuable literature, has remained inquiring into the ways in which individuals and societies *respond to* or are *altered by* science and technology. Whether in the pursuit of such more sociological questions or out of sheer nerdy interest, certain traditions of SF have consistently kept abreast with new scientific developments, from orbital mechanics and space travel to evolution and biotechnology, to the Internet and artificial intelligence — and ecology, and environmental thought. Which is not to say that SF is always, or even regularly, scientifically accurate (think no further than the continued fascination with faster-than-light technology within the genre); as the SF author China Miéville notes, quoting and responding to Gwyneth Jones, "SF relies above all not on the language of science, nor on the command of that language, but on the appearance of that command."[9] SF may or may not genuinely "adhere to" actual science, but it more often than not will at least strategically pretend to do so. Still, if we were to look for signs of the development of new sciences called ecology, climate science, and earth system science in literature, we could do worse than begin with SF.

Meanwhile, SF is "about" history — the sense of "aboutness" of a text will also be of some concern to us later — precisely in that SF regularly imagines futures, futures for whom our lived present will by necessity thus be past. In that movement, the passage of history is always implied, and SF must think about this passage of history — or at least disavow, conceal, pointedly ignore it. SF can thus perhaps tell us something about how the passage of history feels at different times, in different

9 China Miéville, *Cognition as Ideology: A Dialectic of SF Theory*, p.238. In Mark Bould and China Miéville: *Red Planets: Marxism and Science Fiction*, 2009.

places, to different SF authors. On the basis of a somewhat off-hand remark by Fredric Jameson, we will form a more detailed notion of how SF conceives of history and historical change, with an eye towards ecological SF specifically. Namely, as we will see, we can differentiate between ecological SF that produces what I call "already-accomplished futures" and ecological SF that is more interested in "futures in the making". A text of the former category presents us with a future world *B* that is already changed beyond recognition, prompting the reader to reflect on how desirable that future is compared to their present reality *A*. The latter kind of text, by contrast, is more interested in how the world can be made to move from a present *A* to a future *B* in the first place.

I am aiming however, not only to write about ecological SF as a genre with well-defined theoretical attributes. Genre studies in the past half-century has moved decisively towards defining its objects of study as historical rather than theoretical entities; genres are networks or communities in which texts respond to one another, in which the affiliation with a genre depends in part on whether recipients — readers, critics, fans, editors, bookstores — grant it that affiliation. Drawing on this strand of genre studies, I consider SF as a genre-community, a historical entity in its own right. Genre is fundamentally a process of self-observation, self-theorization, and self-writing. What I will be most interested in the ways in which texts commonly read as SF are, as a result of their status as SF, *used* by other texts and people to talk and think about climate, environment, and politics. Academic SF studies has been at the forefront of claiming a certain kind of political relevance for the genre. Importantly, then, conceiving of academic SF studies as an integral part of the SF genre-community, tracing the strategic use of SF to think about the climate must involve a feedback-looped gaze back at the institution from which this dissertation springs. It is in this sense that I am interested in the challenge as posed by Gilles Deleuze and Felix Guattari in the epigraph above: to not read this SF "in search of what is signified", but rather to understand: "How does it work?" How does the machine — the plugging of ecological science fiction into ecological politics — work?

Here, then, are the basic coordinates of this dissertation. I will continue in the second chapter with a more expansive discussion of SF — how it has been defined theoretically and how it can be conceived historically as a genre-community, to follow a distinction set by Tzvetan Todorov. Theoretically, I will be most interested

in the relation hinted at between the futures that SF envisions and the historical pasts that it thereby implies, which I will do in a discussion of the historical "gap". Historically, I will focus on the notion of SF as a kind of self-writing genre community (or system, or network). Arguing that the relations between the different actors of the SF community (readers, writers, academic readers, academic writers) create feedback loops, we will also have to grapple with issues of reflexivity and performativity. Since ecological SF is almost invariably taken to be political SF, we will also have to consider the notion of political SF, advanced both by writers of and academics studying SF. SF is assumed to gain political valence by producing alternative worlds, thus establishing a contrast with our world; this contrast as such is deemed to raise consciousness, so to speak. This issue will be teased out in part by considering one of the methodological debates of literary studies, the question of symptomatic or suspicious as opposed to post-critical reading practices.

In the chapters that follow, I will then turn to a number of ecological SF texts. Beginning with a brief recapitulation of the emergence of the environmental sciences and environmental non-fiction writing, our history of ecological SF with begin with an overview of the long history of "orthodox" ecological SF, or what I term "already-accomplished futures", which function politically by pointing towards an ecologically desirable (utopian) or undesirable (dystopian) future and thereby producing a contrast (what SF scholarship likes to call "estrangement"). As a particularly interesting example of this orthodox SF, I will consider the role that Paul Ehrlich, the population ecologist and popularizer of "overpopulation" concerns, has played in the SF community. This orthodox strand of eco-SF is the background against which I will then closely read a number of SF stories that, I feel, respond to this orthodox SF, problematizing the question of historical change itself, the movement from present to an altered future. First, I read Ursula K. Le Guin's *The Lathe of Heaven* (1971) as a text whose science-fictional hook (or "novum", as we will see shortly) is the science-fictional gesture of creating new realities itself. Second, I read some of the fiction of William Gibson, associated with the subgenre of cyberpunk, not just as non-ecological, but rather as pointedly anti-ecological, representing an attempt to produce fictional futures at a point in time when the very notion of historical change was, briefly, in question among certain milieus of the rich western nation-states. Finally, I read Kim Stanley Robinson's *The Ministry for the Future* (2020) as a text which is concerned not only with ecology, but also with

SF's relation with ecology, and with the strategies of writing politically which SF has engaged in. In the conclusion, I will return to Rachel Carson's *Silent Spring*, which will appear throughout this dissertation, trying to understand the role that this famous work of environmental non-fiction plays in two other works: Liu Cixin's *Remembrance of Earth's Past* Trilogy (2006-2010, English translations 2014-2016) and Elizabeth Kolbert's *Under a White Sky* (2021).

2. What SF is and What People do With it

Since this dissertation is centrally about science fiction, I will continue with a discussion of how I use that term, or rather, of how I understand SF as a genre. Following a distinction set by Tzvetan Todorov, one can speak of theoretical and historical definitions of a genre. A theoretical or formal definition of genre is, to put it briefly, one which could be used trans-historically, which can in principle be used to designate the Greek myths of Prometheus, or of Icarus and Daedalus, as kinds of science fiction, so long as they features a set of attributes that we connect with science-fiction-ness.

The flip side of Todorov's notion of "theoretical" genres is that of "historical" genres. Genre today is usually conceived of as a historical entity rather than a theoretical, ideal abstraction. SF in this view is not a designation granted to a text based on a specific set of requirements ("imagining a future world"; "about the relation between societies and their technologies") but rather a kind of system, or community, or network, or institution, which can be traced historically. In this view, whether a text nominally adheres to the formal requirements of a given genre matters less than whether it has actually been produced, advertised, read, reviewed, and referenced in the context of the genre in question. As such, SF texts must be situated and contextualized within the genre: what direction do they suggest for the future of the genre? What responses do they provoke? It is for this reason that I reference Tzvetan Todorov in the first place: I do not know how relevant he is to the study of genre at large, but his distinction between theoretical and historical genre conceptions has proven influential *within SF studies*, becoming part of the history of how science fiction thinks about itself.

Theoretical and historical genre concepts thus turn out to be somewhat coupled. Conversely, conceiving of SF as a historical entity does not exactly obviate the importance of theoretical, or "formal", genre definitions. Most texts that are historically deemed to belong to the genre of SF are deemed as such, after all, not due to the arbitrary whims of readers but rather at least in part because of their formal qualities; in other words, the theoretical definitions simply become another part of the history of the genre. There is a *history* to how SF has been thought of in

theoretical terms. Any historical consideration of genre inevitably loops back to those theoretical definitions, only now perhaps in turn historicizing how, why, and when these definitions came about and became popular. Most importantly, a study of science fiction will turn out to also by necessity be a study of *academic science fiction studies*. I will begin, then, with a few general "formal" definitions of SF, as given by a few writers, editors and scholars of SF, without claiming that these definitions are in the slightest exhaustive. Many more could be found, and many texts associated with SF clearly do not adhere to any of these formal definitions — but as I have noted already, and as we will see in more detail below, "actual" adherence to a genre does not necessarily depend on compliance with formal definitions regardless.

2.1 Theoretical Self-Definitions

Hugo Gernsback and John Campbell: From Scientific Fact and Prophetic Vision to Analogy (1926-1960)

Born in 1884 in Luxembourg, Hugo Gernsback emigrated to New York in 1904. Over the years he founded an electronic company, Electro Importing, and several (semi-)technical magazines: *Modern Electrics* (1908-1914), *The Electrical Experimenter* (1913-1931, renamed *Science and Invention* in 1920), *Radio Amateur News* (1919-1971, renamed *Radio News* 1920), *Radio-Craft* (1929-1992, renamed *Radio-Electronics* 1948), *Television News* (1931-1932, merged into *Radio News* 1933). Focused on amateur electrical engineering, these magazines taught readers how to build and improve certain electrical gadgets (especially radios), pontificated about future scientific advances, and, through letter-columns, created a community of tinkering readers. And some of these magazines also every now and then carried fictional short stories, which we today would classify as science fiction (a name that did not exist yet). Gernsback wrote a few SF stories (of almost zero literary merit) himself, such as *Ralph 124C 41+*, which was serialized in *Modern Electrics* in 1911. More significantly for his future place in the SF community, he founded and edited the first magazine focused entirely on publishing SF, *Amazing Stories*, in 1926, of

which he lost control in 1929 due to a lawsuit. In the first few issues of *Amazing Stories*, his editorials provide some of the earliest formulations of what SF is (or ought to be), though he calls it "scientifiction" at this point:

> By "scientifiction" I mean the Jules Verne, H. G. Wells, and Edgar Allan Poe type of story— a charming romance intermingled with scientific fact and prophetic vision […] Not only do these amazing tales make tremendously interesting reading—they are also always instructive. They supply knowledge that we might not otherwise obtain—and they supply it in a very palatable form. For the best of these modern writers of scientifiction have the knack of imparting knowledge, and even inspiration, without once making us aware that we are being taught. And not only that! Poe, Verne, Wells, Bellamy, and many others have proved themselves real prophets. Prophecies made in many of their most amazing stories are being realized—and have been realized. (p. 288 / April 1926)

> If we may voice our own opinion we should say that the ideal proportion of a scientifiction story should be seventy-five per cent literature interwoven with twenty-five per cent science. (p. 293 / July 1926)[10]

It seems noteworthy that though we came to Gernsback to look for a formal, theoretical definition, his description — "a charming romance intermingled with scientific fact and prophetic vision" — ends up being preceded by a historical, genealogical one anyway: "the Jules Verne, H. G. Wells, and Edgar Allan Poe type of story." From the earliest SF definitions onward, the historical and the formal intermingle, depend on one another. Still, let us focus on the formal for now, and take up the historical further below. For Gernsback, science fiction at times truly was supposed to simply be science plus fiction. His mechanistic understanding of this combination — as evidenced in the rather absurd formula of three quarters literature mixed with one quarter science — often made for dull reading when followed closely, and the magazines he edited never quite adhered to it regardless; nor had, after all, Verne, Wells, and Poe.

This direct relation of SF to science extended to the second part of his definition, the notion of SF being a prediction of the future — what he called "prophetic vision" (which is perhaps the definition that would more easily include Verne, Wells, and Poe). This sense of prophecy was equally important to him and to him proved the worth of SF as a cultural field. Significantly, it was also how he conceived of science itself; in a 1923 editorial for *Science and Invention*, he argued that

> every inventor must be a prophet. If he were not, he could not think up inventions

10 All citations of Gernsback from Hugo Gernsback and Grant Wythoff: *The Perversity of Things: Hugo Gernsback on Media, Tinkering, and Scientifiction*. 2016.

> that will only exist in the future. For this reason, every inventor must ascend from fact to non-fact. What non-fact will turn out to be, not even the inventor knows beforehand. He prophesies to himself that he can make such and such an invention, all the while thinking about it, and letting his imagination work overtime (p. 269 / August 1923)

Gernsback's definition of science was as troublesome as his definition of SF. The notion that science was being advanced by lone genius inventors like Thomas Edison or Guglielmo Marconi and amateur tinkerers building their own radios was rapidly becoming obsolete; as Grant Wythoff surely argues correctly, this "bore little relationship to what was happening in laboratories", and "by the 1920s, large corporations hoarded patents with the support of the federal government, research and development became an increasingly formalized institution, and hybrid public/private entities were able to draw on capital that no independent amateur could hope to compete with" (p. 17; p. 33).

Gernsback's idiosyncratic sense of what science fiction ought to be — closely connected with scientific tinkering and engineering, and didactic to the detriment of other literary qualities — was contested quickly and enduringly. As Gary Westfahl notes, SF author and critic Brian Aldiss called Gernsback "the worst disaster ever to hit the science fiction field", and "virtually all later voices for SF reform — from John W Campbell Jr and H L Gold to the New Wave's Harlan Ellison and Cyberpunk's Bruce Sterling — have explicitly or implicitly presented their ideas as a repudiation of Gernsback."[11] Yet the Gernsbackian notion of SF as a literature directly tied to the sciences remained stronger than such repudiations would perhaps suggest, and has persisted in parts of the SF community to this day. As editor of *Astounding Science Fiction* from 1937 onwards, John Campbell Jr. — mentioned by Westfahl as a voice for SF reform[12] — indeed tried to inject more complex, identifiably human characters into the genre, but that for him did not imply a diminished relation between science and SF. As Alec Nevala-Lee details, Campbell — as well as Robert Heinlein and, to smaller degrees, Isaac Asimov and L. Ron

11 Westfahl, Gary. "Gernsback, Hugo." The Encyclopedia of Science Fiction. Eds. John Clute and David Langford. sfE Ltd/Ansible Editions, 19 July 2021. Web. 15 Aug. 2022. <https://SF-encyclopedia.com/entry/gernsback_hugo>.

12 Though the reformer Campbell would in time, of course, himself turn into the role of a conservative holding back the genre and further necessary reforms. The John W. Campbell Award for Best New Writer presented by the World Science Fiction Society was renamed the Astounding Award for Best New Writer after 2019 winner Jeannette Ng rightfully noted the horrific political stances of Campbell, which were reflected in his editorial decisions. Curiously enough, the author John Lafferty called Campbell "the worst disaster to ever hit science fiction" as early as 1981, the exact words which Aldiss used against Gernsback.

Hubbard — tried to aid the American war effort between 1941 and 1945 *through science fictional thinking*, finding in SF magazines "a proving ground for [technological] ideas"; he considered "[running] technical problems in the magazine [Astounding Science Fiction] and [asking] readers for suggestions".[13] Towards the end of the war and in the years afterwards, Campbell focused especially on nuclear energy and Hubbard's "science" of dianetics, the latter of which he attempted to embed in the burgeoning field of cybernetic research.[14]

And like Gernsback, Campbell intrepidly mythologized the role of SF as a kind of prophecy. In 1944, he published "Deadline", a story involving a nuclear bomb in the magazine, enlisting writer Cleve Cartmill to write it but providing ample editing (which in effect meant that Campbell himself wrote most of the technical descriptions). The story was of limited literary quality — according to Nevala-Lee, it may indeed have been "bad" on purpose: "Its shallowness amounted to a narrative strategy in itself… [its defects were] all clues to view it [the story] as something else… The entire story was an excuse to talk about the atomic bomb."[15] Through the story, Campbell successfully got the attention not only of some of the SF-reading scientists at the Manhattan project in Los Alamos, but also of the project's counter-intelligence unit, which opened an investigation. Campbell used this fact in turn to advertise the prophetic qualities of SF, writing proudly in an editorial that "One of the boys guessed too good … We are now censored as thoughtfully as the straight fact magazines."[16] As Nevala-Lee points out, this was a strategic publishing decision on Campbell's part, who had thereby "carefully positioned himself" as a prophet of the nuclear bomb through the story's publication, "orchestrating the most famous anecdote of his career to illustrate the genre's ability to foresee the future."[17] The strategy paid off well enough; as late as the 1970s, SF commentators would use the example of "Deadline" to note the prophetic qualities of the genre.[18] In 1960 Campbell re-titled his magazine to *Analog Science Fact & Fiction*, a title which conveyed well the taken for granted mingling of science and science fiction, and

13 Alec Nevala-Lee: *Astounding: John W. Campbell, Isaac Asimov, Robert A. Heinlein, L. Ron Hubbard, and the Golden Age of Science Fiction*, 2019, pp. 184-185.

14 Ibid, chapter 11, pp. 241-266.

15 Ibid, p. 192.

16 Ibid, p. 197.

17 Ibid, p. 208

18 See for example the contributions by Frank Herbert (pp. 69-97) and Thomas Scortia (pp. 135-149) in Reginald Bretnor (editor): *Science Fiction Today and Tomorrow: A Discursive Symposium*, 1974.

which the magazine has, in slight variations, retained to this day (in 1965, the order of Fact and Fiction was reversed; at present, the title is *Analog Science Fiction and Fact*). This dual focus survived beyond Campbell. Editor Ben Bova took over the role of Campbell in 1972; his author-bio in the 1974 edited collection *Science Fiction Today and Tomorrow: A Discursive Symposium* (an early example of the kind of para-academic knowledge production about itself that the SF community would increasingly engage in) meaningfully lists two kinds of publications: thirteen under the rubric of "science fiction" and a further eleven under "science fact".

Campbell did, however, update Gernsback's notion of "prophecy" somewhat for his magazine, which he tried to summarize with the first word of the 1960 title change: analog. What today sounds distinctly archaic, calling to mind the analogue in opposition to the digital, was meant by Campbell to refer to "analogy"; for Campbell, SF was to be "a machine for generating analogies", as Nevala-Lee puts it.[19] That formulation by Nevala-Lee carries the same feeling of combining science and literature as Gernsback's crude 75%/25% formula — only the formulation itself now sounds less scientific and more literary. In the February 1960 issue of Astounding / Analog — the title change occurred gradually throughout the year, with the two words superimposed —, Campbell argued that "the science fiction we run in this magazine is in actual fact a good analog of the science-facts to come". Not a momentous change, but a change from Gernsback's ideal nevertheless: rather than direct prophecy, science fiction here stands in some sort of *analogical* relation to "science-facts", to science and the future.

Ursula K. Le Guin: From Extrapolation to Thought-Experiment (1976)

Yet ironically — confirming in its own way the continued relation between science and science fiction — this altered sense of SF was, by some authors, explained in terms of an altered sense of the sciences themselves. As SF author Thomas N. Scortia notes in 1973, practitioners of 20th century physics such as Werner Heisenberg and Albert Einstein reintroduced rational inquiry into what was supposed to be an empirical science, physics: *Gedankenexperimente*, thought experiments, proved necessary for questions of modern physics (quantum mechanics, special and general relativity). Scortia sets up an (analogical!) relation

19 Nevala-Lee, *Astounding*, p. 8.

between this renewed necessity of thought experiments and the potential of SF. Rather than simply attempting to predict "the" future, SF as a thought experiment seems to imply a more loose relation between our reality and the imagined fiction: it can produce *a potential* future, one of many possible futures, and it can even side-step the temporal relation of a prophecy about futures entirely and, at its most basic, ask the question "what if *x* were different?", producing an alternate reality. Especially noteworthy for our purposes, Scortia also points out the odd scientific nature of some of the state of the art ecology at the time of publication: the Club of Rome's *The Limits to Growth* report published in the previous year (also mentioned by Frank Herbert and Ben Bova in the same edited book, giving some indication of the immediate relevance the report had for at least parts of the SF community). The report was itself a kind of thought experiment, though not in the tradition of modern physics: where for quantum physics, the size of the object to be researched and the fundamental laws of physics limited empirical experimentation, for ecology in the style of the Club of Rome report, the problem was that the object to be researched was indeed the *future* state of the world, unknowable because not yet set in stone. Global human activity was causing increasingly large changes to the environment, making it increasingly important to understand not only ecological relations in the present on a micro-scale, but also to *model possible ecological relations in the future*, and on a macro-scale. As some of the self-definitions of SF were beginning to loosen the relation to science, then, the science of ecology simultaneously became more science-fictional in its mandate. As Scortia argues,

> Since it is impossible to anticipate all of the factors that will influence an extrapolation, science fiction stories are not intended as exercises in prediction even though, as we have noted, successful predictions have occurred. In many instances they follow the pattern that engineers know as "exploring the boundary conditions of the function." Very often in such an exercise the writer's purposes is intended as social warning or as satire and he clearly shows in his speculation that he does not believe that the situation he describes will necessarily come to pass. Many of the present-day ecological stories are of this nature. The chief intent of the writer is to develop a logical extrapolation of what will happen if a present trend remains unchecked. It is (to borrow a Heinlein title) an exercise in "if this goes on."[20]

Renowned author Ursula K. Le Guin took a similarly changed tack to what she understood SF to be in the preface of the paperback publication of The Left Hand of Darkness; taking up both Heinlein's "if this goes on" phrase and mentioning the

20 Thomas Scortia, *Science Fiction as the Imaginary Experiment*, p. 144. In Bretnor, *Science Fiction Today and Tomorrow*.

Club of Rome, she explicitly rejected a definition of SF based solely on temporal prediction (i.e. "prophecy"):

> Science fiction is often described, and even defined, as extrapolative. The science fiction writer is supposed to take a trend or phenomenon of the here-and-now, purify and intensify it for dramatic effect, and extend it into the future. "If this goes on, this is what will happen." A prediction is made. Method and results much resemble those of a scientist who feeds large doses of a purified and concentrated food additive to mice, in order to predict what may happen to people who eat it in small quantities for a long time. The outcome seems almost inevitably to be cancer. So does the outcome of extrapolation. Strictly extrapolative works of science fiction generally arrive about where the Club of Rome arrives: somewhere between the gradual extinction of human liberty and the total extinction of terrestrial life.
>
> Fortunately, though extrapolation is an element in science fiction, it isn't the name of the game by any means. It is far too rationalist and simplistic to satisfy the imaginative mind, whether the writer's or the reader's. Variables are the spice of life. This book is not extrapolative. If you like you can read it, and a lot of other science fiction, as a thought-experiment. Let's say (says Mary Shelley) that a young doctor creates a human being in his laboratory; let's say (says Philip K. Dick) that the Allies lost the Second World War; let's say this or that is such and so, and see what happens […] The purpose of a thought-experiment, as the term was used by Schrödinger and other physicists, is not to predict the future—indeed Schrödinger's most famous thought-experiment goes to show that the "future," on the quantum level, cannot be predicted—but to describe reality, the present world. Science fiction is not predictive; it is descriptive.
>
> All fiction is metaphor. Science fiction is metaphor. What sets it apart from older forms of fiction seems to be its use of new metaphors, drawn from certain great dominants of our contemporary life—science, all the sciences, and technology, and the relativistic and the historical outlook, among them. Space travel is one of these metaphors; so is an alternative society, an alternative biology; the future is another. The future, in fiction, is a metaphor.[21]

Note that for Le Guin too SF is still defined by its relation to "science, all the sciences, and technology", if only as "metaphor". It is no longer a matter of teaching science "through" fiction didactically, as Gernsback had desired; science is now mostly a kind of language, a system of metaphors. SF becomes, one could say, a kind of writing strategy. This would surely be considered a highly revisionist account of the genre by adherents of "hard" SF, for whom science in SF remained more than a mere strategic pool of resources; yet it does, as far removed as Le Guin's stories are from those of Gernsback, keep intact the alliance between SF and science to a significant degree, one that leaves both figures, and many others beside, recognizably within the tradition of the genre.

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21 Ursula K. Le Guin, author's introduction to *The Left Hand of Darkness*. Online: https://www.penguinrandomhouse.ca/books/342990/the-left-hand-of-darkness-by-ursula-k-le-guin-with-a-new-foreword-by-david-mitchell-and-a-new-afterword-by-charlie-jane-anders/9780441007318/excerpt

On the other hand, Le Guin further severs the ties between SF and "the future". The genre definitively no longer needs to extend the present state of affairs into an imagined future to have meaning; this operation is merely a special case of a more general writing strategy. That general writing strategy is to produce a difference between the "zero-world" of our present reality and an imagined alternate reality, an already-used strategy with old pedigree (Shelley) and contemporary practitioners (Dick), as she makes clear. The "goal" of SF shifts away from predicting the future entirely, towards making more legible *our present*. Any such alternate reality changes our perception, allows the reader the rethink her present, to gain a kind of sideways glance at something, it is implied, that cannot be as easily seen by directly looking at it. Le Guin does not expand on this, but as we will shortly see, one of the first *fully academic* theorists of SF would do so within a few years.

Darko Suvin: Constructing the Novum (1979)

We have up to this point looked at the way in which genre *practitioners*, whether authors or editors or both, have defined SF. These practitioners were by nature also SF critics, writing reviews, editorials, forewords, and other para-texts that commented on SF (as sometimes did, for that matter, the fiction they wrote and edited). But the genre had up to this point largely escaped academic notice. This began to change in the 1970s; while the authors of the 1974 collection *Science Fiction Today and Tomorrow* that I have cited multiple times already all squarely fall on the side of practitioners, more than one of the texts in it mentions — almost inevitably with some unease — the recent increase in academic attention. The journal *Extrapolation* was founded in 1959; but its average annual output (across two issues per year) did not exceed a hundred pages for another decade, until the second issue of volume ten in 1969, and a significant percentage of the authors for that period were indeed still practitioners; but slowly, an academic perspective onto SF emerged. The publication of the second academic SF journal, *Science Fiction Studies,* followed in 1973, by which time *Extrapolation* published about 200 pages per year. In the 1970s, then, "science fiction studies" became an identifiably academic pursuit, at least somewhat distinct (though the membranes remained quite permeable) from practitioners commenting on and analyzing their own genre-

community.[22]

One of the arguably most influential *academic* genre definition of SF is that of Darko Suvin, principally collected in *Metamorphoses of Science Fiction*.[23] Suvin begins by differentiating between SF of aesthetic significance which he estimates to make up no more than "5 to 10 percent" of the genre as a whole, and the vast majority of science fiction that "is strictly perishable stuff, produced in view of instant obsolescence for the publisher's profit and the writer's acquisition of other perishable commodities" (vii), in other words, the ephemera of serial, commercial production. Suvin's definition is thus highly elitist (and has been largely rejected in this regard).

The basis of SF for Suvin is its production of what he terms cognitive estrangement. The first part, the effect of estrangement, is shared by SF, fantasy, myth, fairy tales, and the pastoral, in contradistinction with the "'realistic' literary mainstream extending from the eighteenth century into the twentieth" (p. 8).[24] Realistic or naturalistic fiction attempts to "reproduce empirical textures and surfaces vouched for by human senses and common sense" and has a "straightforward relationship to the 'zero world' of empirically verifiable properties around the author" (p. 18); estranged fiction by contrast strives to provide such illumination by "creating a radically or significantly different formal framework" (ibid). Dostoevsky and Flaubert, so Suvin's argument, write into being a world that both they and their readers (at least at the time) would regard as more or less a mirror image of reality—while estranged fiction operates at some distance of the zero world of the writer and reader.

The alleged cognitive aspect in turn differentiates SF from its siblings of estrangement: Myth "absolutizes and even personifies apparently constant motifs from sluggish societies" (p. 7), in a word, essentializes, while SF believes in the radical contingency of the present reality, making it necessary to think about why things are the way they are, and to consider how they could change. The folk or fairy tale is for Suvin indifferent "to the empirical world and its laws" and thus does not

22 While this does not explain the precise date of an emerging "academic" side of SF commentary in the 1970s, it seems clear enough that the massive expansion of American higher education during and after WWII was a significant prerequisite.

23 Darko Suvin, *Metamorphoses of Science Fiction: On the Poetics and History of a Literary Genre*, 1979.

24 Suvin's argument naturally concentrates on prose, since essentially all literary SF comes in the form of the novel, the novella, or the short story.

“use imagination as a means of understanding the tendencies latent in reality, but as an end sufficient unto itself” (along which lines Suvin also criticizes the 90% of SF he considers ephemeral sub-literature, p. 8). He accords even less respect to fantasy, which for Suvin is is “inimical to the empirical world and its laws” and a “subliterature of mystification”, which is why for him it is a “grave disservice and [a] rampantly socio-pathological phenomenon” that commercial habit has put SF and fantasy in close relation with one another (pp. 8-9). What differentiates SF from the other estranged literatures therefore is that it “is a critical one, often satirical, combining a belief in the potentialities of reason with methodical doubt in the most significant cases. The kinship of this cognitive critique with the philosophical fundaments of modern science is evident.” (p. 10). He thus ends up with the following matrix:

	Naturalistic	Estrangend
Cognitive	“realistic” literature	SF (& pastoral)
Non-cognitive	sub-literature of “realism”	metaphysical: myth, folktale, fantasy

Leaving aside for the moment the strange elitism of declaring certain literature cognitive, the distinctions seem at least useful heuristically. It does not seem objectionable for now to say that the worlds of, say, folktales are usually made identifiable as non-realistic by different literary means than the worlds of SF are. Suvin then sets out to further detail the nature of this cognitive estrangement. His basic idea is that SF is structured by a novum (which can simply be read as “novelty”), a term he takes from Ernst Bloch; a “novum of cognitive innovation is a totalizing phenomenon or relationship deviating from the author’s and implied reader’s norm of reality” (p. 64). The novum creates the difference from the zero-world on which realist literature is built, but the novum cannot be a mere “metaphysical wish-dream” (p. 66), or, in other words, the novum is predicated on some kind of scientific (which does include the human and social sciences) plausibility. As a result, so Suvin argues perhaps somewhat high-mindedly, SF exists as a kind of synthesis of naturalistic and supernatural fiction (pp. 80-81).

The concept of the novum is interesting insofar as it is what tethers SF to history: “what would have been utopian or technological SF in a given epoch is not necessarily such in another—except when read as a product of earlier history” (p.

64). SF tells us something about the time in which it was written, but it may comment on that time in an oblique way; it may reflect as well as refract, perhaps. "An analysis of SF", so Suvin, "is necessarily faced with the question of why and how was the newness recognizable as newness at the moment it appeared, what ways of understanding, horizons, and interests were implicit in the novum and required for it" (p. 80). Most intriguingly for my questions regarding the relationship between SF and historical change, Suvin directly announces:

> "Since freedom is the possibility of something new and truly different coming about, "the possibility of making it different", the distinction between a true and fake novum is, interestingly enough, not only a key to aesthetic quality in SF but also to its ethico-political liberating qualities. As always in art, ethical pathos and effect or communal (political) relevance are the obverse of aesthetic consistency. They fuse in the realization that, finally, the only consistent novelty is one that constitutes an open-ended system "which possesses its novum continually both in itself and before itself; as befits the unfinished state of the world, nowhere determined by any transcendental supraworldly formula." This connects with my argument […] about validation for SF being based on science as an open-ended corpus of knowledge, which argument can now be seen to be ultimately and solidly anchored to the bedrock fact that there is no end to history, and in particular that we and our ideologies are not the end-product history has been laboring for from the time of the first saber-toothed tigers and Mesopotamian city-states. It follows that SF will be the more significant and truly relevant the more clearly it eschews final solutions, be they the static utopia of the Plato-More model, the more fashionable static dystopia of the Huxley-Orwell model, or any similar metamorphosis of the Apocalypse (let us remember that the end of time in the Apocalypse encompasses not only the ultimate chaos but also the ultimate divine order)."[25]

Here then, we have come to a third definition of SF. The connection to science remains — here definitively extended to mean the social sciences as well — while a naive sense of "prophecy" is nowhere to be seen. Unlike Le Guin, Suvin does think there is something essential about the *temporal* relation implied by SF; the genre is "solidly anchored to the bedrock fact that there is no end to history", and itself plays with history. Suvin has thereby significantly influenced an entire tradition of SF studies which focuses on SF as "utopia", but — as indicated above — with "utopia" itself redefined to mean a kind of *movement in history* rather than a static solution. Much of Fredric Jameson's work on SF has been in this tradition, to whose work I will return below when considering in more detail the notion of the "historical gap" that the future-orientation of SF implies.

For now, however, to end this section, let me re-emphasize how theoretical

25 Darko Suvin, *Defined by a Hollow: Essays on Utopia, Science Fiction and Political Epistemology*, 2010, p. 88.

Suvin's model of SF remains. As the mention of a "Plato-[Thomas] More" model makes clear, Suvin regards anything as SF to which his abstract definition is applicable, no matter how long before the development of an actual genre community or even the first appearance of the name science fiction the text in question was written. Thus he adds Aeschylus, Aristophanes, Virgil, Lucian, and others as authors to the canon of SF, while simultaneously arguing that the vast majority of what had in fact been published under the moniker of SF in genre magazines did not qualify as such — much of which, he argues, "is simply the Western or some kindred sub-literary species masquerading its structures — generally for venal and ideological reasons — under the externals of SF" (23). While this notion that a genre has a deep structure and a surface ("externals") structure (to borrow for a moment from linguistics) is perhaps not without merit, it does mean that Suvin's theory indeed confines itself to a select literary canon and cannot be used to study SF as a community or a system, to the degree that such an approach would have to study, among other things, the vast majority of works which operate under the surface structure of SF but not its alleged deep structure.

Suvin's notion of the "novum" and "cognitive estrangement" has remained highly influential within academic definitions, however, even has it has also been roundly criticized. China Miéville (a more recent practitioner who also intervenes as a scholar) for example argues, following and extending a point made by Gwyneth Jones, that Suvin's notion of the cognition effect "is the result of a strategy, or a game, played by writer and, often, reader, based not on reality claims but plausibility claims that hold purely within the text"; the "science" of science fiction is a kind of language-based game that SF engages in. It is an *effect*, which does not necessarily imply duplicity but which untethers it almost completely from science as it actually exists in science labs and textbooks. Genres have to be read as social systems, and taking the "cognition effect" seriously means "considering SF not in terms of a text's relationship to its own supposed 'cognitive logic' but as something done with language by someone to someone". As far as the theoretical definition itself goes, so Miéville, one based on *alterity* may ultimately better capture what SF is than one based on cognition: "But we should not be seduced by the long and honorable tradition of left utopias and utopian studies into foreclosing the reverse possibility (which better serves the project of theorizing actually-existing SF and fantasy […]): that utopias (including dystopias) are, rather, specific articulations of alterity, and

that it is of that that SF/fantasy is the literature. In this model, the atom of SF's and fantasy's estrangement, in other words, is their unreality function, of which utopia is but one — if highly important — form".[26]

The SF/fantasy border problem which Miéville brings up (as an author of both genres) shows the strains that any theoretical genre definition must contend with; theoretical similarities based on unreality functions aside, it is clear that as a communal and commercial fact, SF and fantasy have historically been in close proximity with one another, sharing authors, publication platforms, awards, and readers. Let me therefore turn to a different set of definitions of SF, which are historical rather than theoretical.

Interlude: Between Theoretical and Historical: Family Resemblance as Meta-Theory

Of course, the question of "what SF is" can also be posed on a more general level: what are genres? If SF as a community has long struggled to define itself, scholars of genre theory have similarly struggled to define more abstractly the nature of genres. I want to briefly consider an interlude in the history of genre studies in the 20th century: between the long history of largely theoretical definitions of genre (from Aristotle to Northrop Frye, to brutally shorten a far more varied history), and the now-dominant notion of genres as social-textual communities (as emphasized by the school of Rhetorical Genre Studies that has entered literary studies via linguistics), a notion of genre that briefly held sway was that of genres as being defined by family resemblances.

In his *Philosophical Investigations*, Ludwig Wittgenstein notes that when comparing various games — poker, soccer, tennis, hopscotch — we will find different points of likeness among them. Some games, but not all, are played in teams; some, but not all, are played competitively; some, but not all, are highly physically demanding; and so on. Wittgenstein likened this to the resemblance of family members: child A and child B may share their father's nose, but not his eyes; child B and child C may share their mother's eyes, which she shares with one of her

26 Preceding quotes in China Miéville, *Cognition as Ideology*, in Bould and Miéville, *Red Planets*, pp. 235-236 and p. 244. For a thorough, somewhat dry account of this unreality function, see: Dietmar Dath, *Niegeschichte: Science Fiction Als Kunst- Und Denkmaschine*, 2019.

uncles but not the other. In this cloud of relations, most entities share some similarities, but none share all, and at the farther ends of the network (whether of games or of relatives), perhaps nothing at all is shared. “Rather than a set of necessary and sufficient conditions that can be used to demarcate games and non-games, Wittgenstein suggests that there are many threads that crisscross the multidimensional linguistic landscape occupied by the concept of ‘game’.”[27] Wittgenstein’s notion of family resemblance was, for a time, taken up enthusiastically by genre theorists[28] generally as well as by SF specifically. Paul Kincaid, for example, references Wittgenstein, ultimately concluding that SF “consists of a series of threads (themes, devices, approaches, ideas) that are braided together.”[29] This presents less a definition of what genres are than a kind of pragmatist heuristic: SF texts tend to share features with other SF texts. Some SF features aliens, but not all; some robots, but not all; some is set in the future, but not all; and so on. Some SF texts share many features, and some at opposite ends of the genre-cluster feature none at all, while still both being part of SF. Ultimately, this approach leads us regard genre in the manner of Supreme Court Justice Potter Stewart’s famed non-definition of hard-core pornography in Jacobellis v. Ohio; “I shall not today attempt further to define the kinds of material I understand to be embraced within that shorthand description, and perhaps I could never succeed in intelligibly doing so. *But I know it when I see it*, and the motion picture involved in this case is not that.” This sort of *deictic* heuristic has been used, for example, by Norman Spinrad (“SF is anything published as SF”) and by Damon Knight (“it means what we point to when we say it”).[30]

We could take our leave here: ultimately, we have a pretty good idea of what SF is even if we cannot define it. This approach is not historical, but also in a sense agnostically theoretical, or pluralistic: all we can do is point and find similarities based on formal (not historical) points of overlap. John Rieder, whom we will read more carefully in the next section, references Wittgenstein’s family resemblance as well as the mathematical set theory concept of “fuzzy sets” to make the same point: “a fuzzy set, in mathematics, is one that, rather than being determined by a single

27 Massimo Pigliucci and Jonathan Kaplan, *Making Sense of Evolution: The Conceptual Foundations of Evolutionary Biology*, 2006, p. 222.

28 See David Fishelov, Metaphors of Genre: The Role of Analogies in Genre Theory, 1993, for a treatment of family resemblance as genre concept.

29 Paul Kincaid, *On the Origins of Genre*, 2003, p. 417

30 Ibid, p. 411

binary principle of inclusion or exclusion, is constituted by a plurality of such operations. The fuzzy set therefore includes elements with any of a range of characteristics, and membership in the set can bear very different levels of intensity, since some elements will have most or all of the required characteristics, while others may have only one".[31] To repeat, this view is not historical so much as it is *pluralistically* theoretical: some texts will be SF in Gernsback's sense, some in Le Guin's sense, some in Suvin's sense, and some in multiple or even all three senses.

But I find this family resemblance heuristic of genre interesting insofar as its underlying metaphor has no need for such a pluralism after all: family resemblances in biological families can in fact be explained by recourse to a single material mechanism, namely the genetic recombination that results from sexual reproduction. Biological family members are alike (but in different ways) as a direct result of their shared biological *generative process*. Wittgenstein's concept of the "family resemblance" is thus entirely unnecessary, indeed counterproductive, to understanding the very phenomenon from which he derives the term; the partial and varied resemblances between family members are only a mystery if we assume that two entities of a family must share a pre-existing platonic *identity* rather than merely both being the product of the same *generative process*.[32] Following the notion of family resemblance to its end, then, we would once again have to come to the conclusion that what is needed is a historical approach, not a theoretical one.

There is a further limit to the metaphor of family resemblance, one which similarly leads us to the necessity of treating genre historically. There are family members which do not in fact share the same biological generative process. As Marshall Sahlins reminds us, human kinship is a social fact, not a biological one. Kinship is generated by cultural processes such as marriage and adoption as much as by sexual procreation.[33] Clearly, such cultural processes must similarly, if not even

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31 John Rieder, *Science Fiction and the Mass Cultural Genre System,* 2017, p. 18.

32 Though organising dissertations in terms of specific philosophical systems is rarely worth the effort, let me note in passing here that this is what Gilles Deleuze meant by conceiving of difference as prior to identity in *Difference and Repetition*: "to find a differential genetic principle, Deleuze works through the history of philosophy to isolate the concepts of "difference in itself" and "repetition for itself" that the assumptions of previous philosophies had prevented from being formulated. "Difference in itself" is difference that is freed from identities seen as metaphysically primary. Normally, difference is conceived of as an empirical relation between two terms which each has a prior identity of its own ("x is different from y"). Deleuze inverts this priority: identity persists, but is now a something produced by a prior relation between differentials." Daniel Smith, John Protevi, and Daniela Voss, "Gilles Deleuze", *The Stanford Encyclopedia of Philosophy* (Summer 2022 Edition), Edward N. Zalta (ed.).

33 These cultural processes can nevertheless lead to a perception of family resemblance,

more so, be considered historically: marriages and adoptions are nothing if not the historically contingent outcomes of human considerations of love or, more prosaically but no less importantly, alliances. Meanwhile, literary genre lacks any biological basis at all; it is a purely social fact. Its generative processes are correspondingly less deterministic than those of nature (whether of evolutionary biology or of geological rock formation). There are strongly influential generative processes, like the commercial demands of publishing, that may lead to a text being classified as SF or not; but ultimately, human free will means that we can always *reconsider* whether to, say, call something SF.

2.2 Genre as: System, Community, Network, History

Let us now finally consider, then, what it means to think of a genre in historical rather than theoretical terms.[34] One popular metaphor for doing so is to ask when a genre was "born", or, if one prefers engineering over biology, to ask who "invented" a genre. When was SF born? Who invented it? On social media platform Twitter, the New York Times recently advertised their review of a H. G. Wells biography as follows: "With Jules Verne and the publisher Hugo Gernsback, H.G. Wells invented the genre of science fiction".[35] They were far from the first to describe the role of Wells and Verne thusly. The majority of comments and quote-tweets angrily pointed out that Mary Shelley wrote *Frankenstein* in 1818, years before Verne or Wells were even born, so that the honor of inventing SF should belong to her; a few went back further in time and made mention of Margaret Cavendish's *The Blazing World* (auspiciously published in 1666).[36] One can see that this approach is to some degree once again based on *theoretical definitions* of genre. SF is understood to be about fictional inventions and imagined future worlds; therefore, *Frankenstein* and *The Blazing World* (or even some of the works of Plato and Lucretius) are SF. And

whereby adopted children are sometimes perceived as looking like their parents, simply because people have come to expect this to be the case.

34 Though not further referenced here, I take my historical approach to genre to be largely accordant with that of Rhetorical Genre Studies as well. RGS, originating in linguistics, has taken a more strongly institutionalist tack (somewhat obliquely in the vein of Berger and Luckmann's notion of institutionalization) and focuses on genre as a kind of social action. See Natasha Artemeva: *Key Concepts in Rhetorical Genre Studies*, 2004 and John Frow: *Genre*, 2015.

35 https://twitter.com/nytimesbooks/status/1462077043110289408

36 The New York Times tweet is especially odd in that the review itself makes no mention at all of who invented SF; viewed from the perspective of the economic rules of media, one would assume it was primarily designed to generate angry clicks.

whichever text is the earliest one that is to us recognizable as SF becomes the "birth" of the genre.

From the perspective of contemporary SF studies, however, the question seems ill-posed: what would it mean for SF to have been "invented" by an author in the first place, to have been born in one year or another? If it is well-known that Shelley wrote *Frankenstein* long before the publication of Wells' *The Time Machine* or Verne's *Journey to the Center of the Earth*, it is also well-known that Shelley did not set out to write anything called "science fiction", but rather a Gothic tale. A question that goes unasked in trying to answer who invented SF is why we expect genres to have birthdays (or, like Frankenstein, creation days) at all. John Rieder, in his recent study *Science Fiction and the Mass Cultural Genre System* (2017), following the reception theory of Hans Robert Jauß, argues that the creation of SF has been a "collective and accretive social process" which does not allow one "to talk about origins at all" (p. 20). He goes on: "Studying the beginnings of the genre is not at all a matter of finding its points of origin but rather of observing an accretion of repetitions, echoes, imitations, allusions, identifications, and distinctions that testifies to an emerging sense of a conventional web of resemblances. It is this gradual articulation of generic recognition, not the appearance of a formal type, that constitutes the history of early SF" (p. 21).

I do not think this approach makes it impossible to talk of origins entirely, as Rieder does; but it requires us to think in what we could call a different temporal register. Rather than finding the earliest exemplars of what we now think of as SF and marking the publication dates of these exemplars themselves as worthy of attention, we would instead perhaps look at important moments of later reception. For Rieder, the important date with regard to Frankenstein is thus not 1818 but 1881, when the novel loses its copyright status and sells "four times more copies in the next decade than it had [in the preceding half century]", and its reception, in the context of late 19th century Victorianism, comes to focus more strongly on the "scientific character of Victor Frankenstein's workshop" (p. 73).

We could add to this a more direct interest in moments of *retrojection*, moments in which a work is — whether by scholars, practitioners, or lay readers — *retrospectively inserted into a tradition*. And in this sense, Shelley is indeed a "later" SF author than Wells and Verne; though written earlier, Frankenstein began to be conceived of as a pioneering work of science fiction (rather than Gothic or horror

fiction, for which it especially served as a template in the medium of film thanks to early adaptations) only in the latter half of the 20th century by various academic scholars (with, to be clear, good reason). Wells and Verne — who did not think of themselves as writing "science fiction" either —, on the other hand, were first retrojected as the originators of the genre far earlier, at the hands of the last figure that the New York Times' tweet mentions: Hugo Gernsback. Gernsback, whom we encountered before, included a story by Wells in each of the first *twenty-nine issues* of his magazine *Amazing Stories* (launched 1926). This conscious effort of creating a lineage after the fact established Wells (and Verne, who also figured prominently) as "fathers" of SF literature early on.

This kind of retrojection, as an aside, is not limited to SF or to genre literature generally. Beowulf, for example, is widely regarded as a seminal text of English literature. But, as David Damrosch notes:

> Tracing the growth of English fiction, for instance, English departments have typically offered surveys that move from Beowulf to The Canterbury Tales and on to Defoe, Richardson, Fielding, and Sterne. Yet such a parochial evolution would have surprised Henry Fielding, who wrote Tom Jones (1749) in comic dialogue with his epic master Virgil rather than with Chaucer. He had never even heard of Beowulf, whose sole surviving manuscript had yet to be discovered by Grímur Jónsson Thorkelin, who visited England in 1786 seeking Scandinavian material."[37]

What both of these examples show, I think, is how limited a form of literary history is that assembles authors in a linear sequence of authors, from early to recent — whether such a sequence goes

Cavendish —> Shelley —> Wells —> Gernsback

or

Beowulf —> Chaucer —> Shakespeare —> Fielding.

Rather than producing a list of authors, one would perhaps have to produce a *diagram* of a genre, which would need to include arrows going backwards in time along with those moving forward, mapping instances of re-discovery or re-cognition, of belated influence and retrojective inscriptions into the field. Without those kinds of backward movements included, it scarcely makes sense to ask questions like "Who invented Science Fiction?".

37 David Damrosch: *Comparing the Literatures*, 2020, p. 214.

What's more, Gernsback consciously gave readers of his magazines a role in finding older works of literature to inscribe into the canon of SF. In one of his earliest editorials for *Amazing Stories*, he writes:

> One of our great surprises since we started publishing *Amazing Stories* is the tremendous amount of mail we receive from— shall we call them "Scientifiction Fans"?— who seem to be pretty well orientated in this sort of literature. From the suggestions for reprints that are coming in, these "fans" seem to have a hobby all their own of hunting up scientifiction stories, not only in English, but in many other languages. There is not a day, now, that passes, but we get from a dozen to fifty suggestions as to stories of which, frankly, we have no record, although we have a list of some 600 or 700 scientifiction stories. Some of these fans are constantly visiting the book stores with the express purpose of buying new or old scientifiction tales, and they even go to the trouble of advertising for some volumes that have long ago gone out of print. (June 1926 / p. 290)

On the one hand, it thus seems indeed fruitless to find a single "birth" of a genre, much as Rieder argues. However, admitting that fact, it is perhaps far more fruitful to look for *hinge points* of a genre, not in the publication of texts but rather in their reception. Genres are thus seen as a conscious, and collaborative, effort of constructing something, of constructing a *social* entity that exists in history. In this sense, Gernsback is perhaps a more important figure than any of the three authors referenced above. His magazine, as the first regular publication focused entirely on SF, was enormously influential in determining which "repetitions, echoes, imitations" and so on were allowed to accrete. American genre magazines formed the most important media infrastructure for such early processes of accretion.

These processes, however, went beyond the personal story preferences of Gernsback as editor. His SF magazines were also — in contrast to most Western, romance and other such genre magazines of the time — some of the first to consistently include within them reader interactions in the form of letters. This was a practice which he was inclined to continue from his previous, more technically minded, magazines for radio amateurs and electronic tinkerers.[38] It was this brought-over sense of collaborative tinkering, more than the actual scientific or "prophetic" content (which Gernsback's editorial policy and own fiction often focused on too much), that helped give form to science fiction as a genre, giving space to practices of retrospective canon formation — that is, the kind of communal interaction that would later make it easier to retroject Mary Shelley into the SF canon as well. To give an example of such fan interaction:

38 See the extensive, enlightening introduction by Grant Wythoff to the collected editorials of Gernsback, *The Perversity of Things*, cited throughout here.

> I want to say something in favor of your so-called 'flashy' cover. In August of 1927, I happened to be in Chicago. One afternoon I got off the "L" and as it was raining, I was obliged to wait in the lobby until it ceased. There was a newsstand in this lobby and I believe that every publication in the U.S. was represented there. As is my habit, I immediately began browsing through these for something to help pass the time away. Suddenly a bright cover flashed through all the rest and it proved to be the Amazing Stories magazine for August, 1927. I always did have a great liking for the scientific-fiction type of story, so you can rest assured that this magazine did not return to the newsstand.[39]

One thing that seems obvious is that this sort of interaction between editor and fans would give the editors a sense of what the "mood" of the fans might be like: what preferences they may have with regard to stories and artwork, and why. But I find this letter interesting in particular because of the volume that Alice Franklin mentions: the cover of the August 1927 issue of *Amazing Stories* — volume two, number five — consists of a colorful Frank R. Paul illustration of H.G. Wells' *War of the Worlds*, originally published in 1897, reprinted some thirty years later[40]. It has become one of the most recognizable covers by Frank R. Paul, and one of the definite graphical depictions of Wells' aliens. Once again, then, we find ourselves in a moment of intense retrojection. In August 1927, one of the most notable visuals of SF was in fact the visualization of an 1897 novel.

While I find these moments of retrojection especially interesting, we can now generalize and say that genre thus is best seen as a kind of social system or community, made up of people and the social facts these people produce, that is, texts, literary prizes and awards, publishers, fan-cultures, and so on. This social system or community has produced itself historically and reproduces itself continuously. The (re-)production processes involved go far beyond the backward-looking formation of a canon. They would also more prosaically include, for example, the decision by authors and publishers to write and publish new texts with an eye towards the genre (which is to say, marketing them visibly as SF). Such texts may be either relatively uncontroversially part of SF (tending to reproduce the identity of the genre) or controversially so (in which case they may make an argument that SF should *move in a new direction*). As Rieder puts it, "the attribution of the identity of SF to a text constitutes an active intervention in its distribution and reception" (p. 25).

During the magazine era (from 1926 to the 1950s), SF turned into a relatively

39 Letter to the editor by Alice Franklin printed in Amazing Stories, vol 3, no 12, March 1929; quote sourced from: http://www.frankwu.com/Paul-2.html

40 Across two issues, and in abridged form.

closed-off system which "began breeding its own traditions, its own myths, its own history, and its own storytellers", collaboratively writing a sort of "consensus future history".[41] This consensus future history increasingly broke apart as the decades went by and the dimensions of SF continued to grow every which way, increasingly producing highly incompatible visions of the world, and thus of the genre. Yet that shared sense of a world remains important to some degree to this day, in the form of what the editors of the SF encyclopedia call the "SF megatext", the "huge body of established moves or reading protocols that the reader learns through immersion in many hundreds of SF".[42] And the various, partially incompatible visions of the world that SF produces — from new wave SF to cyberpunk to feminist SF, ecological SF, afrofuturism et cetera — continue to be articulated *through the same processes of genre reproduction*, contesting space within the genre space. Rieder accordingly argues that SF is "the product of multiple communities of practice whose motives and resources may have little resemblance to one another" (p. 11).

We are now in a position to think of genres as historical entities which, far from existing for all eternity in a Platonic realm, just waiting to be plucked up by writers, instead come into existence in historical time (though they are not "born" so much as they accrete). Yet as the historical organization of the section on "theoretical" definitions of SF has already strongly implied, this does not at all mean that we can simply do away with such abstract definitions. Rather, these definitions merely become another part of the history of genre. For Rieder, for example, "Suvin's definition becomes part of the history of SF" (p. 17). It can indeed be at least partially *explained* historically; writing at a time when SF studies was just beginning to assert (or insert) itself within academia, the fairly elitist and exclusionary definition by Suvin represented "a way of assimilating SF into the classical-academic genre system and gaining for it a share of the cultural capital invested in that system" (p. 17; p. 7). Paweł Frelik has called this a kind of legitimation strategy.[43] The history of SF is in part a history of how the genre was felt — by its writers, readers, and academic interpreters — to be slighted by a more or less actually existing socio-cultural, literary, or academic "mainstream", and of the

41 James Gunn in Reginald Bretnor: *Science Fiction: Today and Tomorrow*, pp. 189-190.

42 Damien Broderick. "SF Megatext." *The Encyclopedia of Science Fiction*. Eds. John Clute and David Langford. sfE Ltd/Ansible Editions, 19 Dec. 2020. Online: <https://SF-encyclopedia.com/entry/SF_megatext>.

43 Paweł Frelik: *Of Slipstream and Others: SF and Genre Boundary Discourses*, 2011.

legitimation strategies which these feelings produced in the varied members of the genre-community.

At any rate, the continued importance of theoretical definitions — now embedded into the history of the genre itself — should be clear when we consider that the large majority of texts are assigned to genres without any controversy. Whatever partial overlap exists between variant definitions of a genre tends to cover a large portion of the territory, with only certain border cases really in question; few would disagree that Ursula K. Le Guin's *The Left Hand of Darkness* is SF while her *Wizard of Earthsea* series is fantasy. There are multiple definitions of SF, but none of these definitions are *arbitrary*; if anyone were to call for a definition of SF based on the presence of romantic kisses, or the use of iambic pentameter, or a certain word length, that person would obviously be resolutely ignored.

There are thus very real limits to the "problem" of genre; for all the disagreement about how and where to draw the borders, there is a large literary terrain that is agreed upon — and a vast zone that is excluded by just about any definition. I am ultimately less interested in some of the finely-tuned differences that genre community members highlight through variant definitions of the genre than I am in the social fact of such genre border contestations; beyond being a repository of fiction, SF is a social system with a high degree of self-reflexivity. To some degree this is true of almost all literary or genre communities, especially perhaps "pre-modern" systems in which literature tended to be a more or less elitist affair, tightly enmeshed with notions of elite education. Among the kinds of genres assembled in the American pulp magazine heydays of the 1920s, however, SF today stands out (along with, perhaps, detective fiction) as having created a far more active and self-reflexive community than its pulpy peers, many of which are almost entirely forgotten.[44] Such a self-reflexivity, as the literary analyses in the rest of this dissertation will hopefully show, is evident not only in paratexts such as editorials, but also in the fiction itself; the very kind of self-referentiality that orthodox notions of literature tend to take as one of the markers of literariness.[45]

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44 "This rapid expansion of the magazine market meant that by the mid-1920s, the "several hundreds" of fiction magazines on the market were able to diversify into incredibly narrow niche publications "devoted to any and every genre and topic imaginable, such as Courtroom Stories (the first issue featured a cover story on the Oscar Wilde trials), Football Action, Zeppelin Stories, and Gun Molls Magazine". Peterson quoted in the footnotes of *Perversity of Things*, p. 287.

45 See for example Peter Brooks in the preface of *Reading for the Plot* (1984) arguing that "[most] viable [one may ask: viable for what?] works of literature tell us something about how they are to be read, guide us toward the conditions of their interpretation" (xii).

Members of this genre community have often asked a question that is related to but appreciably different from "what SF is", namely: what does SF "do"? Given the attributes which SF has — these depend on how one answers what SF is —, what *affordances* does SF have, what *uses* does it have?[46] Given that SF is often about science or technology, what does the genre help us think about? Given that SF is often set in one future or another (or at least a world different from ours), how are texts of the genre used to advocate for certain political goals that are naturally not achieved yet and await us in the future? For the remainder of this chapter, I will turn to some of the claims that the SF community — both writers and academic scholars of SF — have made regarding the affordances or uses of the genre.

2.3 What People do With SF

Doing Things With Literature

Though its influence as the sole determinant of "literariness" (or artfulness tout court) has long waned, it is hopefully not too controversial to suggest that the notion of art existing for its own sake or within its own sphere still exists: l'art pour l'art, as the slogan goes. Such an ideology of aestheticism does not see it fit for art to have a "function" or "use" at all, rejecting these terms as too utilitarian. At most, art perhaps edifies the soul, or some such thing;[47] certainly art would have no need to have moral or didactic utility. At its most restrictive, aestheticism sees the value of a literary text only in a sense of beauty (or ugliness, for that matter) that the work imparts; less restrictively, a work of art may also be interesting in its relation, in its position relative to other works of art. The work is no longer an entirely isolated object, but it does exist in a self-contained *sphere,* formed by works of art in the multiple. But that sphere of art would still not tasked with interacting with other spheres, such as the political or social.

There have, however, obviously been many academic strands opposed to such a self-contained sense of art or literature. The folk history of (American) literary studies imparted by student textbooks would indicate that the largely aestheticist

46 I use these two terms in reference to Caroline Levine's *Forms* (2015) and Rita Felski's *Uses of Literature* (2008), respectively.

47 If I simplify obscenely here, I would hope that it is forgivable insofar as the matter is ultimately far removed from my concerns.

New Criticism of the mid-20th century gave way to reading practices more concerned with political and social contexts in the latter half of the century, inaugurated by what is usually called structuralism. On the heels of this turn, though tacking towards a more explicitly Marxist direction, Fredric Jameson could thus write in 1981:

> This book will argue the priority of the political interpretation of literary texts. It conceives of the political perspective not as some supplementary method, not as an optional auxiliary to other interpretive methods current today — the psychoanalytic or the myth-critical, the stylistic, the ethical, the structural — but rather as the absolute horizon of all reading and all interpretation. (*The Political Unconscious: Narrative as Socially Symbolic Act*, p. 1*)*

This was "evidently a much more extreme position than the modest claim, surely acceptable to everyone, that certain texts have social and historical-sometimes even political-resonance." (ibid). In other words, he did not expect everyone to agree with his particular claim; but the ground on which he moved was one in which such a strong claim was readily *intelligible*, if not agreeable. For Jameson, texts — which included all sorts of non-literary cultural production — could surely not be taken to mean what they say they mean, as the "ordinary reader" would have it (p. 45). What texts really say must be uncovered in the depths. What are texts *really?* It would be best to see them as "resolutions of determinate social contradictions" rather than as mere *passive* and clear reflections of society (p. 66). The terminology ("determinate contradictions") identifies the approach as evidently Marxist, and constitutes Jameson's stronger claim; note again that in setting himself apart from "weaker" claims, we can see that the ground on which he moved was already one in which texts were readily read politically:

> The methodological requirement to articulate a text's fundamental contradiction may then be seen as a test of the completeness of the analysis: this is why, for example, the conventional sociology of literature or culture, which modestly limits itself to the identification of class motifs or values in a given text, and feels that its work is done when it shows how a given artifact "reflects" its social background, is utterly unacceptable. (ibid)

Methodologically, Jameson ultimately argues that texts must be read as individual particles of a larger unit. This unit is the "ideologeme" (p. 61), so named because it is essentially a "unit" of ideology. Ideology or the ideologeme is an ideal construct that is never wholly visible and never fully present in any one of its individual utterances; the critic must not just bring it to light but *produce* it through their work. Jameson offers another structuralist-linguistic metaphor: beneath

"manifest texts" (the surface) we can find "deep structures", i.e. depth (pp. 133-134).[48] Here, then, is what literary critics (or academics) can *do* with texts, their critical method: they use texts as so many visible data points which, if read together, and with the right "master code" (as Jameson puts it in the preface, *x*), allow us to (re-)produce something *hidden*, namely ideologies. Literary critics can use literature to make visible political ideologies that are not openly perceptible.

If Jameson is an exemplar of such an approach focused on hidden depths, there has been a reaction against this kind of approach in the last two decades. Rita Felski's *The Uses of Literature* (2008) and *The Limits of Critique* (2015) are prominent examples, as is a 2009 issue of the journal *representations* (edited by Stephen Best and Sharon Marcus, based on contributions that were originally written explicitly in reference to the 25th anniversary of Jameson's *Political Unconscious*); earlier theoretical statements widely picked up on are Eve Sedgwick's *Paranoid Reading and Reparative Reading* (1997) and Bruno Latour's *Why Has Critique Run Out of Steam?* (2004). Common to almost all of these responses is a move away from focusing on hidden depths, and a certain tiredness with critique and suspicion. Latour, for example, finds in endless suspicion and post-modern relativism something like a uncomfortably close kin of the kind of conspiracies that proliferated after the events of September 11, 2001. Four years after Latour, at the tail-end of the Bush administration, Best and Marcus note that the Jamesonian need to uncover something in the deep seems wholly unnecessary:

> "If everything were transparent, then no ideology would be possible, and no domination either," wrote Fredric Jameson in 1981, explaining why interpretation could never operate on the assumption that "the text means just what it says." The assumption that domination can only do its work when veiled, which may once have sounded almost paranoid, now has a nostalgic, even utopian ring to it. Those of us who cut our intellectual teeth on deconstruction, ideology critique, and the hermeneutics of suspicion have often found those demystifying protocols superfluous in an era when images of torture at Abu Ghraib and elsewhere were immediately circulated on the internet; the real-time coverage of Hurricane Katrina showed in ways that required little explication the state's abandonment of its African American citizens; and many people instantly recognized as lies political statements such as "mission accomplished."[49]

With everything out in the open like that, what point is there to attempting to

48 This is, again, clearly a specifically Marxist move; for Marx, after all, the method of science was "a method which reveals the 'essential relations' behind the necessary but mystifying inversions assumed by their 'surface forms'", in the words of Stuart Hall (*Selected Writings on Marxism*, p. 22).

49 Stephen Best and Sharon Marcus: "Surface Reading: An Introduction." *Representations*, vol. 108, no. 1, Nov. 2009, p. 2.

map a political unconscious? After 2016, one could probably quite easily replace the examples of the Bush era with those of the Trump presidency: are there any depths to be plumbed when ideology seems to speak to us so clearly? Do we really need to assume texts hide something?

Rita Felski, meanwhile, in *Uses of Literature* is more explicit in quite simply being *bored* with the operations of critique: "There is a dawning sense among literary and cultural critics that a shape of thought has grown old. We know only too well the well-oiled machine of ideology critique, the x-ray gaze of symptomatic reading, the smoothly rehearsed moves that add up to a hermeneutics of suspicion" (p. 1). Her *Uses of Literature* is perhaps most helpful for our needs here, identifying four specific things — largely phenomenological in nature — that literature can be conducive to: recognition, enchantment, knowledge, and shock (p. 14). While all four are clearly potentially relevant categories for SF, I will focus here on the latter two.

To begin with knowledge, Jameson's focus on ideology (and its essential quality of being hidden) has made it more difficult to see the knowledge that literature may have about the world, Felski argues; it "is to have decided ahead of time that literary works can be *objects* of knowledge but never *sources* of knowledge" (p. 7, emphasis added). Yet the problem goes beyond Jameson; to claim that literature might know something about the world has become naive tout court; "an entire cluster of terms — knowledge, reference, truth, mimesis — vanished from […] literary theory" (p. 81). But literature does know something about the world, so long as we keep our claims of knowledge modest more generally. "Once we relinquish the false picture of a reality 'out there' waiting to be found", she says, "we can think of literary conventions as devices for articulating truth rather than as obstacles to its discovery" (p. 84). And: "We are eternally enmeshed within semiotic and social networks of meaning that shape and sustain our being. Hence it makes no sense to conjure up some notion of things as they really are — some higher altitude stripped bare of all symbolization and sense-making — against which we could measure the truth claims of the literary work" (p. 85).

We may note as an aside that this argument — that all forms of knowledge, whether literary, intuitive, or scientific, are equally mediated and unable to say something about "reality" — is in this instance somewhat out of tune with that of Bruno Latour: in *Why Has Critique Run Out of Steam?*, Latour chastises the

academic game of critique precisely for equating the social constructedness of knowledge with there not being a reality out there. While "entire Ph.D. programs are still running to make sure that good American kids are learning the hard way that facts are made up, that there is no such thing as natural, unmediated, unbiased access to truth", he worried at the time (again, during the Bush administration), climate changer deniers used extremely similar modes of argument "to destroy hard-won evidence that could save our lives."[50]

Regardless, Felski focuses largely on a kind of social and phenomenological knowledge: using the example of Edith Wharton's *The House of Mirth* (1905), she argues that novels can give us sense of "tacit knowledge, commonplace gestures, modes of conduct, and totemic objects that make up a particular culture or subculture" (p. 88), or "a literary rendering of how worlds create selves, but also of how selves perceive and react to worlds made up of other selves" (p. 91). This kind of knowledge may often also exist in the social sciences, but literature "gives us a social world *in a different key*" (p. 92).

What about shock? Felski cautions us against some of the stronger claims regarding literature's ability to shock; we should not have "absurdly high hopes of the transformative energies of texts" (p. 109). The jolt that a work of art can give us is first and foremost a personal and immediate one — phenomenological, not sociological —, which surely cannot be expected to automatically lead to societal transformation (that is, "revolution"). But they can shock nevertheless: "audiences of various stripes still testify to feeling disturbed, disoriented, or disgusted by specific works of art. That shock fails to unleash a social cataclysm does not render it less salient as an element of aesthetic response" (p. 130). There is a definite limit to the capacity to shock. Works of art are not, after all, social entities with *agency* in the

50 Bruno Latour: "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern." *Critical Inquiry*, vol. 30, no. 2, 2004, p. 227. But see also Alyssa Battistoni's *Nachruf* on Bruno Latour: "Famous for comparing science studies to global warming denial, it is typically read as a work of auto-critique. It is not, however, a mea culpa but a j'accuse — one among many entries in Latour's longstanding critique of critique. 'A certain form of critical spirit has sent us down the wrong path', he suggested — but his apparent self-indictment was itself a rhetorical move. By 'us' he really meant others: those for whom critique meant debunking, pulling away the veil of mystification to reveal the superior insight of the critical theorist. Critique, Latour argued, was a 'potent euphoric drug' for self-satisfied academics: 'You are always right!' The paradox was that the essay suggested, however subtly, that Latour himself had always been right. If antipathy to intellectual smugness often drove him to think more creatively than the narrow channels of French academia permitted, his frequent calls for humility could belie his own ambition and self-assurance." Alyssa Battistoni, *Latour's Metamorphosis*, 2023. Online: https://newleftreview.org/sidecar/posts/latours-metamorphosis

way that human individuals — people — or human collectives composed of individuals — firms, states, institutions of any kind — are.[51] In the words of Felski, texts "lack the power to legislate their own effects" (p. 9). Closely reading a book, we can discern its potential *capacities* or *affordances* to shock, but "the internal features of a literary work tell us little about how it is received and understood, let alone its impact, if any, on a larger social field" (p. 9; see also p. 18).[52] To study the shock of literature, then, we will have to analyze not only the texts themselves, but also how they are being used by social actors, that is, people and institutions.[53]

Perhaps most important for our present purposes — the question of how (science) fiction is used to talk about climate change —, Felski notes that the biggest strength of literary shock may lie in bringing distant and anonymous things closer to us:

> No one would dispute that our sense of anguish at the suffering of a person close to us far exceeds, in its intensity and magnitude, our response to a work of art. By the same token, however, we may be more deeply shaken and unnerved by a gut-wrenching Sarah Kane play than by any number of death statistics reported in the newspaper. Works of art can bring home, with exceptional vividness and graphic power, psychic dramas of torment and self-loathing, destructiveness and disgust, even as they zoom in unsparingly on flayed bodies, staring eye-sockets, or obscenely gaping wounds. (p. 114)

This sense of producing shock lies, as we will see, at the core of much climate-inflected SF written in past decades.

Doing Things With SF

I chose Fredric Jameson as an example of the "hermeneutics of suspicion" in part, of course, because he has written extensively on SF. As perhaps the most high-profile academic to grace the genre with scholarly attention, his writings have had a sizable influence in SF studies (a field whose scholars have sometimes been as anxious about the prestige of SF, their object of study, as Gernsback was in his role

51 See Andreas Malm's (somewhat dry, to be sure) argument against extending agency to anything but humans and human institutions in *The Progress of This Storm* (2018), pp. 78-118. For a new materialist approach that is nevertheless accordant with such a limited view of agency, see Manuel DeLanda's *A New Philosophy of Society* (2006).

52 I take the term capacities from Manuel DeLanda, *Intensive Science and Virtual Philosophy* (2002); the highly similar term affordances, meanwhile, has gained purchase in literary studies through Caroline Levine's *Forms* (2015).

53 For an example of this kind of work, see Frank Kelleter, *Serial Agencies* (2014). Though Kelleter nominally casts his theoretical allegiance with the more expansive sense of agency against which Malm inveighs, the work does not depend on it at all.

of editor). Jameson was well-positioned to take SF seriously insofar as he took genre more generally seriously. His call to "always historicize!" that opens *The Political Unconscious* included not only texts — the "objects" of study — but also "that more intangible historicity of the concepts and categories by which we attempt to understand those things" (p. ix). This would include, of course, "theoretical" concepts of genre, "which are so clearly implicated in the literary history and the formal production they were traditionally supposed to classify and neutrally to describe" (p. 93). A year after *The Political Unconscious*, Jameson published a short but influential article (*Progress versus Utopia; Or, Can We Imagine the Future?*, 1982*)* in the journal *Science Fiction Studies*, in which he reads SF precisely in the fashion of *The Political Unconscious*, recapitulating the moves of that text lined out above (arguing, for example, once again that to study the surface in individual texts is not enough: "No serious literary critic today would suggest that content — whether social or psychoanalytic — inscribes itself immediately and transparently on the works of 'high' literature", p. 148).

What does Jameson read into SF as a genre? He extends György Lukács' discussion of the emergence of the historical novel. Where Lukács argued that the historical novel emerged in tandem with the "peculiarly modern sense" (p. 149) of historical thinking or historicism more generally, for Jameson the emergence of SF (with Verne and Wells) occurs precisely when "the historical novel as a genre ceases to be functional". What comes to matter increasingly is not a sense of history, of historical change in the past, but rather of the future, of further potential change: "We are therefore entitled to complete Lukacs' account of the historical novel with the counter-panel of its opposite number, the emergence of the new genre of SF as a form which now registers some *nascent sense of the future*" (p. 150, emphasis added). Jameson calls this the "canonical defense of the genre [… SF] narratives have the social function of accustoming their readers to rapid innovation, of preparing our consciousness and our habits for the otherwise demoralizing impact of change itself" (p. 151). As we will see below, SF scholars indeed often still utilize this "canonical" use of the genre. Jameson, however, wishes to go beyond it; he does so, of course, by once again positing a depth beneath the surface, and in that depth, lying in wait, is ideology critique: "the 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" (p. 151). Harmonizing with the theoretical definition of Suvin laid out above, for Jameson SF ultimately merely estranges the *present* rather than produce visions of the future. The future-visions of SF are in essence merely a ploy, enabling a new perspective onto the present:

> Rather, [SF's] multiple mock futures serve the quite different function of transforming our own present into the determinate past of something yet to come. It is this present moment — unavailable to us for contemplation in its own right because the sheer quantitative immensity of objects and individual lives it comprises is untotalizable and hence unimaginable […] — that upon our return from the imaginary constructs of SF is offered to us in the form of some future world's remote past, as if posthumous and as though collectively remembered. (p. 152)

In line with this argument, there is a widely accepted sort of folk wisdom about SF that it is, even in being about the future, "really about the present". What is the overarching project of SF? It is not about imagining futures but, for Jameson, precisely about the impossibility of imagining utopian societies; "its deepest vocation is to bring home, in local and determinate ways, and with a fullness of concrete detail, our constitutional inability to imagine Utopia itself" (p. 153). Not to imagine utopia, but its impossibility — quite a suspicious reading indeed!

Jameson continued his engagement with SF throughout the decades;[54] yet, while Jameson remains oft-cited within SF studies, it seems to me that many scholars do not necessarily follow his most suspiciously-minded subversions: can we find SF scholarship that more readily accepts that SF provides us, perhaps, with a perspective onto the future? And, indeed, with the senses of recognition, enchantment, shock, and knowledge, as Felski would have it?

We can find such an approach to the "uses" of SF, I suggest, not only in recent scholarship but indeed as the dominant method of SF analysis, predating academic scholarship of the genre entirely. A world apart from English departments, the practitioners of SF had, as was hinted at in the section on theoretical genre definitions, already constructed their own notions of what can be "done" with literature. Gernsback led the charge, though his notions were influenced less by the long history of high literary self-reflection than by immediate commercial needs: the American middle-class had to be convinced that its adolescent (largely male) children be allowed to purchase SF pulp magazines. That problem led Gernsback to focus on the *didactic* value of SF, arguing, for example, in an editorial of *Amazing*

54 Much of it collected in *Archaeologies of the Future*, 2005.

Stories that "it should never be forgotten that the educational value of the scientifiction type of story is tremendous" (July 1926 / p. 292). Gernsback was, in other words, concerned with differentiating his magazines from other pulps whose stories provided mere escapist enjoyment. SF for him — directly related to science itself and possessing the qualities of prophecy — was supposed to be *useful* in a more humdrum way than that of Jameson or Felski: "A scientifiction story should not be taken too lightly, and should not be classed just as literature. Far from it. It actually helps in the progress of the world, if ever so little, and the fact remains that it contributes something to progress that probably no other kind of literature does" (October 1926 / p. 304). This didactic value of SF would ensure, so Gernsback's earnest belief, that the genre eventually "will be looked upon with considerable respect by every thinking person" (Fall 1930 / p. 342).

This science-focused, outright naive sense of the didactic utility of SF was an attempt to differentiate the genre from other pulp fiction, but it seems strikingly out of touch with notions of the aesthetic value of art, or even with the less purely aestheticist belief of an education in "the classics" improving a more diffuse sense of moral character.[55] Where Felski, despite her seeming relativistic sense of "truth" or knowledge, focuses entirely the kinds of *social* knowledge that fiction can provide, Gernsback simply assumed that science fiction as science plus fiction would provide a kind of scientific education.

Gernsback's focus on didactic worth ran counter to just about any notion of the value of literature present at the time, or today. As a legitimation strategy for SF it therefore had its limits. The two "revolutions" of American SF that would follow — the "Golden Age" under Campbell's editorship and the New Wave that in turn rebelled against Campbell — can thus be read as merely catching up with what "literary" fiction had already been doing for a long time. Under Campbell, the average SF magazine story became more readable on the level of prose and plot, if nothing else. The New Wave authors of the 1960s that followed, perhaps cognizant that "reading for the plot" nevertheless remained in the eyes of high culture "a low

55 The notion of "the classics" as a kind of edifying literature was particularly pronounced in, for example, early 19th century Oxford and Cambridge education, as well as in mid-20th century American university curricula. Of the former, James Turner writes (*Philology*, 2014, p. 174): "tutors [at Oxford and Cambridge] habitually treated ancient writers pretty much as contemporaries who dispensed useful advice to young men of the ruling classes"; on the latter, see for example Roger L. Geiger on the history of Western Civilization courses (*American Higher Education Since WWII*, 2019, pp. 19-23).

form of activity … which especially characterizes popular mass-consumption literature",[56] would then try to bring the genre up to speed on the kinds of innovation in literary form and style that modernist literature was already producing at the times of Gernsback.[57]

These revolutions notwithstanding, however, the genre community of SF (itself made up of multiple communities of practice with varying desires and approaches to the genre), continuously defended the "uses" of the genre beyond those of literary pleasure that the written language can provide (which for different readers of SF may be variously derived from scientifically accurate technical descriptions, fast-paced action and adventure plots, the sublime word-images of alien worlds, or the joy of New Wave stylistic experiments). Gernsback's defense of SF as a didactic literature has been almost wholly adopted by practitioners and scholars of the genre — only that most such defenses after Gernsback would, more in line with either Jameson or Felski, emphasize a sense of social and political education rather than one in engineering and the natural sciences. Scortia and Le Guin's image of SF as a thought-experiment lined out above proved especially influential as a "use" of the genre. Along similar lines, Frederik Pohl in 1993 referred back to the Gernsbackian "prophecy", only now in political terms, arguing that most of his own works were not only "overtly political" but indeed "propagandistic in their central themes". Pohl added another use of SF in reference to Soviet fiction, arguing that the genre can act as a "political cryptogram" which evades political censorship;[58] this notion has returned to the fore in recent Western reception of Chinese SF, as we will see in the conclusion.

It seems to me that this more ordinary, more post- (or pre-)critical reading stance has been the actual norm of SF scholarship, rather than the iridescent, dazzling subversions of Jamesonian ideology critique. Take Sherryl Vint's recent (2021) introduction to the genre for the MIT Press' *Essential Knowledge* series. Vint, one of the foremost SF scholars working today, more or less takes as a given the

56 Peter Brooks: *Reading for the Plot*, 1984, p. 4.

57 Which is not to say that there was no connection at all between modernist literature and the pulp environment of the 1920s. Yet even David M. Earle's revisionist account (*Recovering Modernism*, 2009, especially pp. 111-113 and 128-131) of the modernism-pulp connection ultimately has fairly little to say about SF, and much of it concerns, fittingly enough, the political (especially socialist) sense of the genre rather than any stylistic or otherwise aesthetic kinship with high literary modernism.

58 Quotes from p. 202 and pp. 206-207 of Frederik Pohl: "The Politics of Prophecy." *Extrapolation*, vol. 34, no. 3, Oct. 1993, pp. 199—208.

"canonical" defense of SF that Jameson wished to overcome in the 1980s: SF helps us think about a modern, rapidly changing world. In chapters on the utopian tradition, futurology, colonialism, robots and AI, genomics and post-humanism, environment and climate change, and economic and finance, she again and again shows that, at its simplest, SF is "useful for grasping daily life in industrialized, technologized societies"; that it can be understood "as a cultural form that offers an 'everyday' language for thinking about and responding to daily life" in modernity and that it "asks questions about the impact of science and technology on human experience, values, and ways of living".[59] Or consider Istvan Csicsery-Ronay — another luminary in the field of SF studies — focusing on the "seven beauties" that SF literature gives us: fictive new words and concepts, future histories, the science-fictional sublime or grotesque…[60] Both Csicsery-Ronay and Vint seem strikingly close to what Felski had in mind when she identified "uses" of literature such as shock, recognition, or enchantment. And it is the approach of Csicsery-Ronay and Vint, not that of Jameson, that forms the actual everyday practice of SF scholars, as any number of back issues of *Science Fiction Studies* and *Extrapolation* attest to — predating not only Vint's retrospective summation but also the turn, in literary studies, towards post-critique and surface reading in the early 2000s.

Nor is this all that surprising: this was, after all, more or less what genre practitioners like Le Guin or Pohl *suggested* ought to be done with SF, turning Gernsback's technological didacticism into a social and political one but retaining the underlying sense of the "aboutness" of literature. For Felski and Best and Marcus, all of whom explicitly note the importance of the *generational* nature of academic training, the hermeneutics of suspicion were felt to be hegemonic in the late 20th century English department. But the proverbial bread and butter of SF scholarship — having emerged within the SF genre community as much as in English departments — has in fact always been a kind of reading practice that, in agreement with Best and Marcus, "take[s] texts at face value".[61] Indeed, even one of the major works of SF critique most explicitly aligned with Jameson — Mark Bould's *The Anthropocene Unconscious* (2021) — ends up being, on closer

59 Sherryl Vint: *Science Fiction*, 2021, pp. 4-6.

60 Istvan Csicsery-Ronay: *The Seven Beauties of Science Fiction*, 2008. The full list runs: fictive neology, fictive novums, future history, imaginary science, the science-fictional sublime, the science-fictional groteque, and the "Technologiade".

61 Best and Markus, *Surface Reading: An Introduction*, p. 12.

inspection, a rather post-critical affair, largely refraining from the hermeneutics of suspicion. Since Bould is specifically concerned with climate change in literature, it will also serve as a good segue-way into the last question to be answered in this chapter: what can we "do" specifically with ecological SF? Let me first give a general sense of how SF scholarship in recent years has approached ecological SF, and then try to ascertain the *limits* of this approach by considering Bould's text in more detail.

Doing Things With Environmental SF: The Problem of the Gap

Science fiction studies has in the last two decades turned increasingly to the problem of climate change and ecology.[62] This development occurred in tandem with changing attitudes towards climate change on other levels of society: society at large has devoted more time to debating climate change, since the issue remains unresolved and grows in urgency with every year; the humanities have translated this societal concern into the academic agenda of eco-criticism and the environmental humanities; and the object of study, too — SF generally and ecological SF specifically —, has moved on from concerns of nuclear war, overpopulation and pollution, popular in the immediate post-war period, to a far stronger focus on the climate crisis. When discussing ecological or climate SF, science fiction studies has largely replicated the general sense of what SF "does" lined out above: climate-tinged SF, in being "about" climate change, encourages in one way or another new thinking and feeling, or disseminates knowledge of the crisis.

Thus in Eric Otto's *Green Speculations: Science Fiction and Transformative Environmentalism* (2012), an early example of the current wave of eco-critical SF

62 Apart from some of the titles I will cite in this section (especially Canavan's and Robinson's *Green Planets*), see for example the special issue of SF Studies on *Science Fiction and the Climate Crisis* (Vol. 45, No. 3, November 2018), as well as:

Brent Ryan Bellamy: *Remainders of the American Century: Post-Apocalyptic Novels in the Age of US Decline*, 2021; Gerry Canavan: "Science Fiction and Utopia in the Anthropocene." *American Literature*, Vol. 93, No. 2, 2021; Antonia Mehnert: *Climate Change Fictions: Representations of Global Warming in American Literature*, 2016; Andrew Milner and J. R. Burgmann. *Science Fiction and Climate Change: A Sociological Approach*, 2020; Chris Pak: *Terraforming: Ecopolitical Transformations and Environmentalism in Science Fiction*, 2016; Paweł Frelik: "On Not Calling a Spade a Spade: Climate Fiction as Science Fiction", *Amerika Studien / American Studies*, Vol. 62, No. 1., 2017; Rebecca Evans. "Fantastic Futures? Cli-Fi, Climate Justice, and Queer Futurity." *Resilience: A Journal of the Environmental Humanities*, vol. 4, no. 2—3, 2017; Shelley Streeby: *Imagining the Future of Climate Change: World-Making through Science Fiction and Activism*, 2018; and Adam Trexler: *Anthropocene Fictions: The Novel in a Time of Climate Change*, 2015.

scholarship, the work that ecological SF is supposed to do is described as follows: such texts "provide factual information", "demonstrate […] disastrous consequences", "reflect on the viability of current socio-political formations as well as to imagine new ones" or serve as "sophisticated intellectual guide[s]" (p. 3). Inform, demonstrate, reflect, imagine. The vocabulary can be expanded with similar verbs; SF also "prefigures" and "theorizes" (p. 4). Ultimately, so Otto, SF has a "pedagogic quality" and, at its best, actively "[creates] transformative environmentalism in addition to reflecting it" (p. 5). Ecological SF works pedagogically; it raises consciousness.

Critical to this pedagogy is the imagined future, and its difference from our present: it is the image of the future that allows us to reflect on our present. One can imagine the operation visually, an image of the future side-by-side with an image of the present, the oddities of our present visible as being odd for the first time. This is what Gerry Canavan argues in his introduction to *Green Planets: Ecology and Science Fiction* (2014).[63] "The fantasy of apocalypse", Canavan notes with regard to dystopias — but the point can obviously be extended to utopia, and science fiction as a whole — "is here unveiled as itself a mode of critique" (p. 13). Visions of the future exist at a distance from the present, and that very distance, or gap, or spread, constitutes an implicit critique of the present. From Paolo Bacigalupi's *The Windup Girl* (2009) to Octavia Butler's *Parable of the Sower* (1993), and all the way back to J. G. Ballard's *The Drowned World* (1962), this is the mode in which climate SF has largely been written. And it is not only the fantasies of apocalypse. Quoting Samuel R. Delany, Canavan argues that there are in principle four positions which SF can take in envisioning ecological futures, ordered in a two-by-two grid:

	Positive Vision	*Negative Vision*
High Technology	New Jerusalem	Brave New World
Low Technology	Arcadia	Land of the Flies

What unites these four seemingly so different positions[64] of literary texts is their

63 A scholarly work which, incidentally, he co-edited with Kim Stanley Robinson, once again leading us to suspect that science fiction as a community exhibits very porous boundaries, if any, between academic scholarship and literary authorship.

64 The two positive visions can, incidentally, also be thought of along the lines of the contemporary leftist disagreement over the climate crisis, where New Jerusalem corresponds to Ecomodernism and Arcadia corresponds to Degrowth.

assumed political potential *as* text: in all four cases, a vision of the future is assumed to have an effect on the reader in the present. Positive visions — utopias — leave the reader with the desire to bring that vision about, while dystopias serve as a warning, a world to be prevented. In this telling — and it is surely correct in registering what the majority of ecological SF aspires to — the history of environmental SF has largely been a history of futures which are already different from our present, in which history has already changed. Ecological U- and dystopias alike gain critical purchase by imagining various futures whose differences from the present of the reader render visible previously unseen aspects of that present, and thus exhort the reader to change it in one way or another. In other words, SF is supposed to be performative or counter-performative. I take the term (counter-)performative from Donald MacKenzie's study of financial theory, who in turn was influenced by J. L. Austin.[65] MacKenzie notes that financial and other economic theory may have performative effects: such theory does not simply "capture" the reality of the economic world, like a camera, but rather has the potential to *change* this reality. Taking further inspiration from sociologist Barry Barnes[66], MacKenzie argues that economic theory can in fact be self-fulfilling: in that case "the use of a model (or some other aspect of economics) makes it [the model] 'more true'". Or, alternatively, it can do the opposite, so that an "aspect of economics is being used in 'real world' processes, and the use is having effects, but among those effects is that economic processes are being altered in such a way that the empirical accuracy of the aspect of economics in question is undermined".[67] It seems to me that much environmental SF, in its utopian and dystopian forms, intends to work similarly: utopian fiction is supposed to make this utopia more likely, to bring it closer to reality; dystopian fiction is a warning that is to act counter-performatively.

Taking a step back, what Canavan and Otto argue above is still, I think, largely the theory of SF that Darko Suvin had already put forward, who had argued that "significant SF is in fact a specifically roundabout way of commenting on the author's collective context [i.e. our present reality] … Even where SF suggests —

65 Much as Judith Butler was, whose theory of gender performativity may be more well-known in the humanities.

66 From a paper that is well worth a read, though 40 years after the fact of course no longer revolutionary: Barnes, Barry. "Social Life as Bootstrapped Induction." *Sociology*, vol. 17, no. 4, Nov. 1983, pp. 524—45.

67 Both quotes MacKenzie, Donald A. *An Engine, Not a Camera: How Financial Models Shape Markets*, 2006, p. 19.

sometimes strongly — a flight from that context, this is an optical illusion and epistemological trick. The escape is, in all such significant SF, one to a better vantage point from which to comprehend the human relations around the author. It is … a device for historical estrangement".[68] We have seen in the previous section that this largely also holds true for how SF is conceptualized *internally* by its practitioners, by authors such as Ursula K. Le Guin or Frederik Pohl. Even one of the newest proclamations of what we can "do" with SF ultimately returns to this sense. In *Uneven Futures: Strategies for Community Survival from Speculative Fiction* (2022), the co-editor Ida Yoshinaga (the other editors are Sean Guynes and Gerry Canavan) makes a claim for something like a "Science Fiction Studies 3.0", where 1.0 corresponds roughly to the theoretical genre definition hashed out by Darko Suvin and genre practitioners, while 2.0 corresponds to the movement of self-reflective, historical genre concepts forwarded by feminists, queer studies scholars, and Marxists, in my telling largely represented by John Rieder's work (pp. 168-169). With *Uneven Futures*, the editors — as the subtitle indicates — wish to argue for something like SF as a praxis, as a series of strategies; "a justice-centered thought experiment to survive an era of futurity in crisis" (p. xv). The editors thereby wish to position their project "both within SF studies as an academic discipline, staking a claim about how we can do our work differently but also... as seeking a broader community of critics and creators already engaged in thinking science fictionally, learning what SF moments, modes, and movements mean to their own knowledge networks" (p. xv). Yet I find this image of SF as a "justice-centered thought experiment" to be strikingly concordant with what authors, editors, and scholars of SF have told us the genre has been all along.

Regardless, Canavan in *Green Planets* argues that even ecological critique unrelated to SF works in this science-fictional manner; since climate change and other ecological disasters need to be stopped *before* they happen (or worsen), ecological politics "uses the same tools of cognition and extrapolation to project the conditions of a possible future — whether good or bad, ecotopian or apocalyptic — in hopes of transforming politics in the present" (p. 17). We can see this in non-fiction work such as David Wallace-Wells' *The Uninhabitable Earth* (2019), a thorough accounting of the various disastrous effects which climate change *will have in the near future*. Wallace-Wells' text is non-fiction, but it is also dystopian,

68 Suvin, *Metamorphoses of Science Fiction*, 1979, p. 84.

extrapolative; after all, climate science itself has to be extrapolative. The whole equation can thus be reversed: such ecological critiques and politics can be *claimed as a kind of science fiction*. Thus, Otto (p. 8) as well as Canavan (p. 4), along with much other SF scholarship, read Rachel Carson's seminal *Silent Spring* (1962) as a kind of SF, on account of the brief "fable for tomorrow" that opens the book: before Carson launches into the details of how DDT and other insecticides damage both human health and nature, she tells a fable of a world in which birds have accumulated too much DDT through the food chain, and have all died. Hence, one of the most famous texts of ecological non-fiction begins with a science-fictional dystopia.

I want to emphasize this basic temporal structure — imagined futures create a contrast with the real present — that allows SF to perform ecological "work" in the eyes of Otto and Canavan. For Darko Suvin, as we saw, SF generally is structured by the "novum", a kind of novelty or alterity which a science fiction text constructs in opposition to the "zero-world" inhabited by the reader and writer. The distance between zero-world and fictive world does not have to be temporal, as SF stories set in alternate realities testify to. Yet in Suvin's long history of the genre (going back to, as mentioned, Thomas More and even Plato), texts at the beginning of the 19th century increasingly moved away from the spatial distance of Thomas More's utopian island — waiting to be *discovered* — and towards a spatially defined distance, i.e., an imagined future.

The future cannot be traveled to with a ship, as More's island was. One might assume that one of the central problems of a temporal SF would then, instead, lie not so much in imagining futures as such, but rather in imagining the *trajectory that would lead to that future*. How does a future, *this* future, come to pass? As Fredric Jameson notes, however, this problem is largely elided or suppressed.[69] In Edward Bellamy's *Looking Backward: 2000-1887*, for instance, the protagonist simply falls into a deep, century long sleep, awakens in the year 2000, and sees a world that is *already* transformed, whose transformation is already complete. Jameson, whose writing on the genre often circles around the notion of SF as utopian, argues that this represents a kind of "defect … which lay precisely in the way that 'transition' was imagined (or not imagined) … This failure of imagination is the same … as that of

69 Fredric Jameson: "In Hyperspace"*, London Review of Books*, 2015. The quotes that follow are from the same text (no page numbers): https://www.lrb.co.uk/the-paper/v37/n17/fredric-jameson/in-hyperspace

the political revolutions designed to achieve the same transition in real life: the absence of a third term between the two systems, the absence of a mechanism." H.G. Wells' *The Time Machine* (1895), so Jameson, merely added the "formal innovation" of "shifting … the reader's attention to a technological substitute for the missing historical transition" in the form of the titular time machine. Time machines as SF gadgets, in this sense, merely once again make it possible to *travel to* utopia, as though they were merely at a spatial, rather than a temporal distance.

What happens between the zero-world of our present and the future which SF imagines? How does the future come about? For much apocalyptic SF, disaster itself functions as the effective historical change. Where Wells' time machine acts as a "technological substitute" and elides the issue of how and why the world had changed in the interim, post-apocalyptic fiction finds, for example in the technology of nuclear weaponry, not a "technological substitute for the missing historical transition" but rather a direct means of historical transition itself. Nobody could doubt, that is to say, that the world after a nuclear war would be radically different from ours. The vast gap between the novel's present (at the time of publication in 1959) and the future of the 27th century of Walter Miller's *A Canticle for Leibowitz* is made legible, in an instant, by the fact of nuclear war; a historical change so momentous that we are scarcely surprised not only by a regression of technology but also by various philological misunderstandings.

Yet if global disaster is an easily understandable form of "transition", the only future towards which it brings us is dystopia. It leaves unimagined the path which we wish to take if we want to *avoid* disaster, which must be through social, political, economic, technological channels. How do we get to utopia, or, failing that, at the very least a livable future? One of my central claims is that this is what is largely missing from ecological SF. It does not tell us of the daily, infinitesimal steps that make up the path between present and future. As we will see in the next chapter, SF texts, by and large, *commence* in a future that is already radically different; that is their *setting.* From that initial point onwards, they may well narrate *further* daily happenings, infinitesimal steps that produce further change; that is their *plot*.

For the SF critic Tom Moylan, a new generation of critical utopias, written in the 1970s, was more attuned to the problem of change. In his initial work, Moylan singles out Joanna Russ' *The Female Man* (1970), Ursula K. Le Guin' *The Dispossessed* (1974), Marge Piercy's *Woman on the Edge of Time* (1976), and

Samuel R. Delany's *Triton* (1976).[70] These novels are largely not concerned with ecology and environmental crisis, so they can be of only limited interest to us. What is relevant about them is that for Moylan these novels brought back the sense of historical „process" — which would suggest that they grapple with our problem of the "gap". But they do so, ultimately, only on the level of *personal narratives* (what Moylan calls, following Juri Lotman, the level of the „discrete") rather than on the level of *setting* (the „iconic") (pp. xiv-xv, xvii, 10). Consider his examples: one of the four worlds presented in Russ' *The Female Man* (1970) is set ten centuries in the future, while a second one consists of an alternate history entirely. Le Guin's *The Dispossessed* (1974), part of the Hainish cycle, is set centuries in the future or perhaps in a different world; the visions of a utopian future that Marge Piercy's *Woman on the Edge of Time* (1976) receives come from the 22nd century. Delany's *Triton* is set in a world in which the human species civilization has become interplanetary. In the context of climate change in the 2020s, these scenarios are still *too utopian*, their stories commencing at a point in time that is already too far away from the present. The sense of "process" between our present and a changed future that we wish to tease out must be on the level of Lotman's iconic, not the discrete: setting and plot, not personal narrative.

Absent a notion of how the *initial* gap between present and future comes about, however, it will be my argument that ecological SF, including any ecologically-minded "critical utopias" of Moylan, has largely hit an impasse. This impasse results from the fact that, as the last few decades of climate politics have shown rather conclusively, a lack of *awareness* is not the problem of climate change; the problem of lacking awareness is, in a sense, set in the wrong temporal register. Consider again nuclear war (one of our case studies of environmental SF in the next chapter), which either happens or does not. It has not yet happened. Instilling a greater sense of awareness through SF — in the public, in politicians, in generals — may help in continuing to ensure that it does not happen. But climate change, and our related ecological degradations, are already happening. They are built piece by piece, day by day, with the emissions of today determining not the climate tomorrow but that of decades hence, producing what literary theorist Rob Nixon has called a kind of

70 Each of these texts is the focus of one chapter of Moylan's *Demand the Impossible: Science Fiction and the Utopian Imagination*, 1986/2014. These are precisely the four novels, incidentally, which Fredric Jameson in *Progress versus Utopia* suggests as examples of SF having at the time "rediscovered its own utopian vocation" (p. 153).

"slow violence".[71] And unlike one of the great environmental problems of decades past — ozone depletion in the atmosphere caused by CFCs —, CO2 emissions are not caused by a few niche industries (which ultimately found substitutes for CFCs), but rather by almost our entire way of living: the production of electricity (gas, coal), non-electric energy (gas, oil), agriculture (livestock and degradation of natural carbon sinks), construction (cement, wood) all conspire to warm the earth. People are generally far more aware of this than they may have ever been of the ozone layer being damaged; but since we need to change almost everything about our lived reality, from the transport of goods and people to eating habits and building patterns, mere awareness of the problem is not sufficient. We do not lack imagined utopias of a world that has been successfully changed; we lack a sense of the path that would fill the *gap* between present and utopia. The chapters that follow are organized around different phases of ecological SF, coinciding with different approaches towards this gap. In chapter three, I will largely focus on fiction from the 1950s to the 1970s which entirely elides this question of the gap, remaining, rather, content to create what I call "already-accomplished" futures, built around a sense that ecological SF must produce awareness. The striking exception will be Ursula K. Le Guin's *The Lathe of Heaven* (1971), which is singularly aware of the "problem of the gap", and deserves critical reconsideration along these lines. The next chapter focuses on the cyberpunk fiction of William Gibson; this chapter can be read as a kind of extended intermission, in the sense that Gibson's fiction will turn out to be not merely agnostic towards ecology but indeed anti-ecological, as his texts throughout the late 1980s and 1990s increasingly refused to consider a gap in time at all, being set, rather, at the end of history itself. Finally, the last chapter will find in Kim Stanley Robinson an author who has begun to take seriously the question of what kind of political change needs to occur — not in the future, but on the way towards the future. In the conclusion, I will return the discussion to Rachel Carson's *Silent Spring* — specifically, to the way in which it is being read by two other authors.

71 Rob Nixon: *Slow Violence and the Environmentalism of the Poor*, 2013.

What Remains After Post-Critique? On Mark Bould's *Anthropocene Unconscious*

As promised, however, let me conclude this chapter by saying a little more about the general limits of SF, and of academic SF *studies*, by taking a closer look at Mark Bould's *The Anthropocene Unconscious* (2021), since it also pertains to the question posed above: should SF studies follow the hermeneutics of suspicion laid out by Jameson, or read along the surfaces as suggested by Felski?[72] In a sense, I wish to intentionally deflate academic expectations at this point: contrary to some of the more lofty pronouncements of academic SF studies, I largely believe our project to have been a failure, not only because the reading of texts itself can never amount to a politics, but also because our literature today can no longer be read either for its depths or for its surfaces.

Bould's work is a direct response to Amitav Ghosh's *The Great Derangement* (2016). Ghosh, in his oft-cited work, laments that contemporary literature has almost entirely ignored the climate crisis. Imagine, Ghosh says — in a rather science-fictional gesture! — museums and libraries of the future collecting the culture of our present, and finding almost no signs of the ecological breakdown in our culture, only distractions: what should they — what can they — do other than to conclude that ours was a time when most forms of art and literature were drawn into the modes of concealment that prevented people from recognizing the realities of their plight? Bould's verdict of Ghosh's argument is stark: "This is, of course, nonsense" (p. 3). For Bould, it is Ghosh's overly strict sense of how texts can be "about" something that is at fault. If *The Great Derangement* asks why there is almost no literature about climate change, *The Anthropocene Unconscious* argues that Ghosh's sense of "about-ness" is simply too limited. So much of contemporary culture, including the literary fiction on which Ghosh focuses, is, just under the surface, suffused by a sense of the Anthropocene.

Under the surface: hence, naturally, the Anthropocene unconscious. Thus if the most direct way Bould structures the book is by writing against Ghosh, the way he

72 This section is mostly taken from my review of the book for *Ancillary Review of Books*. Online: https://ancillaryreviewofbooks.org/2022/03/11/climate-change-lurking-behind-every-corner/

does so in terms of method is to align himself with Jameson's notion of the "political unconscious". Yet Bould, despite the Jamesonian gesture, seems undecided about whether one has to read with or against the text. Yes, Bould says, one may have to read the lines as well as between them, sound texts out for their silences as much as for their sounds: "a text is always disrupted — fractured even — by the material its producer might rather exclude, and thus less coherent than it pretends. It is trailed by … an eloquent jive of demurral, equivocation, circumvention, slippage, contradiction" (p. 16). But this, of course, does not amount to teasing out Jameson's political unconscious. Indeed, somewhat contradictorily, the most prominent metaphor of hidden textual qualities, that of a spatial depth, is taken to be almost entirely irrelevant: "critics are not bathyspheric explorers plumbing textual depths. At no point do we even need to break the surface"; when it comes to the anthropocene unconscious, the "clamour of the unspoken is everywhere" (ibid). From *Sharknado* and *Fast and Furious* to Paul Kingsnorth's *The Wake* or even Ghosh's own fiction, Bould finds the anthropocene everywhere. These works, he says,

> invoke apocalypse, particularly images of water and fire, inundation and conflagration. They recount shifts in land-use, including the catastrophic destruction of subsistence agriculture in favor of export crops and monocultures. They capture changes in weather patterns and seasonal cycles. They chart complex ecologies and interspecies relations. They unfold complex temporalities that disrupt simple models of linear cause-and-effect. They track the violence of imperialism, colonialism and the world market… (p. 67)

Yet we may ask once more: is this about finding the anthropocene unconscious in the depths, or along the surfaces? Do we have to read against the grain and *reconstruct* a political unconscious from these texts, or can we simply follow the footsteps of where literature leads us? Jameson notwithstanding, Bould, one could say, *trusts* the texts which he reads; trusts them, if nothing else, to speak for themselves. He manages to show that much of the literature Ghosh finds lacking is indeed anthropocenic simply by citing the same texts that Ghosh does. With this in mind, we may consider again Fredric Jameson's *Progress versus Utopia*. In it, Jameson claims that "no serious literary critic today would suggest that content — whether social or psychoanalytic — inscribes itself immediately and transparently on the works of 'high' literature" (p. 148). With the rise of post-critique, this is manifestly no longer true, lest we maliciously claim that Rita Felski et al are not

serious critics. Felski regularly notes that her interest in the project of post-critique stems from a sense of boredom with critique, so long hegemonic in English departments. The implied explanation for the emergence of a different style of reading thus originates with the feelings (of boredom) of those (academic) readers. But what if perhaps it is also literature itself that has changed? Perhaps one of the reasons for the rise of post-critical reading practices is precisely that there is an increasing amount of literature that in fact can no longer be read in the way that Jameson would like us to. The notion that literature reveals to us some vast political unconscious seems faintly quaint when those who write the literature are well aware of the fact that this is the sort of thing that may be expected of literature. Vast amounts of literary fiction is produced by writers who have received university degrees in English and/or MFAs in creative writing; Mark McGurl (in an account I admit to finding too celebratory of its findings) has called, in light of this fundamental intertwining of the production of literary fiction and the university, the period of American post-1945 literature "The Program Era" (2009).[73] Most famously in science fiction, Kim Stanley Robinson, whose work we will read in the last chapter, has a PhD in English, and his initial adviser was none other than Fredric Jameson itself, with whom he has remained friends ever since. This does not make it impossible to read Robinson academically; to plunge the depths of Robinson's novels for something like a political unconscious, however, would perhaps become an ouroborosian task.

Interpreted overly cynically in this light, the post-critical project is to simply confess the superfluity of academic reading: this literature is perfectly capable of reading itself. Anecdotally but, I think, tellingly, consider the way Mark Bould begins his reading of *The Overstory* (2018) by Richard Powers (whose books often seem tailor-made for the academic production of "readings"):

> "There were six trillion trees before humans evolved. Now there are just half that number. And half of them will disappear in the next century.[endnote 40]
>
> Richard Powers's *The Overstory* (2018) is constantly amazed by trees. It is also a serious literary novel skeptical of the serious literary novel […]" (p. 122)

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73 I have written a little more about this, though not always with the utmost clarity, in chapter three of my MA thesis: *Thoughts on the Labor of Literary Studies: The Formation of Disciplines and the Production of Readings*, pp. 21-36. Available online:
<https://www.academia.edu/36401884/Thoughts_on_the_Labor_of_Literary_Studies_The_Formation_of_Disciplines_and_the_Production_of_Readings>

The initial short paragraph on the number of trees at first reads like the preparatory context in which to read the novel; this is the external world, our ecological reality, and the state of trees in them, which the novel is about. But flip forward to the endnotes and you will find that the citation for [40] is, in fact, itself Richard Powers' *The Overstory* — far from Bould connecting the novel with an ecological context, the novel supplies its own context, its own knowledge of the state of trees out there. If literature has become this savvy about what academics "do" with literature — that we may read them with an eye for what they say "about" our environment —, who needs academic readings at all? What depths remain to be probed?

This leads us to a serious issue for the environmental humanities, including this dissertation: what is gained, ultimately, by proving Ghosh right or wrong? Why does it matter whether our contemporary literary and filmic culture is or is not sufficiently "about" the anthropocene? Imre Szeman (another important figure at the edges of academic SF studies, whose graduate education incidentally commenced under Fredric Jameson) argues on the back cover that Bould presents us with "an essential read for anyone wanting to better understand what we know and don't know about what comes next" — but if one really wishes to know what comes next, how helpful is it to read about our anthropocene unconscious? How helpful is it, in other words, to read about climate change *as it is mediated by fiction?* What ultimately "matters" in hard, material terms, are two things. First, the *physical* reality and potentiality of climate change — the knowledge that physics, soil chemistry, ecology, earth systems science and so on produce about climate change (and biodiversity collapse, et cetera). And second, the *political* reality and potentiality of climate change: what needs to be done where, by whom, in what quantities, why has it not been done yet, and where can political forces be mobilized to make sure it will be done?

Culture matters in that second sphere, of course, but perhaps not culture as it is analyzed by literary-cultural studies, in the sense of more or less artful fictions — literature, film, TV sitcoms — so much as culture in a wider anthropological sense: the way our societies designate freedom as the freedom of gas-guzzling cars, of over-sized garish suburban homes, of intercontinental flights to be had at thirty bucks; the ways in which we excise ecological costs from our accounting and the ways in which we produce our very food, and package it, and everything else, in plastics that will remain on this planet for an eternity. Consider again that science

fictional gesture of Ghosh which Bould cites in his introduction: a museum from the future, collecting cultural artifacts of our present, finding only concealment. But would they exhibit literature and cinematic films at all, rather than, for example: SUVs, plastic bags, photographs of landfills, blueprints for oversized McMansions, the daily departure tables of the worlds busiest airports, and, surely the centerpiece of this museum, a replica of an open-pit coal mine, a vertiginously inhumane landscape even in miniature?

This anthropological sense of culture, even more than the political unconscious that Fredric Jameson wished to detect in literature, is surely something that to some degree needs to be constructed in the act of writing about it, a more or less "ideal average" (in the words of Marx) system composed in its totality of innumerable everyday reifications and interactions. And perhaps something like the *Fast and Furious* series has its small place in this construction of a petro-culture, doing its part in entrenching (or questioning, or simply registering) a belief system in which masculine self-worth, indeed a sense of freedom itself — a quarter mile at a time — can be proved and defended through ownership of fuel-inefficient cars. But on the whole what has to be understood, then, is a system of culture, politics, and economics that is usually traced more ably by historians, or perhaps by social scientists, than by scholars of literature engaging in close readings, which is what Bould does, what academic SF studies as a whole does. In other words, to analyze the "culture" of climate change not in the wider anthropological sense but rather simply conceived as so many literary or fictional texts is to analyze what we could call a kind of second-order culture: culture that is already in the business of observing culture.[74] This fiction is not the result of some unconscious fiat of imagination; it is the deliberate result of a writing process.

This leaves us in somewhat of a bind *as academics*. The "uses" of literature — to inform, to shock, to produce recognition — often seem so abundantly clear that an academic "reading" is scarcely necessary, no matter whether it plumbs depths or retraces surfaces; it would often amount to reproducing only that which was, highly aware of how academics read texts, put knowingly into the text in the first place. The problem is not whether we should trust or distrust literature; I do not believe

74 As Frank Kelleter has correctly pointed out to me, this is probably not quite how Luhman would phrase it, who only speaks of second-order observations, not a "second-order culture". Still the influence is obvious, hence this footnote: see e.g. Niklas Luhmann: *Die Gesellschaft der Gesellschaft*, 1998.

that Powers' *The Overstory* is "lying" when it says that there were six trillion trees before humans evolved. Rather, it seems to me that it is necessary to attune our reading strategies precisely to the fact that literature today is already a kind of knowledge form; that novels about climate change are expected to, and *want* to, present the reader with "feelings" as well as "facts" about climate change.

In a short book on "The Wire and its readers" (as the subtitle goes), Frank Kelleter analyses precisely these kinds of relationships for HBO's celebrated TV series *The Wire*. "I suggest", he writes, "that we approach *The Wire*'s claim of maverick authenticity — as well as the show's performance of maverick authenticity — not as a matter of fact nor as a false pretense that hides other motives, but as an action in tie with other actions."[75] Whether *The Wire* is authentic in its depiction of the city of Baltimore is ultimately less important — and perhaps undecidable — than the fact that it performed this authenticity (within the text but also outside of it, e.g. by first casting local actors, and then making a note of this casting decision in interviews and advertisements), and that this performance of authenticity was used to claim a special status for *The Wire* as fiction (whether it was "a televisual novel", a "post-modern Greek drama", or simply "not TV") not only by the creators of the show, but also by reviewers and, ultimately, academics. The self-observing feedback loop was completed when the sociologists William J. Wilson and Anmol Chaddha taught *The Wire* in a sociology course on urban inequality, using *The Wire* as a kind of (social-)scientific evidence; a perfect feedback loop of television series and academic knowledge, since "Simon himself has cited Wilson's *When Work Disappears* as an inspiration for the show"; indeed, Kelleter continues, "quite a few of the descriptions of American society produced by *The Wire* correspond in obvious ways with — and are even actively informed by — self-studies of American society in urban sociology, especially the Chicago School in the wake of Robert Park.[76]" A reading strategy for *The Wire* must therefore involve not only closely reading the text, but also closely reading the way in which the show was positioned, referenced, used by others, *including by academics*. Similarly, SF or other eco-fiction today, whether by Richard Powers or by Kim Stanley Robinson, cannot simply be analyzed for its ecological themes; it must be analyzed, at minimum, as a second-order culture

75 Frank Kelleter: *Serial Agencies. The Wire and Its Readers*, 2014, p. 13.

76 Kelleter, Serial Agencies, p. 37. See Anmol Chaddha and William Julius Wilson, "Way Down in the Hole: Systemic Urban Inequality and The Wire", *Critical Inquiry* Vol 38, No. 1, 2011, pp. 164-188.

strategically writing about certain ecological themes, and strategically writing itself into certain literary traditions.

To produce academic readings of this kind of highly aware second-order culture, however, removes us further and further from the "facts on the ground" of climate change. In that sense, Bould's *Anthropocene Unconscious* is not so much an essential *read*, as Szeman claims, as it is an essential *write*: people like Bould and I are required by the demands of the university to produce something, which inevitably means to produce something written; our publications are among the few things that we can show to hiring committees as a sign of productivity, and a dissertation such as this one is, in the humanities, the only way receiving a doctoral degree. But our principal object of study — literature, "texts" — was bequeathed to us by the formative period of disciplinary subdivision in the modern university in the 19th century. The sobering fact for our discipline is that literature is, in what we could call the sphere of public discourse, of political-cultural exchange, far less important than it was back then, or even in the middle of the 20th century. The average American of every age group below the age of 55 reads less than a quarter of an hour a day, and many young people, whether we like it or not, simply do not read books at all.[77] In light of this, literature today is surely even less something which we can read for a political unconscious: it must be understood, rather, first and foremost as the conscious production by and for a tiny minority of our society. And the ability of literature to change the world at all was contentious even in times when it was a far more dominant medium of fiction rather than a distant also-ran, behind the likes of films, serials, and video games. So: what does it *matter* whether literature is or is not sufficiently about climate change? And since Bould does, to his credit, read mainstream film alongside literature, one may add: what does it matter that a few thousand specialists in the practice of reading critically may find the semblance of a petro-cultural contradiction in the *Fast and Furious* series? To appropriate the caustic conclusion of climate activist Tadzio Müller, not even climate *politics* has, after all, put a dent into climate change.[78]

Bould would perhaps say that politics has failed to do so precisely because it lacks the power of fiction. Early on in the introduction, he argues that the stories we

77 Data to be taken with a grain of salt but taken from https://musgrave.substack.com/p/what-the-kids-are-reading

78 Müller's account has since been deleted by Twitter. Reproduction of the graphic online: https://sustentio.com/2022/climateinactionstripes-virale-klimakommunikation

tell ourselves matter. And clearly they do. Political, cultural, economic beliefs are underpinned by narratives, by stories we tell ourselves. But this notion of the power of narrative can itself become a kind of narrative, a story that we in the humanities like to tell ourselves. In the conclusion, Bould argues that the "elusiveness [of texts] should be celebrated. It is perhaps the greatest asset in making meaning meaningful, in making criticism activism. It can turn an often-recondite practice, usually confined to academia and middlebrow media, into transformative praxis" (p. 132). As sympathetic as I am to his project up to this point, I cannot help but disagree entirely: this is a ludicrously overblown belief in the power of literature, though one that Bould shares with much of the (not just environmental) humanities for a simple strategic reason: we have to say these things to get funding. (There is also a more personal reason: since a "career" in the humanities barely offers a living wage or job security until one is well into ones' thirties or forties, it can simply be too sad to dwell on the fact that the things we do are *also* not very important.)

And indeed, as someone who, like Bould, works in SF studies, I cannot help but take recourse to literature myself. Lauren Olamina, the protagonist of Octavia Butler's early climate-tinged SF novel *Parable for the Sower* (1993), would probably agree with Bould, finding that even just naming a thing "helps one to begin to understand it" (p. 73). Names, definitions, stories, have power. By contrast, one of the protagonists of Kim Stanley Robinson's *The Ministry for the Future* (2020) finds the ability to give a name something to do very little. After experiencing first-hand an enormously deadly heatwave, Frank May develops Post-Traumatic Stress Disorder. Of what benefit is that term for him? As "one of his therapists had once explained to him, one of the identifying characteristics of the disorder was that even when you knew it was happening to you, that didn't stop it from happening. In that sense, the therapist admitted, the naming of it was useless. Diagnosis was necessary but not sufficient; and what might be sufficient wasn't at all clear" (p. 45). For Frank May the name of a phenomenon itself does nothing. We are invited here, I think, to read a parallel between PTSD and climate change, a parallel perhaps shared with many other issues in the world. What work is being done simply by correctly naming things, and what work still remains? As with PTSD, even when you know that climate change is happening to you, that knowledge doesn't stop it from happening. Reading political fiction is not itself political, certainly no replacement for politics. As we will see, one of the reasons for why Robinson's novel became a

focal point of the climate discourse after its publication was precisely that it seemed to be readable as a strategic primer on what can be done politically about climate change; it seemed *useful* in a new way.

To imagine, as many scholars of fiction do, that climate politics just needs a little more imagination and story-telling to really get going feels quaint. Climate change is not a problem that is under-theorized. It is a reasonably well-defined problem whose reasonably well-defined solutions are inexorably opposed by many powerful people in the world. Consider another issue that specifically haunts American rather than global politics: does America lack universal health care because American reformers have not yet found the right theoretical language to describe the problem? Or does the nation lack universal health care so because, for lack of a less conspiratorial tone, powerful special interests do not wish to see such a system become reality in the United States, and their political power has simply not been overcome yet?

What is needed is not academic theory but naked political power. Is our culture today "about" climate change? Bould's account is, I think, more convincing than that of Ghosh. We in the humanities should be honest enough, however, to admit that the stakes of answering this question are low either way. Early on, Bould writes that where Ghosh sees a "near-universal failure" by fiction to engage with climate change, "*The Anthropocene Unconscious* often finds negotiations with the limitations of the form" (p. 3). What I really found to be missing from the book is, perhaps, a negotiation in turn with the limitations of *its own form*: that of academic writing principally concerned with the representation of things in fiction rather than those things itself. Keeping this in mind, let me now turn to my own set of "readings".

3. Nuclear War, Overpopulation, Climate Change: "Orthodox" Environmental SF

3.1 A Short History of Ecology and Environmentalist Non-Fiction...

I will begin my history of modern ecological thought and the environmental sciences in the 20th century, concurrently with the so-called golden ages of SF, but let me be clear that one could in theory date and place the beginning of ecological movements and environmental sciences in numerous other ways, of which I will briefly suggest just two. One of these would be in the Americas before the colonial encounter. Many of the indigenous societies that the European settler-colonists would encounter in the Americas after 1492 had been experts in managing ecosystems long before the Americas were colonized by European powers. Indigenous societies possessed scientific knowledge of ecosystems that the settler-colonists indeed pointedly, perhaps purposefully failed to recognize as such — a situation that only began to drastically change when revisionist accounts of environmental history like William Cronon's *Changes in the Land: Indians, Colonists, and the Ecology of New England* (1983) appeared; today, the principal settler-colonial institution of ecological knowledge (which is just to say, American academia) tends to at least give a certain degree of attention to what it itself terms "indigenous knowledges".[79] However, this history of ecology can be of only limited relevance for this project precisely insofar as indigenous knowledges had not yet been *retrojected* into their proper place in the history of ecological knowledge in the middle of the 20th century: indigenous ecological knowledge can have only limited relevance for ecological SF from the 1950s to the 1970s.

One could also place the beginning of scientific environmental thought with the rise of scientific forestry from the 17th to the 19th centuries. This too, incidentally,

79 Besides Cronon, see also e.g. part three of Charles C. Mann's *1491: New Revelations of the Americas Before Columbus* (2005). For the continued importance of indigenous knowledge of ecology and land management today, see e.g. https://www.nytimes.com/2022/11/16/climate/canada-climate-change-indigenous-people.html

would be a history bound up with colonial relations: for it was often in the colonies that European powers first unleashed environmental destruction on such a magnitude and with such rapidity that scientists could perceive clear environmental effects resulting from destructive behavior, which was critical to advances in European forest management; as Kenneth Pomeranz argues regarding the 19th century, "it was on tropical islands that Europeans were able to observe the relationships among changing land use, climate change (especially desiccation), and changes in soil quality unfolding at a speed that resolved debates that they could not resolve theoretically". I mention this dating because the scientific observations mentioned by Pomeranz adhered precisely to some of the standards of "science" that we have incidentally encountered in our discussion of how SF relates to notions of science: such ecological knowledge could be more carefully based on "experiments", in the sense of setting up clear constants and variables to be adjusted. This was possible, of course, *because it was produced in the colonies*. As Pomeranz notes, "the much weaker property rights in the colonies and the relative independence of colonial regimes from local property owners allowed British, French, and Dutch colonial officials to actually experiment with environmental regulation schemes, some of them quite radical, in a way they could not have done back home".[80] And there are still further possible starting points for what we could call modern ecology. As an academic discipline, we could point out any number of milestones in the early decades of the 20th century, from the founding of the Yale Forest School (1900; today the Yale School of the Environment) to the publication of the first academic textbooks with a focus on ecology (at some point in the first two decades of the 20th century), to 1933, when the conservationist Aldo Leopold (graduate of the Yale Forest School) moved to the University of Wisconsin to direct "the first U.S. academic program in wildlife management".[81]

But let us instead begin our story in the 1940s, following, as mentioned in the introduction, Paul Warde, Libby Robin, and Sverker Sörlin's *The Environment: A*

80 This and previous quote in Kenneth Pomeranz, *The Great Divergence*, 2000, pp. 58-59. For a more general treatment of how the emergence of Science Fiction before the time period covered here was influenced by colonialism, see John Rieder, *Colonialism and the Emergence of Science Fiction*, 2008.

81 Charles C. Mann, *The Wizard and the Prophet: Science and the Future of our Planet*, 2018. Information on Leopold and the Yale Forest School is well-sourced; Mann dates the first textbook to 1905, but gives no publication name. Carol Leth Stone's *From Forests to Fields to Food Webs: The Environment in History and Biology Textbooks, 1905-1975* (Dissertation, Stanford University, 1984) lists George W. Hunter's *Essentials of Biology* and *A Civic Biology* as the first biology textbooks with an eye towards ecology, which were published in 1911 and 1914 respectively.

History of the Idea (2018). As the name suggests, their work is an intellectual history. Why the 1940s? The first reason is the immense effect that the second World War had not only on culture and society generally, but also on the development of just about any scientific field, including ecology. The second is the publication of two highly influential books — *Road to Survival* by William Vogt, and Fairfield Osborn's *Our Plundered Planet* — and the new kind of narratives that went with them.

To begin with "applied" scientific advances, World War II had ushered in remarkable breakthroughs in any number of fields, especially in the United States.[82] Some of these breakthroughs created new problems that would with time be understood as *environmental* problems. In the United States (and to a far lesser extent, Germany), resource bottlenecks stymieing the war effort were overcome through enormous government spending (if often still for ultimately private profit), the results of which were any number of synthetic materials, most importantly plastic — one of the critical waste products of our global society today. Similarly, the modern organization of logistics largely came about due to the war effort; "fairly soon into the Second World War, commanders grew accustomed to speaking of tonnage, inventory levels, and supply lines with the knowing reverence previously reserved for accounts of battlefield heroics". This, coupled with inventions such as "[radio], cryptography, dehydrated food, penicillin, and DDT … laid the foundations of today's globalization" — which is to say, the foundations of the far-flung supply chains that enable the ecologically destructive consumption patterns of the world today.[83]

In terms of more theoretical science, it was in the post-war decades that something called "environmental sciences" came into being. Talk of "the environment" increasingly referred to a kind of object in its own right rather than the context of a different object. That is how Warde et al put it, arguing that this shift was completed with the publication of Rachel Carson's *Silent Spring* in 1962: "environment had [for many decades] been a word used to describe the context or background to the real subject of the story, whatever that might be… But that

82 This paragraph is largely based on the second half of Daniel Immerwahr's *How to Hide an Empire: A Short History of the Greater United States*, 2019.

83 Immerwahr: *How to Hide an Empire*, p. 282. The Korean war and the Vietnam war produced further logistical revolutions, especially containerization. On the latter, see Marc Levinson: *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*, 2006.

environment is not the real subject of interest — it is not really a thing at all. Carson, in contrast, wrote about 'the environment' a thing with its own essence that itself became vulnerable, a victim of circumstances."[84]

With this new sense of the environment came, with time, a new scientific paradigm: the environmental sciences, a term that originated in a 1959 memo by British zoologist Solly Zuckerman. That "sciences" was used in the plural gave a hint as to the integrative, interdisciplinary nature of this new scientific endeavor. The founding of the British Natural Environment Research Council in 1964 showed much the same: "In fact, none of the participating scientific disciplines, variously preoccupied with the oceans, land, and atmosphere, had sought to put environment into the name of this funding body. But each had rejected alternatives suggested by others, and so environment was in fact a compromise: the universal second best."[85]

This is, for Warde et al, one of the basic features of the term environment as used by scientists: under its rubric, knowledge from various disciplines is aggregated and integrated. Indeed, though it is difficult to imagine now, the climate as an object of study was a latecomer to this aggregative sense of the environment; meteorology and climate science, housed in geophysical faculties, for the most part did not became participants in questions of the environment until the 1970s and 1980s. Partially this was so because it was in those decades that the consequences of climate *change* became increasingly well understood — and they were clearly environmental. These consequences — droughts, rising and increasingly acidic oceans, shifting ecosystems for species — were, what is more, on a larger scale than most environmental issues previously considered: pollution was often a decidedly local affair. Climate change by contrast moved the sense of the environment "to the scale of planetary dynamics… The global nature of the atmosphere and the rapid circulation of gases in it demanded models that were also global in scope".[86]

These developments ultimately led to the current scientific paradigm of an "Earth System Science", which considers the whole planet as a single system — still defined, of course, not only by global variables (especially "planetary boundaries" such as the global average temperature and the level of ocean acidification) but also by numerous more local sub-systems.[87] This sense of an aggregative science,

84 Warde et al: *The Environment*, pp. 7-8.
85 Warde et al: *The Environment*, pp. 19-20
86 Warde et al: *The Environment*, p. 114.
87 Warde et al: *The Environment*, p. 152. The concept of "planetary boundaries" originates with

produced by large teams of scientists using huge amounts of data, is to some degree also applicable to the development of many other sciences in the 20th century. As mentioned in the section on SF definitions above, the figure of the lone genius scientist was largely already a thing of the past at the time of Hugo Gernsback, replaced by large research labs and R&D divisions. Still, it perhaps bears special mention just how fundamentally one must conceive of "the environmental sciences" as something existing only in the plural. Accordingly, the most important literature of the environmental sciences are perhaps the "multiauthored mega-reports of international bodies",[88] beginning with the Club of Rome's seminal 1972 *The Limits to Growth* report (four principal authors, but seventeen scientists from six countries and with eight different specializations listed as contributors) and culminating in the so-called Assessment Reports of the *Intergovernmental Panel on Climate Change*, for which core writing teams (the AR6, whose publication is ongoing in 2023, lists 30 authors and 9 editors) synthesize the contributions of more than eight hundred scientists.

What is the primary object of these reports? This brings us to the most important feature of the environment as a new "object of imagination and measurement" that Warde et al identify: when we speak of the environment, we are almost invariably concerned with *the future* of the environment. The above-mentioned "mega-reports" fundamentally make claims about how the Earth, the environment, will change *under certain conditions*; the primary visual language of the environmental discourse is that of mathematical curves outlining trends *across time*, including the future — from global average temperatures and CO2 emissions to insect populations and sea level rise. These trend lines too exist fundamentally in the plural: since the future is not set in stone, the IPCC reports and similar documents model not a single but various different *potential* futures. The most important distinction, of course, is that between different "emissions paths": depending on how quickly and completely we reduce greenhouse gas emissions, global warming may reach anywhere between 1.5° C and more than 3° C by the end of the century.

The fundamental orientation towards the future connects the environment in an obvious way with science fiction: in concerns about the environment, did the genre not finally find a theme that unified the Gernsbackian dual desire for prophecy plus

research by the renowned Stockholm Resilience Center.

88 Warde et al: *The Environment*, p. 16.

proximity to the sciences? This also brings us to the second important point made by Warde et al: along with the new environmental sciences came new ways in which these sciences were communicated *narratively* in popular non-fiction books, beginning with William Vogt's *Road to Survival* and Fairfield Osborn's *Our Plundered Planet* (both published in 1948). These two books, as the science journalist Charles C. Mann argues, were "jointly inventing a new literary genre: the concerned report on the global condition. They were the first to portray our ecological worries as a single Earth-sized problem for which the human species is to blame."[89] Let us focus here solely on Vogt, who as an author and public figure was more, and more enduringly, relevant than Osborn.

The path that led Vogt to the publication of *Road to Survival* began with birds, and the unique circumstances of ornithology as a science in the late 1920s — around the time of Gernsback's first SF magazine, that is. "At a time when physics and chemistry were transforming themselves from amateur endeavors into professions that were inaccessible to the lay public", Mann notes, "bird scientists were crowd-sourcers. Ornithologists could not keep track of millions of birds by themselves, so they sought to harness the energy of amateur birders".[90] Vogt was among these amateur birders; he made numerous connections and friendships with scientists through it. All the further stations of his life from that point onwards culminated in *Road to Survival*. For the Audubon Society, dedicated to the conservation of birds, he edited the journal *Bird-Lore*, most notably writing a pamphlet against depression-era mosquito control programs that ended up destroying bird habitats; for the Peruvian government, he studied the precipitous decline of birds on guano-rich islands off the coast of Peru in the 1930s; with the outbreak of WWII, he began working for the US State Department across South America to report on Nazis on the continent; towards the end of the war, finally, thanks to his previous job, "a grateful State Department ensured Vogt's appointment, in August 1943, as head of the newly created Conservation Section of the Pan American Union".[91] In that position, he

> was given the vague task of examining the relationship of climate, resources, and

89 Charles C. Mann, *The Wizard and the Prophet*, 2018: pp. 86-87.

90 Charles C. Mann, *The Wizard and the Prophet,* p. 50.

91 Charles C. Mann, *The Wizard and the Prophet,* Editor of Bird-Lore: pp. 54-57; work on guano islands: pp. 39-43 and 57-70; work for state department and Pan American Union quote: pp. 70-71.

> population to economic development. After studying seabirds on Peruvian islands, Vogt was being asked to move his purview to human beings across an entire hemisphere. But he didn't see it as a huge shift. Ecology, he believed, provided a basic intellectual framework for understanding both birds on small islands and humans on big continents. It told him that both species were part of ecosystems ruled by biological law and shaped by their environment.

Touring 22 countries across Central and South America, he came across ecological devastation everywhere: "Eroded foothills in Mexico. Poisoned rivers in Argentina. Devastated fisheries in Venezuela. Drained aquifers in El Salvador and Honduras. Perhaps worst was the deforestation".[92] It was on the basis of these experiences that he developed the central thesis of his 1948 book: rising consumption and rising population all but inevitably create environmental degradation. Vogt received the book contract from William Sloane, who had just founded his own publishing house — and who was, incidentally, a science fiction and fantasy author. The book, once published, proved enormously successful: warning of nothing less than ecological apocalypse if levels of consumption and population were not lowered, it sold hundreds of thousands of copies, and was distributed in full by the *Book of the Month* club (800,000 subscribers in the US) and in abbreviated form by *Reader's Digest* (15 million subscribers globally).[93] By dint of this popularity, it shaped environmental thought precisely in the sense in which Rachel Carson would, decades later, cement it: Vogt's book was one of the first, and by far the most popular, account of "the environment" as a sort of global object in its own right rather than as a mere context for other objects.

What else can we say about the book as a book? Its temporality was the same as that of IPCC reports to this day: curves of ecosystem variables over time, including into the future.[94] It has already been noted that the environmental sciences would in time be conceived fundamentally in the plural, aggregating large amounts of environmental data into an overall image. And indeed, Vogt's single-authored book synthesized information rather than adding to it. *Road to Survival* was not so much a contribution to the environmental sciences as it was to a politics of environmental*ism*; not a work of science but rather a political intervention, "written to move readers". What did that intervention read like, textually? Warde et al argue that "Vogt launched what might be called the 'modern environmental problem

92 Charles C. Mann, *The Wizard and the Prophet,* p. 71.
93 Charles C. Mann, *The Wizard and the Prophet*, p. 87.
94 Warde et al, *The Environment*, p. 10.

catalog'. It included, but was not limited to, population growth (by far the number-one issue at the time), water scarcity, soil erosion, overconsumption, overgrazing, overfishing, pests, industrial wastes, the retarding productivity of soils, and species loss". As this list indicates, environmentalism in this sense was a politics of crisis, the environment a "crisis concept".[95]

This genre of publication — popular and accessible non-fiction accounts of ecology and prophecies of a degraded future, bringing together the world of the environmental sciences with that of environmental activism[96] — reached its high tide in the 1960s, with Rachel Carson's *Silent Spring* (1962) and Paul and Anne Ehrlich's *The Population Bomb* (1968). Since the Ehrlichs will be the focal point of our investigation into ecological SF around 1970 in a following section, I will focus only on Carson here. More than anything, *Silent Spring* must be considered the high point of the genre in terms of sheer effect: it almost single-handedly put the issue of DDT on the political map of the United States, and deeply influenced the environmental movement more widely; the creation of the Environmental Protection Agency under Nixon has in some part been attributed to the book. The book was highly popular, having been chosen for distribution to *Book of the Month* subscribers and serialized in a magazine (*The New Yorker*) much like Vogt's book some 14 years previously. Why was it so successful? Carson was a gifted writer, for one thing. For another, its scientific claims garnered far more support among academic scientists than either Vogt before her or the Ehrlichs after her — this in turn was so, perhaps, because DDT was ultimately a more domain-limited issue than either William Vogt's and Paul and Anne Ehrlich's "problem catalog" centered on overpopulation. While banning DDT was not trivial, it was, like the regulation of chlorofluorocarbons (CFCs) to protect the ozone layer some decades later, limited to a few small industry sectors rather than demanding a total change in lifestyle as such.

The "genre" of concerned environmental non-fiction — defined above all by a focus on an impending environmental crisis in the future if nothing is done in the present — in the style of Vogt and Carson belong to continues to exist to this day, of

95 Written to move readers: Warde et al: *The Environment*, p. 10. The notion of a crisis concept and preceding quotation: p. 23.

96 For histories of environmentalism as a political project, see e.g. Thomas Robertson: *The Malthusian Moment: Global Population Growth and the Birth of American Environmentalism*, 2012, and Keith Mako Woodhouse: *The Ecocentrists: a History of Radical Environmentalism*, 2018.

course. We may think here of something something like David Wallace-Wells *The Uninhabitable Earth: Life After Warming* from 2019, which performs much of the same work; it engages in the same kind of science-fictional gesture of presenting dystopian futures as Carson and Vogt did —simply by repeating, in accessible prose, the almost innumerable, cascading disasters which unchecked climate change will in all likelihood bring according to the IPCC. Indeed, among a multitude of quotes from non-fiction authors, newspapers, and public intellectuals, two of the blurbs that a reader will encounter upon opening the paperback edition of *The Uninhabitable Earth* are written by Margaret Atwood and William Gibson, as though their status as SF authors grants them an especially noteworthy perspective onto a non-fiction book concerned with possible futures. Directly below Atwood, the blurb courtesy of *The Washington Post* puts the book in direct relation to that of Carson, opining that Wallace-Wells' book has the "potential to be this generation's *Silent Spring*". This seems unlikely, if only because the context is a different one entirely. Wallace-Wells' book was published into a public sphere of vastly larger size, one in which dozens upon dozens non-fiction books on the climate and environment are published every year — and of course, one in which climate change has been a prominent topic for decades. And climate change is not like DDT or CFC pollution: greenhouse gas emissions are largely not produced by a small industrial niche or two, but rather by the most fundamental economic activity of the modern world: the generation of energy through fossil fuels.

While the preceding cannot pretend to be anything more than a sketch of the environmental sciences and the development of environmentalism and environmentalist non-fiction, it will hopefully suffice as a valuable context (environment?) in which to read the emergence of ecological and environmental science fiction. Let us turn to this topic now.

3.2...And of Environmental Science Fiction: The Case of Nuclear War in SF

Just as the environmental sciences as a project came together from various directions, so too is the emergence of an environmental SF a history with multiple beginnings and themes. Let me suggest that there are in principle two modes of

ecological SF. The first is a fiction that is simply influenced by ecology, by questions of how plants, animals, and entire ecosystems interact with human (or non-human) societies, without, however, warning of ecological disaster. The paradigmatic example — being one of the most highly regarded and best-selling SF novels generally — of this mode would be Frank Herbert's *Dune* (serialized 1963-1965 in *Analog*; published as fix-up novel in 1965). Depicting the desert planet Arrakis and at least some of its imaginary ecological interactions (between the lack of water, the native giant worm species, and the "spice" drug for whose harvest the planet is prized by an interplanetary human society beset by feudal rivalries), *Dune* is clearly informed by ecology. Its world, however, is far too far removed from our own for the novel to provide any sort of ecological commentary. The world of *Dune*, in a sense, stands for nothing but itself, producing, at its best, a sense of wonder or enchantment through sheer difference. As such, it can be of fairly little interest to us here.[97]

The second mode of ecological SF, by contrast, is not only ecological but rather about the ecological degradation, even ultimate destruction, of our world; it is dystopian or at least hints in that direction, or, failing that, depicts a utopian *avoidance* of ecological disaster. The predominance of this mode makes sense if we remember that, as it was put above, the environment itself became a kind of "crisis concept" in the post-war years. A generic focus on looming dystopia (or the promise of an ecological utopia, an "ecotopia") among environmental SF texts seems in line with what was suggested by the environmental sciences, or at least by popular non-fiction narratives of the environment. There are innumerable stories of this second mode; we can make out a few specific "themes" of disaster whose popularity varied with time. Nuclear wars and accidents provided the first sustained figuration of environmental disaster, immediately following the war;[98] the theme retained some

97 A more contemporary example would be the works of Jeff VanderMeer, which is ecological, even anthropocenic, but largely not about the environment at the point of absolute crisis.

98 These fears must have first spiked in 1945, either in Los Alamos, New Mexico with the Trinity nuclear test (an event whose symbolic importance was most recently reaffirmed in Episode 8 of David Lynch's *Twin Peaks: The Return*, 2017, and in Christopher Nolan's *Oppenheimer*, 2023) or in Hiroshima and Nagasaki, which have remained the only targets of wartime nuclear weapons, and whose most enduring SF representation perhaps comes in the form of the long-running *Godzilla* film series begun in 1954. The original Godzilla film also referenced the then-recent American Castle Bravo bomb test at Bikini Atoll, carried out on March 1, 1954. The radiation produced by the explosion reached the Japanese fishing vessel Lucky Dragon No. 5; all of the crew members got sick, and one died of radiation poisoning. The event was highly significant for the emergence of the Japanese anti-nuclear movement. In the opening scene of *Godzilla*, the monster destroys a fishing boat, a symbol whose interpretation at the time was abundantly clear.

popularity throughout much of the cold war, for obvious reasons, and the environmental aspects received some brief renewed attention after the 1986 reactor meltdown in Chernobyl.[99] But as a source of "pollution", nuclear radiation was treated fairly generically. Pollution, especially air and water pollution, was a prominent theme from the 1950s until the 1970s, in reaction to issues such as smog (first observed in Los Angeles in the 1940s) and acid rain (becoming a notable problem by the 1960s).[100] In Frederik Pohl and Cyril Kornbluth's *Space Merchants* (serial 1952 / novelization 1953), people may choose to purchase "antisoot plugs" when the air of Manhattan gets particularly bad; the first narrative chapter of John Brunner's *The Sheep Look Up* (1972) — a text whose narrator, under the stylistic influence of John Dos Passos' *U.S.A.* trilogy, is constantly interrupted by fictional newspaper clippings, overheard dialogues, and similar asides — is preceded by a page listing "signs of the times":

> THIS BEACH NOT SAFE FOR SWIMMING
> NOT Drinking Water
> UNFIT FOR HUMAN CONSUMPTION
> Now Wash Your Hands
> (Penalty for noncompliance $50)
> FILTERMASK DISPENSER
> Use product only once — maximum 1 hour
> OXYGEN
> 25¢[101]

Overpopulation figured in a lot of SF at the same time as pollution, and indeed was sometimes referred to as "people pollution". Pohl' and Kornbluth's *The Space Merchants* is yet again an early example, its backdrop that of an overpopulated, environmentally degraded world, though the focus of the novel lay particularly on consumerism influenced by the advertising industry. Isaac Asimov's *The Caves of Steel* from the following year is perhaps even more interesting, insofar as overpopulation has already fully become an incidental background fact, a mere kind of more or less plausible detail of a possible future: the novel is primarily a detective novel in which Asimov focuses on his favorite topic, the possible relations between

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99 Much of the general information in the following paragraph relies on the entries "Nuclear Energy", "Holocaust", and "World War Three" of the Science Fiction Encyclopedia, available online: https://SF-encyclopedia.com

100 J. R. McNeill, Peter Engelke, *The Great Acceleration: An Environmental History of the Anthropocene since 1945*, 2014, pp. 21-25.

101 John Brunner, *The Sheep Look Up*, 1972, p.8.

humans and robots. *The Caves of Steel* mentions population quite incidentally, the narrator noting that increasing efficiency was forced on the people of the earth: "Two billion people, three billion, even five billion could be supported by the planet by progressive lowering of the standard of living. When the population reaches eight billion, however, semistarvation becomes too much like the real thing".[102] The actual world population in 1953 was 2.6 billion; the eight billion mark, which seemed so inconceivable to Asimov that he set it several thousand years into the future, was in fact reached in 2023. Beyond robot-human relations, the main concern of the novel is lack of space; most New Yorkers no longer have kitchens, but eat only in communal canteens. Hence also the title of the novel: for Asimov, a planet of eight billion would surely be a planet of nothing but cities everywhere, with each city "a steel cave, a tremendous, self-contained cave of steel and concrete." For the American white middle class, which since the New Deal of the 1940s had increasingly defined itself by owning its own home in the suburbs, this was certainly a bleak vision of the future.

All of these themes — overpopulation, pollution, acid rain, smog — reached a high point in the years leading up to and following 1970. Alison Sperling identifies 1972 as a critical year for SF, noting that it saw the publication of Ursula K. Le Guin's *The Word for World is Forest* (which we will discuss a little more further below) along with "environmental science fiction by many other SF giants, including Isaac Asimov, John Brunner, Joanna Russ, the Strugatskys and James Tiptree Jr., as well as Douglas Trumbull's directorial debut *Silent Running*. In addition, John Stadler's collection Eco-fiction, published the previous year, featured stories by SF greats such as J.G. Ballard, Kurt Vonnegut Jr. and Ray Bradbury".[103] Brunner had in fact written four novels between 1968 and 1975 that together became known as the "Club of Rome quartet", since the setting of each of these novels was in part defined by ecological degradation projected into the future. Michael Page notes the publication of a number of anthologies with an ecological focus at around the same time, listing "Fred Pohl's *Nightmare Age,* Tom Disch's *The Ruins of Earth*, Terry Carr's *Dream's Edge*, Harry Harrison's *The Year 2000*, and Roger Elwood and Virginia Kidd's *The Wounded Planet*"[104]. We will take a closer look at Fred

102 Isaac Asimov: *The Caves of Steel*, 1953, p. 20. Following quote: p. 21.

103 Alison Sperling: "The Word for World in 1972", in *Foundation*, 50th Anniversary issue, 2022, p. 48. Available online: https://www.academia.edu/85467103/The_Word_for_World_in_1972

104 Michael Page: *Evolution and Apocalypse in the Golden Age*, p. 40. In: Canavan and

Pohl's *Nightmare Age* further below. From the 1980s onwards, finally, ecological SF has increasingly become a kind of climate SF, climate change having remained the dominant ecological theme to this day; we will see an example of this shift from pollution towards climate change occurring within a single novel with Ursula K. Le Guin's *The Lathe of Heaven* (1971), analyzed towards the end of this chapter. Finally, there were a few utopias, most importantly Ernest Callenbach's *Ecotopia: The Notebooks and Reports of William Weston* (1975), in which Washington state, Oregon, and northern California have seceded to become "Ecotopia". Written unabashedly from the perspective of the pacific northwest eco-scene, the novel was quoted as influential by, for example, the Green Party candidate for the 2000 presidential election, Ralph Nader. The last chapter on Kim Stanley Robinson will focus on climate change almost entirely, so we will leave the issue aside here.

Of course, any given SF story might focus on multiple or all of these issues simultaneously; much like the environmental sciences today have as their object a many-dimensional "earth system", of which several parameters are in crisis, so the world-building of any individual SF story may more or less obliquely reference a nuclear war, chemical pollution, smog, overpopulation and climate shifts all at once. Still, we can make out these tendencies quite clearly: ecological SF today is about climate change; in the 1950s it was often about nuclear destruction, and in the 1960s and 1970s about overpopulation or pollution. What unites almost all of these texts is their temporality: the future is, almost without fail, already there. Let us consider stories of nuclear war as an exemplary case, and then move to stories of overpopulation to more closely analyze the political entanglements of such fiction.

Nuclear energy and weaponry had featured in a largely abstract manner in a few SF stories going back to the late 19th century. The first published story of John W. Campbell Jr. — seven years before he became an editor of *Astounding* — was called *When the Atoms Failed* (January 1930, published in *Amazing Stories*), and he published multiple further stories that featured the awesome power of nuclear energy throughout the decade. Once he became editor of *Astounding*, he also wrote non-fiction editorials on nuclear energy. As was briefly mentioned in the previous chapter, this interest of Campbell intensified during the war, culminating in the 1944 publication of *Deadline*, the story that brought him the attention of the Counterintelligence Corps. Some SF fans were generally among the first to know of

Robinson: *Green Planets,* 2012, pp. 40-55.

the top secret Manhattan Project at Los Alamos, New Mexico, which developed the nuclear bomb — those SF fans, namely, that were scientists at Los Alamos. Campbell himself may have known about the rough locations of the nuclear research facilities of the United States thanks to such scientist-fans: he "kept an eye on the geographic distribution of sales, and a large number of copies were sold at the drugstore near Oak Ridge National Laboratory [in Tennessee]", as Alec Nevala-Lee notes.[105]

Much of the "environmental" interest in nuclear energy manifested itself, however, in utterly dystopian *post-apocalyptic* settings; to use the terminology laid out by Gerry Canavan in a previous chapter, the dominant narrative is that of a "Land of the Flies", where modern technology has largely been lost, the power of nuclear energy having been unleashed to utterly devastating effect. This setting produced one of the masterpieces of SF tout court, Walter M. Miller Jr's *A Canticle For Leibowitz* (1959). The story indulges in one of the most regularly enjoyable exercises of science fiction: making the present of the author the object of imagined future philological activities. Set in the aftermath of total nuclear war that occurred in the middle of the 20th century, its three parts are set roughly six hundred, twelve hundred, and eighteen hundred years into a future. In the first part, Brother Francis of the Leibowitz Abbey — located somewhere in what used to be Utah, in the ruins of mid-century America — accidentally comes across a fallout survival shelter from before the war. "Mustering his modest command of pre-Deluge English", he reads a sign on the wall: "FALLOUT SURVIVAL SHELTER. Maximum Occupancy: 15. Provision limitations, single occupant: 180 days; divide by actual number of occupants", and so on. The Deluge being the apocalypse, pre-Deluge English is standard mid-20th century English that would prove rather trivial to read to the contemporaries of Walter Miller. Not so for Brother Francis: "The rest was buried, but the first word was enough for Francis. He had never seen a 'Fallout,' and he hoped he'd never see one. A consistent description of the monster had not survived, but Francis had heard the legends… Brother Francis visualized a Fallout as half-salamander, because, according to tradition, the thing was born in the Flame Deluge… He had unwittingly broken into the abode (deserted, he prayed), of not just one, but fifteen of the dreadful beings!" (pp. 17-18). In the shelter, Francis finds

105 Alec Nevala-Lee: *Astounding: John W. Campbell, Isaac Asimov, Robert A. Heinlein, L. Ron Hubbard, and the Golden Age of Science Fiction*, 2018, p. 197.

within a few fragments of writing from the founder of the abbey, Leibowitz, a Jewish-American electrical engineer before the nuclear war; eventually, partially because of the relics found by brother Francis, Leibowitz is granted sainthood by "New Rome". The relics include, among other things, a shopping list; the world of 1950s America has, more than half a millennium after almost total nuclear destruction, become an utterly unknowable past, an alien world ripe for philological misunderstandings.[106]

Miller ceased writing almost entirely after the publication of the novel. He had worked on a continuation, which was, however, not published until 1997, a year after Miller's death; the manuscript had to be finished by fellow SF author Terry Bisson, and the completed novel, *Saint Leibowitz and the Wild Horse Woman* is far less highly regarded. Yet if *A Canticle* represents, in a sense, the early high point of nuclear apocalyptic fiction, Miller's only further publication in his lifetime does perhaps provide a fitting bookend to the nuclear fears of the 20th century: in 1985, Miller published — as (co-)editor, no story by himself included — *Beyond Armageddon*, an SF short story collection thematically linked by global nuclear war, or what Miller in his editorial introduction terms "megawar".[107]

The collection, in a sense, feels like a denouement to the genre's entanglement with fantasies of nuclear war. Written a few years before the Cold War would end with the dissolution of the Soviet Union, the fear of nuclear Armageddon was still real, to be sure — but it had become, at least in the US, a concern not so much ecological in nature as it was religious, an image of the end times influential for dispensationalist Christians.[108] Under these parameters, it was no longer a particularly interesting theme for the SF community; as Miller notes in the preface, he "picked through thousands of pages… of science fiction stories… about the aftermath of a Megawar at the end of the world, and lo, not a single one of them dealt with… the fate of Reagan and [televangelist Jerry] Falwell… when all the saints are lifted up into the skies at the time of the Great Rapture. So, seen as an

106 See Gary Radford's *Beware of the Fallout* for a reading of the novel in line with Umberto Eco's notion of a model reader. Online: http://www.theprofessors.net/eco-fallout.html

107 Miller gives a sensible reason for the "barbarous neologism", as he himself puts it (p. 5). Within the genre community, the most-used term to refer to post-nuclear-war fiction was that of "post-holocaust stories". Miller found the terminology to be a problem insofar as "the diminishing memory of *the* Holocaust" was "being further blurred at a Nazi cemetery in Germany this week by an aged and fuzzy American President" (p. 5), referring to Ronald Reagan's visit to the cemetery at Bitburg.

108 See Daniel Wojcik, „Embracing Doomsday: Faith, Fatalism, and Apocalyptic Beliefs in the Nuclear Age". *Western Folklore*, Vol 55, No. 4, 1996, p. 297.

effort to capitalize on the recent fervor for apocalyptic nuclear politics, this story-search would have to be judged a failure" (p. 3). He did find "twenty-one pretty good stories about a Megawar and its survivors" (p. 4), but almost none of these were contemporary: fully fifteen of the stories were from the 1950s or 1960s, while only four were more recent (two were older: one each was originally written in 1937 and 1947). If, as Miller himself argues, "each writer was looking ahead from one particular viewpoint during the history of half a century, and his [sic] vision was shaped by his [sic] times", then the collection as a whole must have seemed distinctly anachronistic at the time of publication, largely offering visions of the future from decades past.

While not our main focus — fictions of nuclear disaster and war have been studied extensively by SF scholars[109] —, these stories arranged by Miller are certainly, to some degree, a kind of environmental SF, the nuclear destruction almost inevitably going hand in hand with a kind of ecological degradation. In Edgar Pangborn's *A Master of Babylon*, set roughly in 2100, "the climate had become delightful", but "the sea, gorged on melting ice caps, had removed Manhattan Island from current history" (p. 200). At the same time, the story also makes clear that we are not exactly dealing with an SF that is rigorously concerned with ecological chains of causality: not only tornadoes but also "half a dozen" earthquakes had battered New York City from 1994 to 2084. The sheer breadth of disasters brought about by nuclear war in the story makes them seem more like divine intervention than like the natural outcome of nuclear war disrupting the earth system.

Still, we can fruitfully use *Beyond Armageddon* as a baseline with which to compare the two overpopulation-themed short story collections that we will analyze further below. In this respect, we may wish to pay attention to three interrelated questions: (1) the editorial arrangement of texts in all of these collections; (2) the different temporal logics of different ecological crises; and (3) what kind of "work" one can "do" with these texts. Here is what Miller says in the introduction:

> The order is not always chronological, except near the beginning. In the first story, Megawar is only in the making; in the second, it's all in the mind, as is one version of quantum mechanics; in the third, it's consciously planned; in the fourth, it's off to a slow start. But it's all over by the beginning of the fifth story; and after the fourth story, bombs only fall in survivors' nightmare. The actual

109 See for example David Seed's *Imagining Apocalypse: Studies in Cultural Crisis*, 2014, and *Under the Shadow: The Atomic Bomb and Cold War Narratives,* 2013. For a particularly early study, see Paul Brians: *Nuclear holocausts: atomic war in fiction, 1895-1984,* 1987.

> Megawar happens offstage, between stories, and the rest is about the survivors, the orphans of a psychopathic civilization. Mood, rather than chronology, governs arrangement toward the middle of the book, but the last two stories wind things down again… (p. 6)

In a sense, there are thus two types of stories here: the first four (Lucius Shepard's *Salvador*, Robert Sheckley's *The Store of the Worlds*, Norman Spinrad's *The Big Flash*, and War Moore's *Lot*) are a kind of introduction to the rest of the book, plotting ways in which nuclear wars could happen. All of the other stories are variations of what a post-nuclear world and society could look like. Even among those four, only Spinrad's *The Big Flash* is really about the question of what might bridge the gap between an unaltered present and the irrevocably altered post-nuclear future: in tune with the counter-cultural times of its original publication (1969, in the Damon-Knight-edited collection *Orbit 5*), the answer comes in the form of the "Four Horsemen" (of the apocalypse, naturally), a sort of psychedelic rock or heavy metal band[110] whose mesmerizing music, over the course of 200 days, slowly primes American society to accept the use of nuclear weapons in an undefined war (Vietnam, presumably) — for, adding to the hazy atmosphere of the late 1960s, the band seems to partially be the product of a US army psychological warfare program, COINTELPRO rendered as rock band. The story ends with a widely televised live-performance by the Four Horsemen, which appears to hypnotize American soldiers stationed in a nuclear missile bunker into launching their weaponry.

If subliminal black metal is how public acceptance of nuclear war can be brought about, images of a future in which such a war has come to pass are, one assumes, precisely how to inoculate citizens against the acceptance of nuclear war — writing and publishing post-apocalyptic, post-"Megawar" SF would then, that is, in however small a way work counter-performatively, making such Megawar-apocalypses less likely, producing images of a future that no one would want to come to pass. This would work comparatively well with the environmental (or at least environment-adjacent) disaster of nuclear war, a catastrophe brought about by relatively direct and conscious action (at the hands of presidents, generals, and soldiers), mediated by public opinion. And nuclear war is a discrete event: it either happens or it does not.

The temporality of nuclear war, put differently, is that of a potential, as of yet unrealized crisis, but one whose actualization would be nearly instantaneous —

110 The closest comparison at the time would perhaps be *Black Sabbath*, though the theatrics described in the story make the Horsemen sound, more than anything, like a drone/doom metal band before such a genre really existed, a sort of *Sunn O)))* avant la lettre.

hence, as a story collection, *Beyond Armageddon* dwells on the before and after, but cannot narrate the "event" itself.[111] Nuclear war is potential in that the materials to bring about the catastrophe already exist in the world, but have not yet been activated: the nuclear arsenal of a number of great powers, in the context of the mid 20th century specifically the United States and the Soviet Union, both perpetually at the ready in the form of missile silos, submarines, and bombers, poised to turn the cold, virtual war into actual war at a moment's notice. It is near instantaneous in that turning the cold war into a hot, nuclear war would have likely been a matter of less than an hour, at the conclusion of which the planet and its global society would have been nearly unrecognizable. The fact that both sides of the cold war possessed enough nuclear weaponry to completely destroy the other side gave rise to the notion of a "mutually assured destruction", or MAD: unless the opposing forces' capacities to launch their own nuclear weapons could be disabled quickly enough — an unrealistic prospect — there would be no first-movers advantage, since there would indeed be no victor at all. Nuclear war between two superpowers turned out to be, as the artificial intelligence in the 1983 SF film *WarGames* realizes, a strange game in which "the only winning move is not to play".

Beyond Armageddon as a collection of stories seems to say much of the same thing, the majority of the stories offering a dozen variations of a *post*-nuclear world, which are almost without fail designed to shock, horrify, or at least dispirit: hence, as Miller notes, the stories he selected "have more in common among themselves than a Megawar in the background. There is a nostalgia for things lost". The survivors "don't really live in such a world; they haunt it" (p. 7). Indeed, many of the stories focus on how the past continues to haunt the characters of various futures, or of how the ruins of the past have become mysterious sites. In Steven Vincent Benét's *By the Waters of Babylon* — the oldest story in the collection, from 1937 —, the remnants of an American kitchen are, to the protagonist, no longer understandable as anything but the former place of gods who have long since left: "In the washing-place, a thing said 'Hot' but it was not hot to the touch — another

111 As Britt Wray puts it: "Why might this be? They are, after all, very different threats. With nuclear, only a handful of people ever have anything to do with setting off a warhead, whereas climate change is built into our world, made worse by each item of clothing we buy, each combustion engine car we drive, each vacation we take. I have never known a day on Earth when my actions didn't fuel the fire, literally, and the fact that we can see how we contribute to this problem that makes us feel unsafe is crazy-making in itself. With nuclear, we have a binary situation: detonate or don't. With climate, we have the fabric of the world, and pulling threads is not the same as disarmament." Britt Wray: *Generation Dread*, 2022, p. 40.

thing said ‘Cold’ but it was not cold. This must have been a strong magic but the magic was gone” (p. 249). In Michael Swanwick’s *The Feast of Saint Janis*, civilization and cities still exist in some form after the “Megawar”, especially in Africa, while America has been hard-hit; but the post-apocalyptic culture feeds off of 20th century America, the height of entertainment consisting of the show of a Janis Joplin impersonator: “I mean they played good music back then; it was real. We’re just echoes, man. Just playing away at them old songs” (p. 306). Throughout the year, the faux-Joplin shows become more and more frenetic, until, after a year, the spectators themselves murder the impersonator in a kind of sacrifice, and a new Joplin appears shortly thereafter. In Ray Bradbury’s *To the Chicago Abyss*, finally, an “old man” is both hunted by the police and valued by fellow humans for remembering — remembering the pre-apocalyptic times, and reminding people of them:

> “Years ago I looked at the ruined world, the dictatorships, the desiccated states and nations, and said, ‘What can I do?’ … What did I have to offer a world that was forgetting? My memory! How could this help? By offering a standard of comparison. By telling the young what once was, by considering our losses […] I remembered imitation flowers, dial telephones, refrigerators, kazoos […] Once a man asked me to remember just the dashboard dials on a Cadillac. I remembered. I told him in detail. He listened. He cried great tears down his face” (pp. 267-268).

After the apocalypse, even the survivors are not really alive.[112] For Miller, the worlds of *Beyond Armageddon* are defined by a nostalgia for what is in fact the non-fictional present reality which we, as readers, inhabit. There might be a conservative spirit in such a nostalgia for the present; but equally, and more hopefully, it might instill a *conservationist* spirit, one who would wish to preserve this world (by, for example, fighting against nuclear proliferation). In that sense, the function of Bradbury’s old man stands in for the function of post-apocalyptic SF itself: by producing future defined by lack it reminds us of what we have in the present.

Of course, perhaps all this can also be read as simply yet another case of SF ultimately being about the present, not the future, as Darko Suvin would have it: the imagination of any SF writer in the present is haunted, overdetermined, by would-be survivors in the future, whom we cannot imagine feeling anything but nostalgia for the things which they lost, which we (for now) still have. Regardless: fiction about

112 This same sense of haunting, of course, fuels most zombie fiction, in which survivors feel incessant guilt precisely for surviving and are little more than the (titular, in one case) “walking dead”.

nuclear war is quintessentially counter-performative, producing apocalyptic images of the future that exhort us, in the present, to act or at least feel negatively about the paths that would lead to such futures.

Let us continue, then, with what was perhaps the primary mode of ecological SF until the increased prominence of climate change: the fear of overpopulation, and the ways in which SF stories about this fear were framed by the non-fiction of Paul and Anne Ehrlich.

3.3 Science Fiction and the Ehrlichs: Two Short Story Collections about Overpopulation

Ehrlich and his *Population Bomb* (1968)

Concerns about "overpopulation" as an ecological concern have a long history, one which precedes and outlives the popularity of Paul and Anne Ehrlich's *The Population Bomb* (1968). Such concerns go back, of course, to Thomas Robert Malthus (hence such concerns are today usually called Malthusian), and they are still occasionally voiced today by popular conservationists such as David Attenborough (as well as by Paul Ehrlich himself). But the fear of "too many people" was unquestionably at its height around 1970.

It is important to note, because this is often neglected, that these concerns were not always about the environment. Worries about population levels in the post-war years had just as much to do with development and modernization theories, with state-led roads to national prosperity. The single most significant population control policy, China's one-child policy — in place from 1980 to 2015, though significant population control measures were implemented as early as 1970 — was not really environmental in nature at all, for example; it was implemented largely due to the state's views on how national development should proceed.[113]

But, in American discourse especially, there *was* undoubtedly also an environmental edge to fears of "overpopulation". And it was to a significant degree Paul (and Anne) Ehrlich who had influenced this. For Paul Ehrlich, "overpopulation" was an environmental question, though one that in turn was the

113 See for example Susan Greenhalgh: *Cultivating Global Citizens: Population in the Rise of China*, 2010.

determining factor for all sorts of social issues. Overpopulation for Ehrlich was at the heart of "a score of problems, from suburbs to pollution to national parks to India, and particularly to Vietnam and inner-city unrest", as Thomas Robertson puts it.[114] With the publication of *The Population Bomb*, overpopulation became the dominant sense of the environment in crisis for some time. Asked by David Brower, then the director of the environmental Sierra Club, to write a book on overpopulation and the environment, Paul and Anne Ehrlich hastily wrote *The Population Bomb* in early 1968,[115] to be published by Ballantine Books — incidentally an important publisher for science fiction and fantasy in the 1950s.[116] The book's existence as a rhetorical-political object was influenced heavily by Rachel Carson's *Silent Spring*, showing Ehrlich that a bestselling book for "a general readership" could be far more effective than "a phalanx of scientists".[117]

Unlike *Silent Spring* and its topic of DDT, *The Population Bomb* did not focus on a single environmental problem. Rather, like Vogt's *Road to Survival* twenty years prior, the book was another example of the "environmental problem catalog", summarizing all sorts of issues under the umbrella problem of overpopulation. As Robertson notes, Ehrlich mentioned not only agriculture (as Malthus had) and the effects of soil erosion and pesticides (the more humble focus of *Silent Spring* despite being twice as long), but also "smog, water pollution, lead poisoning, and even climate change" — to which we may add, incredibly, war (especially Vietnam) and racism in the US.[118] Yet the book could only tackle so many different issues because it reduced them, single-mindedly, to questions of overpopulation. Robertson is surely correctly to point out the limits of this approach: "Ignoring or downplaying causes such as colonialism, capitalism, poor government, local exploitation, and

114 Thomas Robertson: *The Malthusian Moment: Global Population Growth and the Birth of American Environmentalism*, 2012, p. 139.

115 Paul Ehrlich has argued multiple times that his wife Anne co-wrote the book with him, and that her name does not appear as a co-author only because the publisher wanted it to be so. Regarding the publication schedule: Brower specifically hoped that the book would influence the 1968 presidential election. The first draft was written in less than a month in early 1968. See Charles C. Mann: *The Book That Incited a Worldwide Fear of Overpopulation*, Smithsonian Magazine, 2018. Online: <https://www.smithsonianmag.com/innovation/book-incited-worldwide-fear-overpopulation-180967499/>

116 Ballantine was founded to publish paperback originals rather than just as reprints, a publication strategy that emerged around 1950; SF as a genre was highly relevant in this endeavor. One of the first publications of Ballantine Books was Frederik Pohl and Cyril M. Kornbluth's *The Space Merchants* (1952), mentioned in the previous section.

117 Thomas Robertson: *The Malthusian Moment: Global Population Growth and the Birth of American Environmentalism*, 2012, p. 135.

118 Thomas Robertson, *The Malthusian Moment: Global Population Growth and the Birth of American Environmentalism*, 2012, pp. 142-143.

individual failings, many environmental Malthusians reduced poverty and other complicated socioeconomic dynamics to a simple factor of population, in effect blaming the poor for their own poverty.[119]"

As I have already mentioned in the section on what kind of work is being done with ecological SF, with the rise of academic scholarship on ecological and climate SF, Rachel Carson's *Silent Spring* has itself been claimed as a kind of science fiction text by scholars. Somewhat understandably, the same thing has not happened with the Ehrlichs' *Population Bomb*: while *Silent Spring* is still highly regarded as a touchstone of environmental non-fiction, *The Population Bomb* is (rightfully) considered outdated, indeed racist. Still, it seems to me that the book was, at the time, far closer to SF than that of Carson — regardless of whether or not it is also far more detestable (and there is, after all, no shortage of texts that we today deem offensive but that are nevertheless obviously part of the history of SF). Yet while Carson is seen as "science fictional" on account of the writing strategy of the "fable for tomorrow", the Ehrlichs' publication is merely mentioned, if at all, as a kind of environmental *context* to ecological SF.[120] Let us take a closer look, then, at *The Population Bomb*.[121]

From the first sentence, the book engages in prophecy: "The battle to feed all of humanity is over. In the 1970s and 1980s hundreds of millions of people will starve to death in spite of any crash programs embarked upon now. At this late date nothing can prevent a substantial increase in the world death rate…" (xi). The first two sentences predict a future precisely in the manner of much SF. The third sentence is more ambivalent, insofar as it pulls this predicted future into the present: this is no imagined future, it is already given, hence no prediction at all. But then, is this not perhaps the same kind of rhetorical strategy that all SF in some sense engages in, asking the reader to pretend that the imagined future has already come to pass?

Chapter one, entitled "the problem", leaves little doubt as to what that problem is: the title of the first sub-chapter reads "too many people". It leaves equally little doubt as to whether the book's outlook on overpopulation is, to some degree, racist.

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119 Thomas Robertson, *The Malthusian Moment: Global Population Growth and the Birth of American Environmentalism*, 2012, p. 10

120 "Science fictional": Gerry Canavan, introduction to *Green Planets*, 2012, p. 4. Ehrlich is mentioned by several authors in the same collection, but only ever contextually — he is never analyzed as in fact having written SF himself.

121 The original 1968 edition is difficult to procure; in what follows, I am citing from the revised 1971 edition.

It opens with an infamous anecdote:

> I have understood the population explosion intellectually for a long time. I came to understand it emotionally one stinking hot night in Delhi a few years ago. My wife and daughter and I were returning to our hotel in an ancient taxi. The seats were hopping with fleas. The only functional gear was third. As we crawled through the city, we entered a crowded slum area. The temperature was well over 100, and the air was a haze of dust and smoke. The streets seemed alive with people. People eating, people washing, people sleeping. People visiting, arguing, and screaming. People thrusting their hands through the taxi window, begging. 'People defecating and urinating. People clinging to buses. People herding animals. People, people, people, people. (p. 1)

As the historian Matt Connelly notes, "Ehrlich could have encountered far larger crowds on a hot night in New York or London".[122] What Ehrlich saw was a condition of poverty (in a country which had, until 1947, been ruled by the colonial British Empire for almost a century), not overpopulation. Setting the tone for the book, it is not hard to understand that this style of environmental discourse ultimately attracted racist attitudes. His notorious colleague and ally in the fight against overpopulation, Garrett Hardin, whose (erroneous) 1968 paper on the "tragedy of the commons" remains widely cited to this day, was an open racist and white nationalist. Ehrlich is not a white nationalist, and at times in his works makes sure to point out that consumption among the wealthy (nations and individuals) is a far more severe issue than the "overpopulation" of the poor (in *The Population Bomb* itself, see for example p. 7). But his chosen lens of "overpopulation" makes it all but impossible for his environmental thought to not conflate these things regularly.

On the following page, Ehrlich attempts to strike a more conciliatory tone, and in doing so gravitates towards a science-fictional image popular at the time, arguing that we [Americans] "must all learn to identify with the plight of our less fortunate fellows on Spaceship Earth if we are to help both them and ourselves to survive" (p. 2). "Spaceship Earth" was a concept popularized by the economist Kenneth Boulding to emphasize the limited resources of the planet, floating in space as a kind of closed system.[123]

The second chapter, however, is where *The Population Bomb* truly turns to science fictional thinking, presenting three "scenarios" that delineate possible "ends

122 Matt Connelly: *Fatal Misconception: The Struggle to Control World Population*, 2008, p. 258.

123 Kenneth Boulding, *The Economics of the Coming Spaceship Earth*, 1966. For more on the concept, see also Sabine Höhler's contribution in *Green Planets*, pp. 99-114.

of the road". Ehrlich is sure to note that "these are just possibilities, not predictions"; but then, this is more or less what SF does once we consider not an individual story but rather the genre as a whole, always presenting stories in the plural: a multitude of possibilities. And his scenarios are literary fiction (which is not to say that they have much literary value); the first begins: "President Burrell was bored with the meteorology briefing. What did he care about the albedo, the properties of ice crystals, the greenhouse effect? The 1984 elections were on his mind — how the hell could he get reelected if he were responsible for instituting the first food rationing since World War II?" (p. 50). Interestingly, even within this single scenario the narrative perspectives multiply, rather like in the acclaimed environmental novels of John Brunner written around the same time: the narrative jumps from the president of the United States to a housewife (who reflects on the price of food) and, most curiously, to a black widow whose husband has died in a riot. "He had died because of the things she had loved him for", she reflects; "his refusal to knuckle under to the dominant white society and, especially, his feeling of community with the oppressed people of the Third World. The callousness of American decisions during the great famine had all but driven him mad. The clarity with which the Population Control Law was aimed at the blacks and the poor had been the last straw" (p. 54). What are we to make of this? The prose is lousy and didactic, if perhaps no more so than some of what was still published in SF magazines at the time. But it is interesting how, in this fictional short story nestled in a work of non-fiction, Ehrlich briefly appears to grapple with the racist implications of his own politics — for Ehrlich himself, after all, was very much in favor of population control laws.

The first scenario ends with global nuclear war, but a nuclear war driven by, of course, by global food shortages. For Ehrlich, any kind of environmental disaster is ultimately simply a function of population. The second scenario focuses on the increased possibility of viruses and disease. Influenced by the — by now largely forgotten, but at the time still well-known — 1967 outbreak of the Marburg Virus, the scenario has perhaps remained most timely. As scientists have warned for decades, and as we all know since 2020 at the latest, zoonotic diseases have indeed become vastly more likely as a result of climate change, global meat consumption, and increased global travel. The disease chosen by Ehrlich is Lassa fever, first described in 1969 in Nigeria. What is most noteworthy about the scenario is the style in which it is written, being composed entirely of news reports. It is prefaced by the

note that the "first three news stories in this scenario are genuine; the rest are based upon them" (p. 62). The three genuine news reports (two from the New York Times, and one from the Associated Press) recapitulate the beginning and the end of a small outbreak of the disease in Nigeria in February and March of 1970. Ehrlich's fictional account picks up in 1973, with the disease reappearing in Nigeria and spreading across the entire world, ultimately killing more than a billion people, as a result of which world leaders finally see reason and implement, what else, stringent population control measures:

> WORST IS OVER (New York Times, May 15, 1974). The World Health Organization announced today that Lassa fever is definitely on the decline. There is now, for the first time, enough serum to treat all new cases… An estimated 1.12 billion men, women, and children have perished from the disease. […]
>
> LEADERS MEET AT U.N. (New York Times, June 2, 1974). The assembled heads of state of 72 nations, including the U.S., China, the USSR, India, and most of Europe, together with delegates from the other nations represented in the U.N., yesterday passed a resolution designed to prevent events such as those of the past year from ever recurring. Stating that the lessons of overpopulation were clear for all to see, they unanimously voted complete cooperation in recovery measures, which were to be accompanied by strong population control, taking advantage of the reduced younger generation. The loss of nearly half the world's children was an immeasurably profound tragedy, they stated, and they offered the deepest sympathy to all bereaved parents (among whom were many of the leaders themselves). Nevertheless, the opportunity to establish population stability for the next two generations must be grasped. […] (pp. 71-72)

Pessimistically, this utterly extreme scenario deserves serious consideration for one reason: at least once before, as unimaginable as it is today, a communicable disease had in fact killed at least a quarter of an entire continent's population: the outbreak of the bubonic plague in the middle of the 14th century across Africa, Asia and Europe devastated Europe so severely that it is considered one of the most critical events in European history.

Yet it must simultaneously be emphasized how bombastic and, ultimately, self-congratulatory the account is. Its bombast is clarified if one considers that Lassa fever in fact recurs to this day in in West Africa, from Nigeria to Guinea and Sierra Leone — but, while remaining a serious issue, there are in reality about 500,000 cases annually, resulting in about 5,000 deaths.[124] The fact that the disease remains almost entirely confined to a specific area (largely defined by the presence of the Natal multimammate mouse, which is the principal host of the disease) makes a

124 Ogbu, O et al. "Lassa fever in West African sub-region: an overview." *Journal of vector borne diseases* vol. 44,1 (2007): 1-11. Online: https://pubmed.ncbi.nlm.nih.gov/17378212/

mockery of the conclusion to Ehrlich's scenario — or rather, to his short story —, in which world leaders finally come to their senses, which is to say, come to agree with Paul Ehrlich's single-minded drive to equate any and all ecological issues with overpopulation. Writing in the faux-objective style of a news report further increases the self-congratulatory feeling of the conclusion.

The third "scenario", finally, is written in the style of a history textbook, detailing a future history in which overpopulation is actually tackled in time. Ehrlich here again echoes a frequent writing method of science fiction, in which fictional histories of the future, written like encyclopedia or textbook entries, loom large.[125] Two facets are particularly relevant here for us. First, this scenario, while written from the perspective of an already accomplished future, does briefly reflect on how the gap from present to future (or, from the perspective of the fictional text, from past to present) was overcome, mentioning arguments between competing schools of historians "over what the decisive factors where in the general acceptance" of population control. The answers are ultimately unsatisfactory, laconically noting, for example, that citizens simply "jelled almost overnight" with the moral position necessary to implement population control. It is of some interest that Ehrlich once again seems to briefly grapple with the question of racism, with the textbook-narration arguing that "the moral leadership of President Richards in openly condemning racist governors and congressmen" must have been important as well — though Ehrlich, of course, elides what exactly a non-racist as opposed to a racist form of population control would look like.[126] Second, as before, Ehrlich remains curiously ambivalent about the question of what kind of writing might prove politically effective; the third fictional scenario concludes in an almost self-undermining fashion, and is followed immediately by editorial self-commentary:

> It is impossible in a textbook to give you an emotional grasp of the greatest convulsion ever undergone by human society. In your next library session, call for tapes LW301 and LW302 so that you can sample personally the flavor of those exciting and difficult times.
>
> This last scenario has considerably more appeal than the others, even though it presumes the death by starvation of as many as a billion people. Unfortunately, it also involves a maturity of outlook and behavior in the United States that seems unlikely to develop in the near future. I will leave you to decide which scenario is more realistic, and I challenge you to create one more optimistic than the last. (I

125 See the SF Encyclopedia entry on Future Histories: https://SF-encyclopedia.com/entry/future_histories

126 All quotes pp. 74-75.

> won't accept one that starts, “In early 1972 the first monster space ships from a planet of the star Alpha Centauri arrive bearing CARE packages…”) (p. 77)

If the (fictional) textbook entry cannot give its (fictional) reader the “emotional grasp” of the issue at hand, then why did Ehrlich choose this style for the scenario, to be read by us as the actual reader? One supposes that the opening scene of the (non-fictional) book — the taxi ride in India, in which Ehrlich conflates poverty and a hot day with overpopulation — already provides such an affective understanding, since it is how Ehrlich himself “came to understand” the “population explosion” on a more visceral level than his scientific education. As for the self-commentary that concludes the section, Ehrlich uses it to once again attempt to set these “scenarios” apart from (science) fiction — which, so Ehrlich, would simply invent space ships from Alpha Centauri as an easy way out. But of course, the absence of quasi-godly outside intervention does not in fact set Ehrlich’s narrative scenarios apart from SF — environmental SF at the time, for the most part, provided scenarios every bit as pessimistic as those of Ehrlich. And the implied logic of how to effect political change was similar too: when Ehrlich laments that the development of a “maturity of outlook and behavior in the United States” is unlikely, the implied hope, of course, is that the shocking nature of the very book in which we read those words makes such a development more likely: much like with dystopian SF, *The Population Bomb* is supposed to act counter-performatively, preventing the population bomb from going off by writing about it.

Altogether, the three fictional scenarios of chapter two make up about one-sixth of *The Population Bomb* — hardly the main focus of the book, but if the two-page “fable for tomorrow” of Rachel Carson’s *Silent Spring* is enough for SF scholars to claim the book as a kind of SF, surely the same applies to that of Ehrlich. While chapter one briefly explains the supposed problem of overpopulation, chapters three and four focus on what political policies would be necessary; they are of little interest to us here. Chapter five (which is followed only by a brief epilogue and supplementary material), however deserves some mention: entitled “What can you do?”, it further details the political *theory of change* that Ehrlich believes in. What can readers who are convinced of Ehrlich’s position do? The chapter sections read “join ZPG”, “write letters” (e.g. to congresspeople and other elected officials), “organize action groups”, “positive reinforcement”, and “proselytize friends and associates”. The general sense is clear enough: the gap between present and future

(this time utopian, not dystopian) can be filled through civic activism, citizens convincing first one another and then elected officials, who then enact meaningful policy. This sense of political action feels distinctly archaic today (people rarely write letters to politicians or other institutions anymore).

At first, *The Population Bomb* sold decently, but not extraordinarily well, and attracted fairly little critical attention. Its bestseller status was not cemented until Ehrlich appeared, in January 1970, on Johnny Carson's hugely popular *Tonight Show*; Connelly notes that "Ehrlich's appearance prompted more calls and letters than any other guest during the preceding months.[127]" It was then that the book became truly successful. Carson invited Ehrlich several more times over the coming months, to talk about overpopulation. The sense that the environment had to be saved from "people, people, people" was perhaps crested in April 1970, when the first Earth Day had as many as twenty million participants in the US.

The environmental movement would, of course, endure to this day; but in the following years it would shift its focus decisively away from the Malthusian sense that something called "overpopulation" lay at the bottom of environmental degradation. As Robertson argues, in "the 1970s, a new political landscape, featuring a resurgent left and a "new" right that both found Ehrlich's biological approach reductive and authoritarian, would pick apart his contradictions".[128] And Ehrlich's grandiose, oft-cited predictions simply turned out to be gravely wrong: increases in agricultural productivity (in part through the "green revolution", i.e. new plant crops and increased fertilizer usage) significantly lowered global malnutrition within a few years of the text's publication.[129] The "battle to feed humanity" was, in the 1970s, not lost but decisively won.[130]

The Population Bomb was hugely successful and influential for a time, yet today it is mostly a historical footnote. Where Carson's *Silent Spring* was focused on a single issue and thoroughly researched, its claims regarding DDT largely holding up to this day, the reputation of Ehrlich's book, written in haste and with an eye towards maximum effect, was undone by its own grandiose claims. It is thus not

127 Matt Connelly, *Fatal Misconception*, p. 259.

128 Thomas Robertson: *The Malthusian Moment*, 2012, p. 151.

129 For an overview of the green revolution, see Charles C. Mann: *The Wizard and the Prophet: Science and the Future of our Planet*, 2018. For a critical history, see Marci Baranski: *The Globalization of Wheat: A Critical History of the Green Revolution*, 2022.

130 This is not to say that agriculture today is without its issues. It produces too many CO2 emissions and is too dependent on high fertilizer inputs, with fertilizer runoff remaining one of the most serious environmental issues besides climate change.

surprising that academic science fiction scholarship would like to claim Rachel Carson as an early, indeed unwitting writer in the canon of ecological SF, while largely ignoring Ehrlich. It is my contention, however, that SF studies is self-serving in doing so: as the above has already shown, Ehrlich's non-fiction work was far more indebted to science-fictional thinking than that of Carson. And Ehrlich was even more directly involved with the genre: he contributed, this time with his wife co-credited, to two science fiction short story collections: *Nightmare Age* (1970), edited by Frederik Pohl, and Voyages: *Scenarios for a Ship Called Earth* (1971), edited by Rob Sauer. Let us look at these next.

Frederik Pohl's *Nightmare Ages* (1970)

We can discern quickly that *Nightmare Age*, edited by Frederik Pohl (one of the major figures of American 20th century SF), is beset by the same ambivalence between non-fiction and science fiction as Ehrlich's *Population Bomb*, beginning with the cover: at the top, it promises (in all capital letters) "thirteen tomorrows — that we may be building today!" If SF is a matter of fictional futures, it nevertheless takes its extrapolative beginnings in the non-fictional here and now.

The cover art seems to depict spheres of life across multiple scales: beginning at the top with space, followed by the stratosphere, then trees standing in a brown-green field of grass, its horizon forming the central line of the cover art. In the lower half we can see a figure wearing, perhaps, a hazmat suit, stepping into a smaller red sphere. On the whole, the composition seems to point towards a sense of connection across scales, from the individual to the interplanetary.

Opening the book, the reader comes across a content description, preceding the author and title pages, which remains as pointedly equivocal as the tag line on the cover. Let me quote it in full:

> THE FUTURE MAY BE—AND THEN AGAIN, IT MAY NOT…
>
> But it's possible to have a lot of fun looking at the possibilities…
>
> At least if we do so through the cynical eye and skillful talents of the writers in this sparkling collection of stories that take a well-informed look at what might happen if technology continues unchecked and affluence progresses unabated. And people, of course.

> That's really where it all starts — with homo sapiens, the most successful predator this planet has ever seen. Successful because, not being physically all that strong, he had to become smart to survive.
>
> But that was in an earlier and simpler time. Lately, life has gotten pretty complicated; in fact, it's a moot point whether we aren't in the process of complicating ourselves out of existence. After all, what happens when the world's most savage predator has nothing left to prey on but himself? (no page)

The text primarily promises, as a collection of fiction, enjoyment from the various future-scenarios that follow; "it's possible to have a lot of fun looking at the possibilities". But these possibilities are interesting in part precisely because they are not just fiction; they might be "the future". What kind of trajectories would result in one or another of these futures, of these nightmare ages? What is common to all of the stories selected? No single thing, it turns out: they extrapolate future catastrophe from present trends in technological development, or affluence, or simply population levels; rather different variables! The explanation given for why "people, of course" would be especially important is not ecological so much as evolutionary and anthropological, presenting an odd teleology of where human tendencies would seem to inevitably lead: humans are predators defined by intelligence, and our intelligence has led us to become so dominant that we now predate on nothing but ourselves.

This supposed thematic through line for *Nightmare Age* seems highly idiosyncratic, the viewpoint of the editor (or possibly an anonymous copywriter at Bantam Books) more so than presenting an adequate synthesis of the collection. In the editor's introduction proper (pp. 1-2), Pohl argues that the point of the collection is indeed not to offer a unified vision of the future, but rather "a shopping list of possible futures"; not a singular secure knowledge of what will happen but a series of potential trajectories. What's more, this collection of possibilities is "valuable" precisely due to its multiplicity: "There are many differences between these two kinds of crystal-gazing, and peculiarly enough [… the multiplied kind represented by *Nightmare Age*] is far more valuable than the first", because "what's the use of a prediction that can't be made to fail to come true? The only reason for wanting to know what's ahead is to steer away from the events you don't like and toward the ones you do." Once again, the mission statements of SF and of the environmental sciences are strikingly accordant: to map the various trajectories that human-nature systems (whether the entire planet or smaller subsystems) will follow under various

conditions (most famously today, the various trajectories of decarbonization that result in futures whose radical differences from one another are innocently enough labeled “1.5 °C warming”, “2.0 °C warming”, and so on), and to make the desirable futures more likely, and the undesirables ones less likely. The second aspect — to use these possible images of the future to get us closer to the desirable ones, and farther away from the undesirable ones — is fairly exactly what academic SF studies, from Darko Suvin’s general theory of SF to Gerry Canavan’s more specific sense of climate-tinged SF, assume the genre can “do” as literature.

If front matter like this creates the context of a book, the most important piece here is, however, the table of contents, also worth being reprinted verbatim here in full:

Each entry in the table of contents is preceded by a single-line summary by Pohl, through which he creates a loose sense of narrative connection between the short stories. This shared narrative should obviously does not quite work (how is it that us "[wiping] ourselves out" leads to a merely "fragmented" society?) and, as the last comment with its heavily ironic exclamation mark makes clear, should not be taken too seriously regardless. Connecting all of the short stories into a single narrative would, after all, work against the very sense of a plurality of possible futures previously promised. As such, the imagined narrative remains incongruous.

But what is perhaps most noteworthy is that the first story promises to explain "How we *are* destroying our world" in the present tense, while the commentary voice switches to the future tense ("*will* destroy it faster") from the second story on. There is thus something special about the first story: is it perhaps not a possible future at all but rather a sort of report on the state of the present? It is written, of course, by Paul Ehrlich, who, as the back cover notes, "is not a science fiction writer at all". This gives him a special position in the book. Similarly, Pohl's brief editorial commentary above the story itself notes that Ehrlich "is not a science-fiction writer... What he is is a scientist. More than that, he is a prophet" (p. 3). But of course, as we have seen, "prophecy" had long been one of the possible attributes of science fiction! And the story itself, Pohl concedes, is SF after all: "But if he is not a science-fiction writer, he is like as science-fiction writer in that his warnings are cast in the form of something as much like a science-fiction story as — ECO-CATASTROPHE!"[131]

The text itself is stylistically most similar to the third scenario of Ehrlich's *Population Bomb*, written like a sort of fictional historical account, enumerating a host of ecological disasters that are to hit the world throughout the 1970s, each with a date: "The end of the ocean came late in the summer of 1979"; "There had been the final gasp of the whaling industry in 1973, and the end of the Peruvian anchovy fishery in 1975"; "It became apparent in the early '70s that the "Green Revolution"

131 Each of the brief editorial introductions by Pohl concludes like this, with the title of the respective story.

was more talk than substance"; "At home in the USA the early '70s were traumatic times. Racial violence grew and the habitability of the cities diminished"; "Water supplies, already marginal in quality and quantity in many places by 1970, deteriorated quickly. Water rationing occurred in 1,723 municipalities in the summer of 1974"; "Air pollution continued to be the most obvious manifestation of environmental deterioration. It was, by 1972, quite literally in the eyes of all Americans. The year 1973 saw not only the New York and Los Angeles smog disasters, but also the publication of the surgeon general's massive report on air pollution and health"; and so on (pp. 3-9). Though Ehrlich's narrator calls out the importance of national and international inequality, the ultimate culprit is, of course, overpopulation, with population control as the only solution (p. 7).

Ehrlich's contribution to the collection narratively ends with China attacking Russia; but the narrative conclusion is followed by brief commentary by Ehrlich himself (pp. 16-18), which begins: "A pretty grim scenario. Unfortunately, we're a long way into it already. Everything mentioned as happening before 1970 has actually occurred; much of the rest is based on projections of trends already appearing" (p. 16). We may note that in fact only very few events mentioned by Ehrlich are dated before 1970; the vast majority of the story is conjecture. Still, it is noteworthy that once again the line between science fiction and ecology is purposefully blurred, present-day fact seamlessly turning to projections of a future not yet there. And Ehrlich's non-narrative commentary is in fact no different from the fictionalized narrative that precedes it, prophesying that "Most of the people who are going to die in the greatest cataclysm in the history of man have already born. More than three and a half billion people already populate our moribund globe, and about half of them are hungry" (p. 17).

Like all of the other texts in *Nightmare Age*, Ehrlich's contribution was not written for the collection, first appearing in the September 1969 issue of the counter-cultural magazine *Ramparts* (folded in 1975); it was, however, the most recently written text. Only two other stories — Bulmer's *Station HR972* and Reynolds' *Among the Bad Baboons* had been written in the last five years; three other texts were first published in the early 1960s, and six more (both by Pohl, both by Kornbluth, one by Leiber, and Heinlein's) were from the 1950s. Pohl, accordingly, has argued that "the world ecology movement really began in the science fiction stories — especially in the 1950s, but actually going back as far as science fiction

itself does".[132]

Pohl's sense of the history of the world ecology movement is certainly blinkered, implicitly excising a long history of conservation. More relevant to our immediate interests, perhaps, we have already noted in the chapter on genre theory that it might not be the best approach to find discrete "beginnings" of movements — whether these are socio-political or genre-literary in nature. If it is true that we can find ecological themes in a lot of SF from the 1950s, it is also perhaps true that this fact was only truly *recognized* in 1970s, with retrospective collections such as *Nightmare Age*. Heinlein's *Year of the Jackpot*, for example, follows Potiphar Breen, a statistician who compiles data on various events and social trends: to "Mississippi River floods, fur catches in Canada, stock market prices, marriages, epidemics, freight-car loadings" (p. 288), and so on, using this data to find cyclical recurrences in history. At the seeming climax of the novel, nuclear war commences, Breen and his partner escaping the destruction because Breen's calculations have enabled them to flee to the countryside in time.

Yet the true denouement of the story comes in the form of the sun itself being destroyed. As Breen realizes while reading a scientific paper, about thirty minutes before it will destroy Earth, the sun has just gone supernova: "It him him with gentle melancholy. No more? Never again? Colorado on a cool morning… the Boston Post Road with autumn wood smoke tanging the air… Bucks County Bursting with color in the spring" (p. 311). One of the oldest stories in the collection, published in 1952 in *Galaxy Science Fiction*, *Year of the Jackpot* must have seemed less about ecological degradation at the time of publication and more about changing social norms and attitudes[133], the rise of statistical information-gathering and use in society (Breen works as a "numbers boy for a firm of industrial engineers", as a kind of business consultant), and ultimately about advances in supernova research itself: the fictional scientific paper that Breen is reading on supernovae is attributed to "Dynkowski", which we may assume to be an allusion to the German-American astronomer Rudolph Minkowski, who worked on supernovae in the 1940s. The explosion of the sun can only with difficulty be read as an ecological catastrophe in

132 Pohl, *Yesterday's Tomorrows*, quoted in Michael Page: *Frederik Pohl*, 2015, p. 107.

133 Much of the statistical data that Breen collects in the early pages of the story concerns what he calls "silly season" incidents, such as people compulsively undressing themselves, and cross-dressing. At the time of writing, Heinlein was already well on his way on the political journey from liberal to conservative.

the normal sense, acting, rather, as a sort of act of god utterly beyond human control. The story becomes ecological only through the act of being placed into a collection of other short stories with more explicitly ecological themes.

Or consider Kornbluth's *The Marching Morons*, the oldest story in the collection (*Galaxy Science Fiction*, 1951). Through a process that in its effect amounts to time-travel, a man from the 1980s wakes up in a distant future in which almost the entire human population — of which there are, vaguely, far too many — has become aggressively stupid, because, "while you [Mr. Barlow, the man from the 1980s] and your kind were being prudent and foresighted and not having children, the migrant workers, slum dwellers and tenant farmers were shiftlessly and short-sightedly having children — breeding, breeding" (p. 66). That the eugenicist set-up to this story is offensive goes without saying.[134] More importantly, though, while there was significant overlap between eugenicist interpretations of evolution on the one hand and the racist implications of population-focused ecological warnings on the other, these did remain somewhat separate concerns, and *The Marching Morons* at the time of publication would have clearly been read as belonging almost exclusively to the former — continuing a lineage begun with H. G. Wells *The Time Machine* (1895), in which the nameless protagonist, traveling hundreds of thousands of years into the future, encounters two entirely distinct species of humans. Curiously enough, the protagonist of Kornbluth's story at first thinks himself stranded in *yet another* different lineage of SF plot, assuming that he will be hunted down by a secret police with "mind-reading machines, television eyes everywhere, afraid you'll tell their slaves about freedom and stuff. They don't let anybody cross them, like that story I once read" (p. 62), referring probably to George Orwell's *1984* , published three years prior.

It is only by being placed in the wider context of *Nightmare Age* that *The Marching Morons* would primarily be read as an ecological story. And that context, apart from Pohl's editorial comments, seems to a large degree supplied by Paul

134 The only thing that makes the story less offensive is that it can be read as precisely satirizing the sort of eugenicist science fiction that it is part of. Mr. Barlow suggests that they "solve" the problem by exterminating those humans deemed undesirable, by sending them on one-way trips to Venus, taking explicit inspiration from none other than Adolf Hitler; the more intelligent humans of the future go through with his genocidal plan, but then forcibly send Mr. Barlow himself to Venus, too disgusted with the "solution" devised by him. It is odd, to say the least, to read this story in a collection marketed as being about ecological degradation, since the story would appear to either endorse Nazism or criticize many of the other stories, indeed the entire impetus of the book, as fascist.

Ehrlich's "Eco-Catastrophe!". As the first text of the collection, which the table of contents, after all, orders in a sort of chronology of disasters, it sets the stage for everything that follows; as the most recently written text, it re-interprets less recent ones in light of contemporary thinking and science; and in being written by Ehrlich who, as the back cover puts it, "is not a science fiction writer at all" but rather a scientist, it surely claims a special kind of authority in relation to the science fiction "proper" that follows it: written by a scientist, it offers the interpretive key with which to read everything else in *Nightmare Age*. We can see something similar happen with the second short story collection in which Ehrlich was involved. Let us now turn to *Voyages*, published in 1971.

Zero Population Growth's *Voyages* (1971)

Consider again Ehrlich's *The Population Bomb*, whose last substantive chapter is entitled "What can you do?"; the first section of the chapter reads, "join ZPG". ZPG was the abbreviation for *Zero Population Growth*, a non-profit organization co-founded in 1968 by none other than Ehrlich, its mission being precisely to raise awareness of the supposed threat of overpopulation. When Ehrlich was invited back to Johnny Carson's *Tonight Show* a few months after his first visit, Carson "let Ehrlich give the address of Zero Population Growth" [to the audience]. By March 1971, ZPG had thirty-two thousand members."[135] Within a few years, with the decline of overpopulation-based environmentalism, ZPG became largely irrelevant. But it is relevant for us because one of its activities in the service of raising awareness, at the height of its popularity, was to publish an edited collection of SF short stories.

As an object, *Voyages: Scenarios for a Ship Called Earth* appears to us in a mostly monochrome blue cover with white font — which, besides the title and the editor, Rob Sauer, announces the book as "a Zero Population Growth / Ballantine Book" and mentions the foreword by Paul and Anne Ehrlich —, with a small white overcrowded sphere of people at the top, one of them shouting "HELP!"; the sphere, clearly, is our planet. Past the cover, the introductory blurb promises a "thought-provoking collection of science fiction stories focusing on the very real ecological and environmental problems confronting the modern world", making sure to note

135 Matt Connelly: *Fatal Misconception*, 2008, p. 259.

that anchoring of this fiction in “very real” problems.

In the foreword itself, the Ehrlichs begin by pointing out the predictive quality of SF, noting that “recent visits to the moon … were described with remarkable accuracy a good deal more than a decade in advance by science fiction writers” (ix); this is, of course, the Gernsbackian defense of the value of SF. The Ehrlich’s continue by arguing that SF has not only predicted space flight but that “many science fiction writers during the last thirty years or more have been writing about the problems associated with overpopulation. Their environmental awareness is often demonstrated in the context of planets other than Earth, but it is clear that the complexity of ecosystems and ultimate human dependence on them have not escaped their notice” (ix). It is noteworthy here that “overpopulation” precedes “environmental [awareness]” and “complexity of ecosystems”. For the Ehrlich’s, overpopulation must be at the bottom of environmental problems.

The foreword is followed by the acknowledgments and yet another piece of prefatory writing, entitled “Zero Population Growth: A Statement”, which has no named author. The statement begins with a discussion of environmental issues using the word pollution (“of air, land, water, and biologic systems”), and correctly points out that these separate issues can become interrelated along complex paths of causality: “Air pollution, for example, can inhibit or kill plant growth, leading to soil erosion and eventual destruction of the original characteristics of our streams” (xiii). From this, however, the text turns to a diagnosis of total crisis that is social and cultural as much as environmental:

> “Crowding caused by unplanned growth has produced urban areas undesirable for human occupation. With slum living we see an increase in crime and racial tensions and, beyond this, whole urban populations are suffering from air, water, and noise pollution. Although it is difficult to measure, many Americans would agree that they have been suffering from decreasing quality in their daily life. Except for a few enclaves, gone is the sense of open spaces, of elbow room. We are surrounded by unpleasant noises and unnatural smells. Visual pollution competes for our wavering attention. Wilderness has shrunk almost to the vanishing point. Wildlife is disappearing. The list of threatened species grows longer every year. Individuality is lost in faceless masses.” (xiv).

The list of grievances is vague, not clearly connected with one another, and ends on a note of social critique seemingly entirely unrelated to environmental degradation. To see all of these seeming issues as related means to attribute a very specific root cause: overpopulation. Accordingly, the text continues: “All of these problems have a factor in common. That common factor is man… When we have

grasped this historical position of ours, when we see our world from the viewpoint of an astronaut limping home from the moon, then one intrinsic question emerges: *How many* of us will Earth adequately support?" (xiv-xv, emphasis in original). The influence of Ehrlich's vision is unmistakable: the issue at bottom is always overpopulation. The statement concludes by explicitly noting the political *work* that the book wishes to do as a literary object:

> "We, of Zero Population Growth, have put this book together with the belief that Americans will act in responsible and wise ways upon their own initiative — if they are enlightened as to their own and their nation's best interests… Some of the stories in this book seem far-fetched; many seem only too frighteningly accurate. But they all deal directly or by analogy with one or more aspects of the population issue. Our purpose is to alert you; to provide material helpful to your visualizing of images of our future world; to cajole you into doing some clear-eyed, hard-headed thinking about your and your children's roles in that future…" (xvi)

As with *Nightmare Age*, the stories collected in *Voyages* are of highly varying quality. Theodore R. Cogswell's *Consumer's Report*, for example, is a witty, if utterly absurd, fantasy of a sort of necessity for Keynesian economic stimulus gone into overdrive, a world in which the primary role of young people is to be "consumers" — of military-grade weaponry, to be used in petty street fights, to ensure that a sufficient percentage of the youth does not survive for into adulthood. The two stories which precede it, by contrast, are eugenic/genocidal scenarios of very little intellectual or literary merit, their crass advocacy for murderous population control written in the worst style of didactic SF.[136]

All of the collected stories are, like those to be found in *Nightmare Ages*, reprints from earlier publications. Seven texts are from the 1950s; two are from 1961; and eight are from the years 1966-1970. As with *Nightmare Age*, then, many of there stories were already a decade old at the time of re-publication.[137] The two collections share no stories,[138] and only a single author (Cyril Kornbluth). We could take this to mean that, as the Ehrlichs' argue in the preface to *Voyages*, "this book is only a

136 Those would be *Population Control, 1986* by Horacio V. Paredes and *The Tunnel Ahead* by Alice Glaser, respectively. The former is set on the macro-scale of heads of state deciding which populations to decimate through phony wars; the latter focuses on the micro-scale of a single family returning from a vacation and having to go through a car tunnel that randomly kills a set percentage of people.

137 We can be more precise: the median story would be J. G. Ballard's *Billennium* or Alice Glaser's *The Tunnel Ahead*, which were both published in November 1961; the average year of publication was also 1961.

138 Though Norman Spinrad's *The Big Flash*, which we have taken note of in our discussion of Walter M. Miller Jr.'s *Beyond Armageddon* above, re-appears in *Voyages*.

small sample of what the genre offers on the subject [of overpopulation]" (ix). More than that, though, much of the fiction in *Voyages* does not actually seem to be about overpopulation, or at least *had not been* about overpopulation until it was put into the context of the collection. Indeed, it seems to me that many of the better stories are dragged down by the overall context of *Voyages*, and especially its editorial commentary, which endlessly repeats its warnings of overpopulation. The foreword, the introductory statement, the "Letter to Those Who See No Threat" that closes the book (pp. 307-310), the editorial commentary that precedes each story, all signal that the fiction which they contextualize can only be about one thing. The commentary that sets the stage to Kit Reed's *The Food Farm*, most flagrantly, begins with an epigraph quoting Paul Ehrlich's *Eco-Catastrophe!*, which we encountered in *Nightmare Age* above (p. 79), and then opines on what needs to be done about overpopulation and food crises for six entire pages, before tersely, almost disinterestedly introducing the short story itself with a single paragraph.

Or consider Pamela Zoline's *The Heat Death of the Universe* (originally published in *New Worlds #173*, July 1967), which *Voyages* includes. The story is usually, and rightfully, read as a classic of feminist SF.[139] In 54 numbered paragraphs (including seven "inserts" which are written in the style of encyclopedia entries on various topics), it details a day in the increasingly chaotic household of housewife Sarah Boyle, who has to prepare a birthday party for one of her children alongside various other household work. The story has no science-fictional "conceit" in the sense of imagining a different world at all. Rather — perhaps more in line with Campbell's notion of SF as marked by the constant generation of analogies — it merely analogizes from the increasing entropy and ultimate heat-death of the universe derived from the laws of thermodynamics to the unfolding psychological breakdown which Sarah Boyle experiences as an overworked housewife, summed up, perhaps, in paragraph 36: "Housework is never completed, the chaos always lurks ready to encroach on any area left unweeded, a jungle filled with dirty pans and the roaring giant stuffed toy animals suddenly turned savage. Terrible glass eyes." The story satirizes various aspects of mid-century America, from marketing campaigns on cereal boxes (paragraphs five to eight) and consumerism more generally (paragraph 37) to the increasing cultural influence of America (paragraph

139 See e.g. Malisa Kurtz (pp. 150-151) in her chapter on post-war SF in *Science Fiction: A Literary History*, ed. Roger Luckhurst, 2017.

12). But primarily the story must surely be read as a feminist excoriation of the expectations of unpaid housework placed on women in the hetero-normative household of mid-century suburban America:

> (21) CLEANING UP THE HOUSE. (THREE.)
>
> Beds made. Vacuuming the hall, a carpet of faded flowers, vines and leaves which endlessly wind and twist into each other in a fevered and permanent ecstasy. Suddenly the vacuum blows instead of sucks, spewing marbles, dolls' eyes, dust, crackers. An old trick. “Oh my god,” says Sarah. The baby yells on cue for attention/changing/food. Sarah kicks the vacuum cleaner and it retches and begins working again.
>
> (22) AT LUNCH ONLY ONE GLASS OF MILK IS SPILLED.
>
> At lunch only one glass of milk is spilled.
>
> (23) The plants need watering, Geranium, Hyacinth, Lavender, Avocado, Cyclamen. Feed the fish, happy fish with china castles and mermaids in the bowl. The turtle looks more and more unwell and is probably dying.

For the editor of *Voyages*, the story can ultimately be only about the consumerist mentality of too large a population. It is introduced by two pages of commentary, which almost entirely, however, focuses on the economist Kenneth Boulding’s work *The Economics of the Coming Spaceship Earth* (1966). Only the last sentence actually references Zoline’s text, calling it a “particularly apt comment on the omnipresence of product” (p. 62). And the omnipresence of product, in turn, can of course only have one cause; by sheer virtue of its venue — a “Zero Population Growth” publication, with a foreword by Anne and Paul Ehrlich, repetitive editorial comments on overpopulation, and next to many other stories that are more or less explicitly about overpopulation and pollution —, Zoline’s *Heat Death of the Universe* feels strangely drained of its feminist perspective, reduced instead to yet another commentary on pollution caused by consumerism.

To conclude with one final example, there is J.G. Ballard’s *Billennium*, originally published in the January 1962 edition of *Amazing Stories* but republished many times since its publication, including in *Voyages.* In the story, 20 billion people roam the earth, the growth rate of the human population having been a continuous three percent since the 1960s — which, based on a population of about three billion at the time of publication, would indeed place the story in the 2020s. (In reality, the two-percent growth rate of the 1960s had fallen off significantly by the

1980s, standing now at roughly one percent; hence our actual world population of eight billion.)

But then, Ballard's story is an over-revved satire, not an attempt to accurately prophesize the future: we learn that an astonishing 95% of humanity live in the cities, that everyone spends their free time looking for new apartments, and that restaurants are a struggle to get to if they are as outrageously far away as "two hundred yards upstream" — upstream, that is, of the permanent crush of people. Fully-realized world-building with consideration given to economy or politics this is not. The government has just decreased the maximum room size from four to three square meters. Rossiter marvels at his friend Ward's room — which, illegally, is too large by half a square meter —, finding it "enormous, the perspectives really zoom" (p. 6). The landlord agrees, demanding a rent increase that Ward cannot cover. Moving into a new room together, Rossiter and Ward eventually stumble upon some hidden additional space behind the wall of their newly acquired cubicle; unlike in C.S. Lewis' *Chronicles of Narnia* or Mark Z. Danielewski's *House of Leaves*, what awaits behind the broken-down wall is not a fully realized fantasy world or a labyrinthine, geometrically impossible space, but rather, simply, a second room, "some fifteen feet square, empty except for the dust silted up against the skirting boards" (p. 15). Rossiter is "staggered by its vastness", and they both find themselves "grasping at the sensation of absolute spatial freedom… [the room's] walls huge cliffs that soared upward to the skylight". They fill the room with furniture that nobody else would want in a world of twenty billion, since it "was heavy and Victorian, the cheapest available". The experience might as well be religious; "an enormous mahogany wardrobe, fitted with carved angels and castellated mirrors" reminds Ward of nothing less than a Gothic cathedral (p. 16).

Yet, inviting at first two friends, then another person, then two more, the room ultimately ends up as crowded as any other; the luxuriously spacious furniture is slowly removed again, piece by piece. The story ends with nothing learned or gained:

> Settling himself, he noticed that the right-hand spire of the wardrobe, all he had been able to see of it for the past two months, was now dismantled.
>
> It had been a beautiful piece of furniture, in a way symbolizing this whole private world, and the salesman at the store told him there were few like it left. For a moment Ward felt a sudden pang of regret, as he had done as a child when his father, in a moment of exasperation, had taken something away from him and he had known he would never see it again.

> Then he pulled himself together. It was a beautiful wardrobe, without doubt, but when it was gone it would make the room seem even larger" (p. 378).

In the context of Ballard's work or the genre of SF as a whole, *Billennium* unfolds as a sharp if unsubtle little satire, in no sense a "prophecy" of the future as Gernsback would have it; the world-building is little more than skeletal, the text instead lingering on personal affects and observations.[140] And if overpopulation was a recurring concern in 1960s SF, it was certainly far from the only kind of story. In the most recent complete short story collection of Ballard, for example, *Billennium* appears between *Mr. F. Is Mr F.*, an altogether more fantastical story about a man who slowly de-ages and ultimately turns into the unborn child that his wife carries to term, and *The Gentle Assassin*, which revolves around a scientist traveling back in time to prevent a would-be royal assassin from inadvertently killing the scientist's partner.[141] All three stories end on the kind of ironic reversal that at times has unfortunately dominated the form of SF short stories; but put together, the three stories also provide evidence of some of the breadth of plots and fictional worlds that the genre can play with. It was not the only story centered around overpopulation by Ballard, to be sure: in its original publication (*New Worlds* issue 112, November 1961), it is introduced by the editor as "[fitting] into the category of city-growth [type of story?] created in his earlier *Manhole 69*, *Build-Up* and *Escapement*. If the world is overcrowded now, try and visualize it as Ballard sees it here" (p. 43). But the two entirely different stories that precede and follow it within the *New Worlds* issue similarly make it clear that *Billennium* is just one visualization of possible worlds among many, many others. Yet in the dour, repetitive context of *Voyages*, Ballard's story ironically loses much of its power, flattened to yet another jeremiad against overpopulation.

* * *

Both *Nightmare Age* and *Voyages* have been largely forgotten. Published in paperback format, *Voyages* was never reprinted while *Nightmare Age* received at most a second printing (in 1971, according to the Internet Speculative Fiction

140 Reading the short story in the midst of the Covid-19 pandemic, it was perhaps through descriptions of claustrophobically full public spaces ("every thoroughfare was always packed with a shuffling mob of pedestrians […] wrestling past each other on their way to home and office", p. 364) that produced the strongest sense of shock.

141 J. G. Ballard: *The Complete Short Stories, Volume One*. Fourth Estate, 2014.

Database; Pohl himself however remembers the book as selling out a single printing after which it "was seen no more").[142] I purchased both books on Amazon Marketplace from online second-hand bookseller accounts, the pages starkly yellowed by the passage of half a century. My copy of *Voyages* bears on its first page the stamp of the "National Conservation Library" of the *Izaak Walton League of America*, an American environmental organization founded originally by fishing enthusiasts in the Midwest. That the library of a conservationist and environmental organization at some point in recent years decided it no longer wished to conserve its copy of what is essentially a piece of overpopulation agitprop is not entirely surprising. The website of the Izaak Walton League today features a great deal of information on climate change, listing among possible climate solutions carbon sequestration "in our soils, grasslands, and wetlands", as well as "improving energy efficiency" and "build[ing] resilience into out ecosystems";[143] overpopulation is not mentioned, having rightfully long since fallen out of favor as an explanation for environmental destruction.

Nor is it entirely surprising that there is no academic scholarship on either book, for several reasons. First, as mentioned in the sections above, both collections merely provide a new context for previously published stories, many of them published more than a decade previously; the better or at least better-known individual stories by authors like Ballard, Zoline, Pohl, and Heinlein *have* received scholarly attention, but usually as part of the lifetime work of their authors, or in discussions of the decades in which they were first published. Second, published in 1970-1971, these titles were published before academic SF studies had really gotten off the ground; most scholarly attention could therefore only be retrospective. And the history of a specifically ecological SF has become the center of academic attention only in the last 15 years or so — I have already mentioned seminal works like Gerry Canavan and Kim Stanley Robinson's *Green Planets* —, largely in the wake of climate change becoming the central challenge of global politics. This leads us to the third reason: much as the library service of the Izaak Walton League of America seems to have had little interest in keeping *Voyages* in its inventory, SF studies has perhaps not had much interest in registering the genre's long history of ecological thinking as something that was not necessarily always praiseworthy. SF

142 Internet Speculative Fiction Database entry on *Nightmare Age*: https://www.isfdb.org/cgi-bin/title.cgi?35062. Pohl quoted in Michael R. Page: *Frederik Pohl*, 2015, p. 107.

143 Online: https://www.iwla.org/soils-agriculture/climate-science-and-solutions#solutions

studies is not special in this regard: in the context of ever-diminishing funding for academia generally and the humanities especially, "eco-critical" approaches in literary studies generally tend to focus on the positive, emancipatory potential of such work. Yet I think that this is an elision of sorts: rather than jubilantly claiming Rachel Carson's *Silent Spring* as an early example of ecological SF, we ought to also grapple with the fact that, in 1970 and 1971, at least some actors within the SF community used the genre to mobilize for a vision of environmentalism that often veered towards the racist, eugenicist, and outright genocidal.

3.4 From Overpopulation to Climate Change: The Many Futures of Ursula K. Le Guin's *The Lathe of Heaven* (1971)

Before I conclude this chapter, let us consider at least one text from the early period of ecological SF which takes seriously the problem of the gap — though it does not "fill it", so to speak: Ursula K. Le Guin's *The Lathe of Heaven* (1971). The novel has not received an enormous amount of attention, being something of an odd outlier in her overall work. Its ostensible thematic focus on shifting realities has led the novel to being read, somewhat dismissively, as derivative of Philip K. Dick; shortly after its publication, Ian Watson diagnosed in one of the earliest issues of *Science Fiction Studies* that the novel seems as if Le Guin had "been becharmed by that master trickster of false reality states, Philip K. Dick".[144] Gawker editor Brandy Jensen, writing a Le Guin-themed "gift guide" some 45 years later, essentially agrees — albeit without the slightly strange, sexist suggestion that Le Guin had been "becharmed" by a male writer —, finding it to be "the Le Guin book most likely to be described as 'like Philip K. Dick.'"[145]

The novel has also perhaps rarely been read for its ecological themes because there are two stories by Le Guin which are "ecological" in nature in a far more direct sense. Both *Vaster than Empires and More Slow* (first published in the story collection *New Dimensions 1*, 1971) and *The Word for World is Forest* (first published in Harlan Ellison's anthology *Again, Dangerous Visions*, 1972) are primarily focused on planetary ecologies. But these stories cannot be too useful for

144 Ian Watson: "Le Guin's Lathe of Heaven and the Role of Dick: The False Reality as Mediator." Science Fiction Studies #5 (Vol. 2, Issue 1, 1975), no page.

145 Online: https://www.gawker.com/culture/12-days-of-gift-guides-ursula-le-guin-le-gift-guide

us: they are in the mold of orthodox ecological SF, constructing an alternative world that is supposed to reflect back on our present without, however, addressing the "gap" between that world and ours. Let me briefly note, however, that even beyond the problem of the gap these texts are of limited usefulness to us precisely because these texts are so clearly "about" ecology: there is nothing much left to interpretation.

The latter text, for example, is set in the "Hainish Cycle" of Le Guin, a set of stories set in the same universe, in which both humanity on earth as well as humans or human-like species across a number of planets were originally planted by the technologically advanced Hainish; the Hainish Cycle includes two of her most well-regarded novels, *The Left Hand of Darkness* (1969) and *The Dispossessed* (1974). Though the stories are almost entirely independent of one another, tending to focus on only one of these multiple human civilizations, there are usually loose background details of these separate planet-wide societies slowly connecting with one another, ultimately forming a loose confederation by the name of Ekumen. Set within this larger context, *The Word for World is Forest* focuses on a military logging colony sent from Earth to the planet of Athshe, ravaging the planet's ecosystem while enslaving the native population of humanoid aliens. One of the strengths of the novella is its anthropologically informed construction of the Athshean society, which can be subtle; however, unlike the fully realized imaginary societies of *The Left Hand of Darkness* and *The Dispossessed*, the Athshean society sometimes reads a little too closely modeled on anthropological studies of Native American societies.

This constitutes a subset of the "problem" that the text has generally: not only its imagined society, but also the imagined situation of a resource colony defined by enslavement and genocide feel too distinctly like mirror worlds of our own past, if not present; the text cannot help but be read as a parable, as didactic. I write the word "problem" in quotation marks because the parabolic nature of the novella does not necessarily diminish its affective impact: read almost as a piece of decolonial propaganda, the text can be powerful in its unadorned retelling of the horrors of genocidal colonialism and enslavement (and the Vietnam war). In a sense, the directness of the story is only an issue for academics wishing to write about it: the text so readily explains itself that there is little left to add in the way of critical commentary.

The *Lathe of Heaven* is more interesting for our purposes in a few ways. The novel exists at a kind of juncture point: published, on the one hand, in between considerably more popular SF titles by Le Guin (her two major SF works from 1969 and 1974 mentioned above); but also situated in time between the ecological concerns about overpopulation and climate change. The former, as we have just seen, loomed large in 1950s and 60s SF, though they were sometimes only recognized as such around 1970, with the kind of retrospective editorializing of *Nightmare Age* and *Voyages*; climate change, of course, would become vastly more prominent in the decades to follow. In *The Lathe of Heaven*'s early twenty-first century Portland, both of these ecological concerns figure side by side. As in Asimov's *The Caves of Steel* (1953) or J. G. Ballard's *Billennium* (1962), overpopulation necessitates highly efficient space usage. The office of psychiatrist Dr. Haber lacks windows, being an "interior Efficiency Suite"; from it, he can "hear doors, typewriters, voices, toilets flushing, in offices all up and down the hall and above him and underneath him … The only solid partitions left were inside the head" (p. 5). But climate change has arrived in the future as well. Rather than having a window, Haber's office features a large photograph of Mount Hood, a photograph that, Haber thinks, must be old indeed: how else could the mountain (actually a volcano) depicted be covered in snow?[146] "The Greenhouse Effect", the reader is informed, "had been quite gradual, and Haber, born in 1962, could clearly remember the blue skies of his childhood. Nowadays the eternal snows were gone from all the world's mountains" (p. 6). The greenhouse effect was well-known by 1971, but a public debate surrounding climate change barely existed; the first World Climate Conference would not follow until 1979, and the Intergovernmental Panel on Climate Change, the IPCC, was not established until 1988. In that sense, Le Guin's novel is an early anomaly among ecological SF, prefiguring the increased focus on climate change that would not happen in environmental thinking at large until somewhat later. Overpopulation, however, seemingly remains the primary ecological focus; if the agoraphobic excesses of Ballard's *Billennium* are avoided, we nevertheless hear that our protagonist, George Orr, doesn't like "riding the subway to work. You keep feeling crowded in on, you said — squeezed, pressed

146 And in reality, the Timberline Lodge atop Mount Hood can indeed boast the longest ski season in the United States.

together. You feel as if you had no elbow room, as if you weren't free" (p. 58). And as in Paul Ehrlich's grave predictions of world hunger, malnourishment has come to America in large scale in the novel; early on, a medic relates to Orr that his number one preoccupation is attempting to requisition "Minimal Protein Rations" for "Basic Support families" (p. 4).

I have noted without comment that the novel, written in 1971, is set in the early 21st century; thus it would seem to not help us in our search for novels that problematize the passage of time from present to future. The central science-fictional conceit of the novel, however, is neither climate change nor overpopulation in the first place. Rather, it is that the aforementioned George Orr every once in a while dreams what he calls "effective" dreams: dreams which change reality itself. Orr dreams, and the world changes, or rather, *retroactively turns out to have always been different*. In other words, we may begin to suspect that the novel is *about* science fiction and historical change itself.

Orr attempts to prevent these dreams from occurring by taking drugs beyond his allotted ration, a crime for which he ends up in mandatory "Voluntary Therapeutic Treatment" — which is to say, he ends up in the office of Dr. Haber, the small-time psychiatrist with the windowless office. Haber, believing Orr to simply be mentally ill, attaches Orr to a science-fictional gadget — called the "augmentor" — and hypnotizes him. Hypnotized and attached to the augmentor, Orr is put into the sleep phase in which he dreams "effective" dreams almost at once, at which point Haber attempts to give his dreams direction. Haber tells Orr to dream of a horse. And indeed he does:

> "And you dreamed. That much I can tell you. Can you tell me the dream?"
>
> "It was about a horse. That one," and he [Orr] waved his hand toward the picture-window-size mural that decorated Haber's office, a photograph of the great racing stallion Tammany Hall at play in a grass paddock. […] "Dr. Haber, does anything about that picture strike you as… as unusual? […] Was it there an hour ago? I mean, wasn't that a view of Mount Hood, when I came in — before I dreamed about the horse?"
>
> Oh Christ it had been Mount Hood the man was right
>
> It had not been Mount Hood it could not have been Mount Hood it was a horse it was a horse
>
> It had been a mountain
>
> A horse it was a horse it was —
>
> He was staring at George Orr, staring blankly at him, several seconds must have passed since Orr's question, he must not be caught out, he must inspire

confidence, he knew the answers.

This passage clearly communicates Haber's shocked realization that Orr does not in fact suffer from delusion; he comes to believe that Orr indeed dreams "effective" dreams. A man of action, a mirror of Orr's pronounced passivity throughout much of the novel — Orr simply wishes to stop having his effective dreams so that he can go about his otherwise unremarkable life —, Haber wants to use Orr's ability to improve the world (alongside his own position in it, turning into a more and more important government scientist throughout the novel); he makes Orr return to his office many times. There, he directs Orr to dream of a world without overpopulation, with better weather, with world peace. But these dreams turn out to be difficult to accurately control. When Haber has Orr dream of a world that is no longer overpopulated, the dream shifts them into a reality in which overpopulation has been "solved" by a plague that has killed six out of seven billion people — the kind of dystopian scenario that appeals to take overpopulation seriously (like, say, those of Paul Ehrlich) were meant to prevent in the first place. When Orr is tasked to dream of world peace, he comes to in a world in which humanity is indeed united — out of fear of an interplanetary threat; aliens have landed on the moon. Asked, finally (by a third character, Heather Lelache), to dream of the aliens leaving the moon, Orr conjures a world in which, with obvious dramatic irony, the extra-terrestrials leave the moon to land on earth. Soon enough it turns out that the aliens have peaceful intentions, but not before a stray rocket of the human planetary defensive system hits the novel's recurring image of the environment in crisis, Mount Hood; the volcano awakens, "[steam] and ground tremors ensued at once, and by noon of the first day of the Alien Invasion, April Fools' Day, a vent had opened on the northwestern side and was in violent eruption. Lava flow set the *snowless*, deforested slopes blazing" (p. 112, emphasis added).

By the end of the novel, Orr lives in a world that has changed many times over. The necessity — whether commercial or out of respect of the classical form of tragedy — of a climax, combined with the structure of the novel being one of many realities in succession, a kind of series in itself, with all the *serial outbidding*[147] this perhaps implies, demands a final dream that dwarfs everything that has come before. Haber's continued research into dreams and into Orr's ability has finally allowed

147 "Serielle Überbietung", as the DFG research group *Ästhetik und Praxis populärer Serialität* has termed it.

Haber to dream "effectively" himself, with ambivalent results for the world and catastrophic effects for himself. Haber being emotionally incapable of the task, the world does not improve so much as it shifts into an amalgamation of many previous realities, Portland turned into a patchwork of mid-sized city and metropolis; "pieces, remnants and commencements of about six different public transportation systems cluttered up the city. Reed College had a subway station, but no subway; the funicular to Washington Park ended at the entrance to a tunnel which went halfway under the Willamette and then stopped" (p. 180). And while previously only Orr and (with difficulty) those present at his effective dreaming sessions could remember the realities left behind, the final dream is remembered by all. The dream itself becomes the final global crisis of the novel, the kind of event that characters in novels give a name: "the inexplicable events of the evening that was now referred to as 'The Break'" (p. 179). Haber is so overwhelmed by his dream that he turns permanently catatonic.

The novel, this much seems obvious, is highly ambivalent about utopian impulses, about world improvement fantasies; be careful what you wish for, in the fashion of a classic wishes-gone-wrong tale, and be careful, it hastens to add, what you dream of. For dreams, it seems, are the wrong mechanism to effect change: "Your own ideas are sane and rational", Orr admonishes Haber at one point, "but this is my unconscious you're trying to use […] You're trying to reach progressive, humanitarian goals with a tool that isn't suited to the job" (p. 85). This can, in part, simply be read as an example Le Guin's life-long engagement with Daoism — reflections on purpose versus purposelessness in the text (p. 81), at least, read similarly enough to the ruminations on a useless tree in the Zhuāngzǐ (庄子), a text with which Le Guin would have been familiar.

But from the perspective taken in this dissertation, what interests me most is that the activity of dreaming here is not to dissimilar from the activity of writing ecological science-fiction itself.[148] The story, then, would not be ambivalent about utopian impulses generally so much as it would be ambivalent about writing specifically utopian or dystopian SF. When Orr wakes up from one of his effective dreams, he does not find himself in a reality that changes, but in one that has long since changed, that, retroactively, has always been different. After Haber directs Orr

148 It is, of course, a common enough topos to relate dreaming with the activity of art-making, as in, quite recently, Christopher Nolan's *Inception* (2010).

to dream of a more important position for himself, he becomes the director of an oneirological research institute, and finds himself in an office with, finally, a window, "looking out east and north over a great sweep of world" (p. 50), his position in society finally having become important enough to warrant a good view of a nature that is nevertheless vanishing. "It was", we hear, "an inspiring view. It *never failed* to inspire Dr. Haber" (p. 51, emphasis mine). This entirely new reality does not feel new, but rather like it had always been this way. "Ever since last Friday", the strange temporal logic reads, "there had been an Institute [for oneirological research] for the last eighteen months" (p. 62). The activity of dreaming here becomes a metaphor for writing dystopias in general; Le Guin is highly aware of the structure of ecological SF. Worlds are invented that are *already* radically different, whose shift in relation to our reality in the world of the novel took place decades ago, or has "always" been the case; ever since last Friday, it has always been this way. And this kind of story, Le Guin may be suggesting, should not be expected — by, say, fans and scholars of ecological SF — to actually "do" any political work. Absent a mechanism of historical and political change, dreaming up futures in which the historical change has already happened will not accomplish much. It is the wrong tool for the job.

The entire problem with Orr's dreams is that dreams, as he puts it early on, "take short cuts" (p. 13), that dreams, originating outside of conscious thought, go in unexpected, difficult to control directions; ultimately, "the dream almost never came out the way Haber had intended" (p. 59). Read in this way, scholars and authors of SF would argue, perhaps, that the genre is well-suited to correct exactly that flaw, as a kind of rational, cognitive literature. But can we not translate the novel's problem of "taking short cuts" precisely into the problem which we have been focusing on all along? The shortcut that science-fictional-thinking indulges in is exactly that of imagining only already-accomplished futures, leaving us with no information on how to move the world from here to there. Dr. Haber, the Frankensteinian figure of the novel (the "mad scientist" who is really "not a mad scientist […] he's a pretty sane one", p. 74), has this very problem: "he didn't like to waste time on means, getting to the desired end was the thing" (p. 19). But absent a reality-altering dream — a science-fictional conceit of strikingly absurd irrealism — how does one ever get to a desired end without wasting time on the means, on exactly that which Fredric Jameson calls the mechanism, that is, politics?

We may note one more thing: like the potential future trajectories of the environmental sciences, and like the short story collections we have considered previously, *The Lathe of Heaven* produces not just a future but a multitude of futures. The text, with its series of realities, can not only be read as an individual exemplar of SF, but also as a miniature of SF as an entire genre, a miniature of SF as a *collection* of alternative realities, strung together by their genre affiliation. Each of the various realities of the novel has the potential to produce, for the characters in the novel that experience the change (first Orr, then also Haber, then Heather Lelache, and finally, with the last dream, the entire world), a kind of science-fictional cognitive estrangement, for they retain what Orr calls a "double memory". They remember both the previous reality and the new one — "do you remember it both ways?", Orr asks Lelache after she is present at one of his dreams for the first time (p. 69). If we read *The Lathe of Heaven* as being about SF as a genre, we can understand these dual memories of two realities as the state of reading SF and comparing its world to our own, non-fictional reality, with the resultant Suvinian cognitive estrangement. Take, for example, the kind of world-building that SF accomplishes through neologisms,[149] where made-up words, natural to the characters of the text (unless there is a fish-out-of-water character, as in e.g. a time travel story) but alien to the reader, jolt her into an awareness of how things could be different. In *The Lathe of Heaven* it is not only the readers but the characters themselves who experience this feeling:

> "Cislunar," Orr said, feeling a little sorry for Haber. "We weren't using that word, when I went to sleep. How are things in Isragypt?"
>
> The made-up word from the old reality had a curiously shocking effect, spoken in this reality: like surrealism, it seemed to make sense and didn't, or seemed not to make sense and did." (p. 84)

Clearly, Le Guin's text is aware of how SF works as a genre. It is a text of (many) already-accomplished futures, but it makes literal the lack of process by which these futures come about. Still, we must take our leave here. We will have to wait until the last chapter to read a text in which the gap between present and future is, in fact, filled.

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149 Neologisms are one of the "seven beauties" of the genre identified by Istvan Csicsery-Ronay's *The Seven Beauties of Science Fiction* (2008) mentioned in our discussion of genre above.

4. Refusal of the Apocalypse: William Gibson's Cyberpunk at the End of History

4.1 What Was Cyberpunk? Science-Fiction at the End of History

In the course of our investigation into SF that is in some way ecological or environmental, the concept of "history" has turned out to be central. Environmental change, including environmental destruction, is like all change something that happens over time, and the environmental sciences are, as we have seen earlier, constitutively oriented towards the future. This has presented us with a problem: while SF as a literary genre in principle has a certain kind of privileged access towards history, its future-scenarios turning our present time into the history of a future yet to come, in practice it has turned out to largely elide the question of historical change. The genre itself functions as a time machine, transporting us into the already-changed future in an instant, leaving the slow movements of history that have led to this future a mystery. Kim Stanley Robinson's SF is somewhat of an exception to this: his most recent *The Ministry for the Future* (2020), in particular, is avowedly about the passage of history between our present and a potential climate future. Before we move to Robinson in the next chapter, though, I want to suggest that we can use our framework developed so far to reconsider the work of an author working in a very different subgenre.

William Gibson is perhaps the most important writer associated with the subgenre of cyberpunk. Neither the genre nor Gibson have so far been extensively read from an ecological lens: Gibson's work, like much of the genre, seems decidedly un-ecological, disinterested in nature and its relation with people and societies.[150] In what follows, I would like to argue two things. First, that Gibson is in fact not only un- or a-ecological, but rather in a sense actively anti-ecological: in other words, environmental questions are not only orthogonal to Gibson's cyberpunk but in active tension with it. Second, that this is precisely so because Gibson's work, and the genre associated with him, were visions of a future written at a time when, in the infamous words of Francis Fukuyama, history itself had appeared to have ended.

150 Even Veronica Hollinger's entry on "Ecology in the Anthropocene" in the *Routledge Companion to Cyberpunk Culture* (2020, edited by Anna McFarlane et al.) ultimately only confirms this diagnosis.

From the vantage point of this "end of history", both large-scale environmental crisis and in fact the very core of SF — the creation of future worlds — were becoming difficult to imagine. Indeed, in following Gibson's trajectory as a writer from the early 1980s to the early 2000s, we can discern something like a diminishing ability to write SF at all: as the perceived possibility of producing history recedes, SF is increasingly caught in the present, unable to imagine futures in a strong sense.

Let us begin with some preparatory work. What is cyberpunk? Or perhaps: when was cyberpunk? In line with our chapter on SF as a whole, we ought to think of cyberpunk as a subgenre both in historical as well as in theoretical terms. The term has been used to describe texts with only partial resemblance, and there accordingly multiple histories of the genre, and multiple theoretical hinges. Let us get an idea of what cyberpunk was, and then see how the work of Gibson fit into it — and what has made it so anti-ecological.

At its simplest and most tautological, cyberpunk can perhaps be defined by the texts which are called cyberpunk. Besides the work of William Gibson, authors associated with cyberpunk, especially in the 1980s, would include Pat Cadigan, Rudy Rucker, Neal Stephenson, and Bruce Sterling. These authors, notably, were largely known for novels, not for short stories, if in part only because the genre as a whole moved towards the novel.[151] Certain works by New Wave authors from the 1960s and 1970s, such as stories by Philip K. Dick (*Do Androids Dream of Electric Sheep?*, 1968), John Brunner (*The Shockwave Rider*, 1975) , or Samuel R. Delany (*Nova*, 1968) were seen as important precursors. Among visual media, the most important cyberpunk works would be the film *Blade Runner* (1982), the manga and anime *Akira* (manga 1982-1990, anime 1988) and *Ghost in the Shell* (manga 1989-1990, anime 1995), and, much later, the video game *Deus Ex* (2000). The major blockbuster video game *Cyberpunk 2077* from 2020 is the most recent high profile continuation of the subgenre, though in truth it seems to add fairly little novelty into the cyberpunk-formula, instead reading primarily as nostalgic for the subgenre.

Based on the aforementioned texts, we can already make out a few tendencies of cyberpunk. The visual media lets us hone in on the predominant setting and associated visual language: unending metropolitan cityscapes, often at night, bathed in the unnatural light of neon. Extrapolating from real-life urbanization trends (which have indeed continued to this day),[152] the world of cyberpunk has been a

151 As Sherryl Vint notes in her literary history of the period, p. 182. Sherryl Vint: *From the New Wave into the Twenty-First Century*, in: Roger Luckhurst (editor): *Science Fiction: A Literary History*, 2017, pp. 181-207.

152 By one measure — what counts as an urban space is notoriously contested — The rural

world of cities. In *Deus Ex*, the player moves from New York to Hong Kong to Paris — visiting each of the cities, however, only at night. *Cyberpunk 2077* is literally set in "Night City". And then there is, of course, *Blade Runner*'s Los Angeles of the year 2019, another city exclusively seen at night, a background texture defined by unending skyscrapers, flickering lights of apartment windows interspersed with giant Pan Am and Coca-Cola advertisements, these billboards too made of pure light. William Gibson, watching the film while writing *Neuromancer*, was worried that he would be seen as "[copping] my visual texture from this astonishingly fine-looking film."[153]

This inordinate focus on the city gives us a hint as to the relation between cyberpunk and nature, or its lack thereof: the latter has simply vanished, ceased to be an object of concern. Where someone like Isaac Asimov in his visions of overpopulated cityscapes, like in *The Caves of Steel*, would find it relevant to mention either the enormous hinterlands or the technological/magical solutions that feed these spaces, in cyberpunk they are no longer worth mentioning. Nor do these texts seem overly concerned with the ecology of the city itself, in the way that some innovative works of the environmental humanities are.[154] We will see this lack of any nature whatsoever in William Gibson's work as well.

The explosion of cyberpunk to some degree coincided with what is commonly identified as a new era in American and global capitalism.[155] The previous economic order — in the United States defined by the New Deal institutions and rules in place since the presidency of President Franklin Roosevelt — began to be come undone with the termination of the Bretton Woods monetary system in 1971 and the oil crises of the 1970s. The new order of capitalism emergent from the 1970s and 1980s onwards has most often been referred to as neoliberalism, defined by economic policies of privatization, deregulation, and increasingly globalized free or low-tariff trade across the world; corporations would become vastly more international, their supply-chains longer, their tax responsibilities in any given zone of administration

population has increased from two billion to 3.4 billion between 1960 and 2020, while the urban population has increased from one billion to an astonishing 4.4 billion in the same time. According to a variant definition by the European Commission, fully 85% of people live in urban areas. Data from: https://ourworldindata.org/urbanization

153 Blogpost by William Gibson, 2003: https://web.archive.org/web/20070926221513/http://www.williamgibsonbooks.com/blog/2003_01_01_archive.asp#90199532

154 I am thinking here of something like William Cronon's *Nature's Metropolis* (1992) or, even more relevantly *The Infrastructural City: Networked Ecologies in Los Angeles* (2008), edited by Kazys Varnelis, an excellent work on the kind of ecological systems that continue to exist in cities.

155 One of the best accounts of this history is Jonathan Levy's *Ages of American Capitalism*, 2021. See especially pp. 516-583 on the crisis on the 1970s, and pp. 587-632 on the new economic order that would follow.

lesser. While the sense of a "deindustrialization" hitting the West and in particular the United States is sometimes overblown,[156] it is true that certain regions in the United States (most famously Detroit, the former car production capital of the country) collectively referred to as the rust belt suffered from mass factory closures; as Jonathan Levy relates, a new "logic of valuation" among capitalists led to a "purge of fixed capital stock" (that is, already-existing machinery and factories) and disinvestment in certain kinds of factory production.[157] Instead, financial investment and the holding of appreciating assets was becoming critical, culminating in the rise of western tech companies like Apple or Microsoft,[158] whose principal assets were intellectual property either in non-physical goods (Microsoft) or in physical goods (smart phones and computers) whose direct production costs, outsourced to various countries in Asia, would matter less than the costs of research and development. This focus on (often intangible) assets extended beyond the realm of tech companies.[159] Related to the end of Bretton Woods and (relative) deindustralization, the United States balance of trade permanently flipped from surplus to deficit towards the end of the 1970s, the country from that point onwards importing more (as measured in dollar values) than it exported; high household consumption of imported goods from the rest of the world was increasingly financed by debt rather than by concomitant exports, for fairly complex reasons related to how the US dollar itself has operated as a highly desirable commodity.[160]

De-industrialization — in its modest "real" and in its more severe "felt" dimensions — was accompanied by both fascination with and (often xenophobic) fear of "the East", specifically Japan, which had grown prodigiously since the end of

156 On just how acute deindustrialization was or was not in the United States, see e.g. Ha-Joon Chang: *Economics: The User's Guide*, 2014, pp. 259-266.

157 Jonathan Levy: *Ages of American Capitalism*, 2021, p. 589.

158 At the time of this writing (June 05, 2023), the market capitalization of Apple (APPL) and Microsoft (MSFT) alone makes up almost 15% of the entire S&P 500, composed of 500 companies.

159 See for example Brett Christophers: *Rentier Capitalism*, 2020, who besides intellectual property rights also considers the finance sector, ownership of natural resources, ownership of digital platforms, ownership of infrastructure, and land ownership. Each of these activities is profitable not by virtue of "producing" anything so much as by limiting access to an owned asset. Almost every company that makes up a significant component of the S&P 500 is engaged in one or multiple of these activities defined by control over an asset: Apple and Microsoft are followed by Amazon (platform), Nvidia (intellectual property), Google (platform), Meta (platform), Berkshire Hathaway (finance and real estate), Tesla (intellectual property plus regulatory arbitrage), UnitedHealth Group (infrastructure), ExxonMobil (natural resources), Johnson& Johnson (intellectual property), JPMorgan Chase (finance), and Visa (platform or infrastructure).

160 For some state of the art discussion of the topic, see various articles in Phenomenal World, e.g. https://www.phenomenalworld.org/analysis/the-class-politics-of-the-dollar-system/; https://www.phenomenalworld.org/analysis/dollar-and-empire/; and https://www.phenomenalworld.org/analysis/the-dollar-and-climate/

For an easily understandable overview, see Yanis Varoufakis' *The Global Minotaur*, 2011 and more recently Michael Pettis and Matt Klein: *Trade Wars are Class Wars*, 2020.

World War II and from which large amounts of consumer goods increasingly emanated towards the United States. As growth within Japan slowed down, enormous amounts of Japanese money made their way to America as well, buying up companies and land, especially on the pacific coast — Hawaii and California — but also in New York. Not incidentally it was during this time that Donald Trump, then still a real estate developer decades removed from his xenophobic tenure as president of the United States, would come to permanently assume that other countries (then Japan; later, China) were taking advantage of the United States.[161] Along similar lines, it was also not incidental that the 1988 film *Die Hard* had Bruce Willis fight through a high-rise building named *Nakatomi Plaza* — "an emblem of the then widely stoked fear that Japanese high-tech businesses were threatening to dominate the American economy", as film critic Richard Brody puts it.[162]

All the same, fears of Japanese domination were overblown; its (PPP-adjusted) gross domestic product crested in 1991, at 9.14% of world GDP, and decreased steadily from there.[163] As alluded to above, growth through productivity increases gave way to asset inflation not only in America but also in Japan — hence the increasing influx of Japanese money rather than Japanese consumer goods into America —, where a massive bubble in land and stock prices grew in the latter half of the 1980s. At its height, famously, the ground on which the Tokyo Imperial Palace rests, roughly a square kilometer in extent, was estimated to be worth as much as entire land in the state of California.[164] When the bubble burst, Japan experienced a long economic slump, what is today called the lost decade or even, pluralized, the lost decades.

If the perceived "threat" of Japan waned, the phenomenon of "globalization" continued apace. To give but one measure of the increasingly globalized nature of the economy, the value of internationally exported goods as share of total GDP rose from 9.07% to an erstwhile high of 16.61% between 1970 and 1980, where it roughly remained until 1993 (14.81%), before rapidly rising further, reaching 19.68% at the turn of the millennium and cresting with the great financial crisis of 2008, at which point it stood at 26.23%. Beyond the sheer value of international trade, as Levy relates, organizations and laws became more transnational as well:

161 See https://www.wsj.com/articles/trump-forged-his-ideas-on-trade-in-the-1980sand-never-deviated-1542304508

162 See https://www.newyorker.com/culture/richard-brody/i-watched-die-hard-for-the-first-time

163 Data: IMF https://www.imf.org/external/datamapper/PPPSH@WEO/JPN?zoom=JPN&highlight=JPN

164 See https://www.lrb.co.uk/the-paper/v42/n06/richard-lloyd-parry/akihito-and-the-sorrows-of-japan

"new forms of private 'global governance' emerged, in lieu of state regulation"; "sharing much in common with one another, global cities appeared to detach from their national locations"; and, more than anything, "the growth of 'financial openness' vastly outpaced the growth of 'trade openness.' That is, movements of hot money, often speculative — in the form of financial investments in foreign currencies, stocks, debts, and derivatives — expanded at a rate disproportionate to the needs of fixed investment or trade"; it did so, of course, increasingly at the speed of light thanks to the spread of digital technologies — especially the internet.[165] The internet, cyberspace, would be one of the primary technologies which the subgenre thought about; indeed, the term "cyberspace" was popularized by Gibson's *Neuromancer*.

Let me add one more piece of context before we turn to the work of William Gibson. These political-economic developments, coupled with the demise of the Soviet Union in the early 1990s, also gave credence to the infamous thesis of Francis Fukuyama that History itself had ended; History with a capitalized, Hegelian 'H', "understood as a single, coherent, evolutionary process."[166] For Fukuyama, countries "undergoing economic modernization" would become more uniform, more liberal democratic, more linked through the market, and more capitalist, and they would, small perturbations (small-h history) notwithstanding, remain so. The evolution of political forms had reached its zenith, liberal democracy at serious risk only of possibly being unable to give people what they truly strive for: recognition, the striving for which Fukuyama called, in a nod to Plato, "thymos".[167] This summation could be accused of simplifying Fukuyama's argument too much, an accusation which often hinges on the question of just how optimistic or pessimistic one assumes Fukuyama meant this vision to be. However much pessimism is to be found in Fukuyama's account, however, it is largely based on the assumption that liberal democracy at the end of history might fail only insofar as it would leave unfulfilled a deep philosophical or anthropological constant — a human need for "thymos". But politically, nothing would dislodge liberal free-market democracy. Global conflict like the cold war seemed to have become almost impossible. While Fukuyama's initial article (entitled *The End of History?*) in *The National Interest* (1989) preceded the collapse of the Soviet Union, the most sustained version of his argument from 1992 (*The End of History and the Last Man*) devoted the early chapters to the

165 All quotes Jonathan Levy: Ages of American Capitalism, 2021, pp. 661-662.
166 Francis Fukuyama: *The End of History*, 1992, p. xii.
167 Francis Fukuyama: *The End of History*, 1992, p. xiv-xv.

question of international and geopolitics, finding that "strong" authoritarian states will almost inevitably lose out in the global race for prosperity. What replaces capital-H history and grand, "macro-"politics? Perhaps a turn towards the micro-politics of the individual body: in 2002, Francis Fukuyama would turn his attention towards biotechnology and post-humanism[168] — one of the two "future-tech" focal points of cyberpunk, along with the internet.

In his sweeping, and not altogether unappreciative, essay on end of history theses from Hegel to Fukuyama, Perry Anderson notes that Fukyama's slippery use of the term thymos limits the extent to which we can evaluate the thesis at all, the concept appearing both as "the engine of democracy" and simultaneously as "the ambition for supremacy".[169] More important for our purposes, though, Anderson argues (in 1992!) that the supposed extension of first world wealth to the rest of the world which liberal democracy promises would probably run up against ecological limits — and that positional goods, which we are today in the habit of producing above all else, are *defined* by generating inequality, making their extension to everyone impossible by definition.[170] Indeed, if liberal free market democracies have so far failed to meaningfully address the climate crisis, ecology may soon turn out to "resume" history, in the sense of new political forms dislodging liberal democracy in the long term.[171] The supposed end of global geopolitics was punctured, if not earlier, then by the war in Ukraine that Russia began in 2014 and fully unleashed in 2022.[172] Then there was Fukuyama's sense that the "weakness" of strong authoritarian states would be shown clearly with regard to the People's Republic of China (p. 34), a prediction utterly at odds with the geopolitical and economic rise of the country: while China's share of global GDP in 1992 stood at 4.38%, thirty years

168 Francis Fukuyama: *Our Posthuman Future: Consequences of the Biotechnology Revolution*, 2002.

169 Perry Anderson: *The Ends of History*, p. 346. In Perry Anderson: *A Zone of Engagement*, 1992, pp. 279-376.

170 Perry Anderson: *The Ends of History*, p. 352. The term positional goods was coined by Fred Hirsch; for an analysis which treats much of our productive capacities today as being in the service of producing positional goods (or "sign value"), see especially the early works of Jean Baudrillard — works through which Baudrillard ultimately broke with classical Marxism.

171 See for example Geoff Mann's and Joel Wainwright's *Climate Leviathan*, 2018. Notably, it is not only a successful defense of the ecosphere that would in all likelihood necessitate a different political order, either in the form of a democratic ecosocialism (which Mann and Wainwright, under the moniker of "climate X", define only vaguely) or of a more authoritarian "climate Maoism". Should the 1.5 °C, let alone the 2 °C climate targets be breached, resulting in hundreds of millions of climate refugees fleeing areas that have become utterly uninhabitable, fascist closed-border states would quite possibly displace liberal democracy wherever the climate remains livable. As such, the climate crisis may well be the end of the end of history whether it is resolved or not.

172 See Adam Tooze, *War at the End of History*: https://www.newstatesman.com/ideas/2022/04/war-at-the-end-of-history

later this had increased to more than 18%.[173] While these changes have come in tandem with the country becoming unambiguously capitalist, China is certainly anything but a liberal democracy today. In the United States, meanwhile, the period of macro-economic stability from the 1980s onwards, described by economists as "the Great Moderation", came to an end with the devastating financial crash of 2008.

Fukuyama's thesis has lost much of its appeal today, and was controversial even at the time of publication. But the sense that "history had ended" did seem pervasive, if not to the 1990s and early 2000s as such, then at least to a certain kind of person: to the rich western middle and upper classes, to elites who would become increasingly "technocratic", assuming politics was becoming less and less about large-scale ideological disagreement and more about small improvements in the efficiency of governance. And while Fukuyama's thesis was clearly centrist-conservative in its outlook, one can identify leftist versions of the same sense of an end of history: Jean Baudrillard's work from the later 1980s onwards, for one, was suffused by a similar sense, though in a more definitively melancholic register.[174] Or consider the famous dictum, traveling from Fredric Jameson to Slavoj Žižek and Mark Fisher, that it may be easier to imagine the end of the world than the end of capitalism. The phrase originates in Jameson's 1994 *The Seeds of Time*, which he explicitly opens with reference to the end of history thesis, seeming to take it seriously intellectually even if he ultimately disagrees with it:

> Even after the "end of history," there has seemed to persist some historical curiosity of a generally systemic — rather than merely anecdotal — kind: not merely to know what will happen next, but as a more general anxiety about the larger fate or destiny of our system or mode of production as such — about which individual experience (of a postmodern kind) tells us that it must be eternal, while our intelligence suggests this feeling to be most improbable indeed, without coming up with plausible scenarios as to its disintegration or replacement. It seems to be easier for us today to imagine the thoroughgoing deterioration of the earth and of nature than the breakdown of late capitalism; perhaps that is due to some weakness in our imaginations. (pp. xi-xii)

As with Perry Anderson, it seems notable that Jameson, at least here, immediately hones in on the question of ecological destruction: the "thoroughgoing deterioration of the earth and of nature" will, *in the long run*, surely resume history in one way or another.

173 Data from https://www.statista.com/statistics/270439/chinas-share-of-global-gross-domestic-product-gdp/

174 See for example *The Gulf War did Not Take Place*, 1995, and, in direct if oblique reference to Fukuyama, *The Illusion of The End*, 1994. I am also reasonably certain that I have read an interview with Baudrillard in which he directly argues that he "basically agrees" with Fukuyama, only more pessimistically; however, I am no longer able to find the publication.

Jameson's phrase, repeated in his 2003 New Left Review text *Future City*,[175] has become somewhat of a catchphrase. Mark Fisher's work on "capitalist realism" in particular is heavily indebted to it, quoting it at the outset of *Capitalist Realism: Is There No Alternative?* (2009), though he oddly does not cite either of Jameson's two texts, or any other particular text, instead merely noting that "it has been" attributed to both Jameson and to Slavoj Žižek:

> Watching *Children of Men*, we are inevitably reminded of the phrase attributed to Fredric Jameson and Slavoj Žižek, that it is easier to imagine the end of the world than it is to imagine the end of capitalism. That slogan captures precisely what I mean by 'capitalist realism': the widespread sense that not only is capitalism the only viable political and economic system, but also that it is now impossible even to imagine a coherent alternative to it. Once, dystopian films and novels were exercises in such acts of imagination—the disasters they depicted acting as narrative pretext for the emergence of different ways of living. Not so in *Children of Men*. The world that it projects seems more like an extrapolation or exacerbation of ours than an alternative to it. (p. 1)

I do not wish to dwell on Fisher's work; but it seems reasonable to call this, to some degree, a — now far more pessimistic — leftist version of Fukuyama's end of history (whom he explicitly mentions, pp. 6-7): capitalist liberal democracy having won so decisively that we cannot even imagine an alternative. Fisher explicates this sense with reference to science fiction and dystopian fiction: even these genres, which are supposed to be in the business of imagining different worlds, can no longer do so any more. For example, Fisher argues that Alfonso Cuarón's *Children of Men* (2006) represents no radically different future but rather simply our present, only a little shittier: "The catastrophe in *Children of Men* is neither waiting down the road, nor has it already happened. Rather, it is being lived through. There is no punctual moment of disaster; the world doesn't end with a bang, it winks out, unravels, gradually falls apart" (p. 2). This is anecdotal evidence in the extreme, of course, the (not necessarily unconvincing) reading of a single movie here only meant to sketch the sense of "capitalist realism" that Fisher trusted his reader would have intuitively felt already. From the widely derided *The Day After Tomorrow* (2004) to more well-regarded films like *Wall-E* (2008), *Snowpiercer* (2013), or *Mad Max: Fury Road* (2015) one could bring to bear a number of counter-examples in which dystopian futures are still the result of cataclysmic (environmental!) breakdowns rather than of an almost imperceptible winding down. Then again, these films would certainly seem to confirm Jameson's diagnosis: it is easier to imagine the end of the world than the end of capitalism.[176]

175 Online: https://newleftreview.org/issues/ii21/articles/fredric-jameson-future-city

176 Of course, there might be good reasons for that: why would we expect world-ending disaster

4.2 Hard Evidence of the Human Near-Dystopia: *The Gernsback Continuum* (1981)

But more than enough has been done to historicize Gibson's cyberpunk. Let us now turn to his actual work, to reaffirm old findings and, hopefully, to make one or two new ones. As we will see throughout — and as has been argued many times before —, Gibson's work is suffused by this sense of a new capitalist regime: neoliberal and globalized, the United States de-industrialized, futuristic bio-tech and communications technology coming from Japan or, failing that, from private, transnational mega-corporations. To my knowledge, however, Gibson has rarely been explicitly read in relation to Fukuyama's end of history thesis.[177] I want to suggest that the trajectory of Gibson's fiction, from his earliest short stories in the 1980s to his 2010 novel *Zero History*, is in fact the trajectory of a science fiction that, written at what seemed like the end of history, was increasingly unable to imagine radically different futures at all, and hence lost one of the essential ingredients of the genre — and became, ultimately something other than science fiction.

To make this argument, I will look at three groups of texts by Gibson: first, his 1981 short story *The Gernsback Continuum*, originally published in *Universe 11* and republished in the 1986 collection *Burning Chrome*, from which we will also consider Bruce Sterling's preface. The short story and Sterling's preface give a clear indication of how Gibson (and Sterling, who proselytized cyberpunk like no one else) wished to set himself apart from previously existing cyberpunk. Second, I will then consider most of his first nine single-authored novels, grouped into three trilogies: the Sprawl trilogy (*Neuromancer*, 1984; *Count Zero*, 1986; and *Mona Lisa Overdrive*, 1988), the Bridge trilogy (*Virtual Light*, 1993; *Idoru*, 1996; and *All Tomorrow's Parties*, 1999), and the Blue Ant trilogy (*Pattern Recognition*, 2003; *Spook Country*, 2007; and *Zero History*, 2010). This is clearly an enormous corpus,

to be difficult to imagine? And, conversely, considering the nebulous nature of the term "capitalism", whose definition varies enormously not only across intellectual camps but even within them, why would we expect to have a clear sense of what capitalism "ending" would entail? As McKenzie Wark has argued, by certain definitions we must surely entertain the notion that capitalism has, indeed, already ended. See Colin Drumm: *How Wearisome Eternity: Review of Capital is Dead by McKenzie Wark*: https://cosmonaut.blog/2019/10/29/how-wearisome-eternity-a-review-of-capital-is-dead-by-mckenzie-wark/

177 An exception is Elana Gomel, "Recycled Dystopias: Cyberpunk and the End of History." *Arts*, vol. 7, no. 3, July 2018.

but we will concentrate on the twin questions of what has remained invariant about Gibson's vision of the near future, and what has changed, conversely, across these 26 years, with regard to the imagination of the environment and historical change. What will become visible, I argue, is that Gibson's work is one that remained broadly similar in its technological outlook and general sense of the future, with the effect that the real world was increasingly "catching up" with the imagined futures of Gibson, until, ultimately, something like a present-day thriller remained with the appropriately titled *Zero History*. One filmic adaptation of Gibson's work prefigures this move towards the present: Abel Ferrara's 1998 film *New Rose Hotel*, an adaptation of Gibson's 1984 short story of the same name. Noting that the film adapts the story — set in the same universe as *Neuromancer* — to the screen strikingly faithfully and yet essentially does not register as science fiction at all, I find it to encapsulate well how Gibson's visions of the future ceased, with time, to be futuristic. Finally, I will close this chapter by considering how Gibson's most recent, unfinished trilogy has "returned" to the future precisely because it, unlike any of his previous work, is trying to be about climate change.

I should note at the outset that this is, perhaps, in many ways the most "traditional" SF studies portion of this dissertation. Still, it is not my goal to "mine" Gibson's texts for insight into our (neoliberal, postmodern, globalized, end of history-ized…) "condition", as has been done so frequently. Rather, in more or less confirming the validity of such previous analyses, I want to argue that Gibson has ultimately reached the "zero history" point of a science fiction that refuses to take seriously ecological and environmental degradation.

The Gernsback Continuum (collected, along with all of the other short stories that Gibson largely ceased to write after his first novels, in *Burning Chrome*) is one of Gibson's earliest publications; *Fragments of a Hologram Rose* precedes it by four years, while *Johnny Mnemonic*, *The Belonging Kind* (co-written with John Shirley), and *Hinterlands* were all published in 1981, the same year as *The Gernsback Continuum*. In some ways the story is fairly atypical of what came to define Gibson's cyberpunk: there is not yet a vision of the Internet, or of an information society more generally. There is, indeed, no science-fictional conceit as such at all, in the sense of a futuristic technology or societal development. The story is nevertheless an important short story in the canon of SF insofar as it is — as the title suggests — *about* the genre. It is in fact a sort of statement of intent: here is what SF should be like instead of what it has been like so far. It *performs* a new direction for

the genre. It has, accordingly, received more scholarly attention than almost all other short stories by Gibson.

The story follows an unnamed American freelancer photographer who is tasked by "noted pop-art historian" Dialta Downes to take photos for an "illustrated history of what she called 'American Streamlined' Moderne.' Cohen called it 'raygun Gothic.' Their working title was The Airstream Futuropolis: The Tomorrow That Never Was" (p. 29). Downes' interest lies, essentially, in visions of the future that never came to pass:

> At first I wasn't sure what she was talking about, but gradually it began to dawn on me. I found myself remembering Sunday morning television in the Fifties.
>
> Sometimes they'd run old eroded newsreels as filler on the local station. You'd sit there with a peanut butter sandwich and a glass of milk, and a static-ridden Hollywood baritone would tell you that there was A Flying Car in Your Future. And three Detroit engineers would putter around with this big old Nash with wings, and you'd see it rumbling furiously down some deserted Michigan runway. You never actually saw it take off, but it flew away to Dialta Downes's never-never land, true home of a generation of completely uninhibited technophiles. She was talking about those odds and ends of futuristic Thirties and Forties architecture you pass daily in American cities without noticing: the movie marquees ribbed to radiate some mysterious energy, the dime stores faced with fluted aluminum, the chrome-tube chairs gathering dust in the lobbies of transient hotels. She saw these things as segments of a dreamworld, abandoned in the uncaring present; she wanted me to photograph them for her. (pp. 29-30)

During his assignment, the protagonist becomes increasingly taken by these past visions of the future, eventually hallucinating. First, he sees a kind of retro-futuristic airship: "And one day, on the outskirts of Bolinas… I penetrated a fine membrane, a membrane of probability… And looked up to see a twelve-engined thing like a bloated boomerang, all wing, thrumming its way east with an elephantine grace, so low that I could count the rivets in its dull silver skin, and hear — maybe — the echo of jazz" (p. 33); later, he hallucinates a heterosexual couple ingesting "food pills":

> "They were the children of Dialta Downes's '80-that-wasn't; they were Heirs to the Dream. They were white, blond, and they probably had blue eyes. They were American. Dialta had said that the Future had come to America first, but had finally passed it by. But not here, in the heart of the Dream. Here, we'd gone on and on, in a dream logic that knew nothing of pollution, the finite bounds of fossil fuel, or foreign wars it was possible to lose… 'John,' I heard the woman say, 'we've forgotten to take our food pills'. She clicked two bright wafers from a thing on her belt and passed one to him. I backed onto the highway and headed for Los Angeles, wincing and shaking my head." (p. 38)

The protagonist talks to a friend, "Merv Kihn, a freelance journalist with an extensive line in Texas pterodactyls, redneck UFO contactees, bush-league Loch

Ness Monsters, and the Top Ten conspiracy theories in the loonier reaches of the American mass mind" (p. 33). Kihn suggests that he saw a "semiotic ghost", a kind of detritus of our collective pop culture, "bits of deep cultural imagery that have split off and taken on a life of their own" (p. 35); in this case, they just happen to be semiotic ghosts not of contemporary pop culture but of a time past. Kihn recommends immersing himself in contemporary culture; "Watch lots of television, particularly game shows and soaps. Go to porn movies… really bad media can exorcise your semiotic ghosts" (p. 39). And the "cure" works: at the end of the story, the protagonist "spotted a flying wing over Castro Street, but there was something tenuous about it, as though it were only half there. I rushed into the nearest newsstand and gathered up as much as I could on the petroleum crisis and the nuclear energy hazard" (p. 40).

There is, then, perhaps something slightly paranormal at the core of the story, but not exactly anything science-fictional. Yet it is equally clear that the story grapples with science fiction *as a pop-cultural genre*; and especially with the science fiction of a certain past era. Gibson does so, to begin with, by creating a connection between Gernsbackian SF of the 1920s with other artistic, especially architectural trends of roughly the same time. There is a curious sense of falsely fictionalizing something real when Gibson implies that it is Dialta Downes who "called [it] 'American Streamlined Moderne'", as though there was no *actual* architectural movement called (by everyone, not just Gibson's character) Streamline Moderne, a 1930s Art Deco off-shoot. The examples in the text are unambiguous references to real buildings, from Frank Lloyd Wright's Johnson Wax headquarters (1936-1939, Racine, Wisconsin) and the "winged statues that guard the Hoover Dam, forty-food concrete hood ornaments leaning steadfastly into an imaginary hurricane" (p. 30) to the "Coca-Cola plants like beached submarines, and fifth-run movie houses like the temples of some lost sect that had worshipped blue mirrors and geometry" (p. 32). The referenced Coca-Cola plant, for example, is specifically the Los Angeles Coca-Cola factory, built in 1936, designed by Robert V. Derrah; cinemas simply happen to be some of the better-preserved Streamline Moderne buildings, such as the Arcata Theater (now Arcata Theater Lounge) in Humboldt County or the Angels 6 Theater in Angels Camp, both in California.[178]

What are we to make of this juxtaposition between Gernsbackian SF and Streamline Moderne? To some degree, it doesn't work: as mentioned previously,

178 For a thorough list, see https://cinematreasures.org/styles/3

Gernsback's sense of science being advanced by lone genius inventors was already out of date at the time of publication, science having had become a pursuit of government labs and in-firm research and development teams. And consider especially the "winged statues" of Hoover Dam, the *Winged Figures of the Republic* created by sculptor Oskar J.W. Hansen. Hoover Dam, though it had been in planning in some form since the 1920s, was, though only half a decade removed from the first *Amazing Stories* issue, essentially of an entirely different era and ideology than the techno-utopian visions of Gernsback — having been constructed in the 1930s during the Great Depression. Gibson's narrator has these winged angels face an "imaginary hurricane" of a future that never came to pass, but we might say equally that they were designed to face the past, to soothe the enormous anxieties of the Great Depression. The construction was partially funded by Roosevelt's *Public Works Administration* (PWA) program, and the connection is significant: so much construction funded by the PWA and the *Works Progress Administration* (WPA) was in the rough style of Art Deco or Streamline Moderne that the architectural label "WPA Moderne" emerged.[179] This sort of Streamline Moderne project was no purely utopian vision of the future: it was part of a massive government program to lessen economic devastation. On the other hand, perhaps one cannot fault Gibson for the perception of both Gernsback's SF and of some of these architectural projects as fascist ("When I isolated a few of the factory buildings on the ground glass of the Hasselblad, they came across with a kind of sinister totalitarian dignity, like the stadiums Albert Speer built for Hitler", p. 31). A memorial at Hoover Dam, also designed by Hansen, which depicts the upper half of a nude male body as enormously muscled and toned as those of the angel statues, is dedicated to the roughly one hundred workers who died constructing the dam, along with the inscription "They died to make the desert bloom." Like the 1920s visions of the future that haunt *The Gernsback Continuum*'s protagonist, this sort of quasi-celebration of death may perhaps indeed be said to have "all the sinister fruitiness of Hitler Youth propaganda" (p. 38).

Then, too, the story is is obsessed with surfaces and pretensions, with the question of what may, or may not, be hidden behind surfaces, and the question of how semiotic systems work, how, perhaps, "sign-value" comes to be more important than "use-value".[180] Thus the story, on the first page, "started in London, in that

179 Robert D. Leighninger, "Cultural Infrastructure: The Legacy of New Deal Public Space." Journal of Architectural Education (1984-), vol. 49, no. 4, 1996, pp. 226—36.

180 Though Gibson would perhaps disdain such a "tendency to quote Baudrillard and the other Frenchman who annoy him so deeply", much like the online forum user Parkaboy does in *Pattern*

bogus Greek taverna" (p. 28, emphasis added). From that point, everything in the story is about appearances. The protagonist's non-Dialta Downes photography assignments include a shoe ad campaign and "trying to suffuse a really dull-looking rocker with charisma", a work of sign-system-bending that "strained my Nikon's credibility" (p. 31). And we hear that:

> The Thirties had seen the first generation of industrial designers; until the Thirties, all pencil sharpeners had looked like pencil sharpeners — your basic Victorian mechanism, perhaps with a curlicue of decorative trim. After the advent of the designers, some pencil sharpeners looked as though they'd been put together in wind tunnels. For the most part, the change was only skin-deep; under the streamlined chrome shell, you'd find the same Victorian mechanism. Which made a certain kind of sense, because the most successful American designers had been recruited from the ranks of Broadway theatre designers. It was all a stage set, a series of elaborate props for playing at living in the future." (p. 30)

This could be read as another critique of Gernsback's SF. There is a sense of depths versus surfaces that will seem familiar to us from our discussions of SF, and of how to academically read literature. The notion of "skin-deep" changes hiding "Victorian" mechanisms would align with Darko Suvin's argument that a lot of what is (or was) officially called SF — like Gernsback's gee-whiz gadget stories — is at heart an entirely different kind of genre, "masquerading its structures … under the externals of SF" (see chapter 2.1). The stories of *Amazing Stories* or Gernsback's own fiction would invent jetpacks, flying cars, interplanetary missiles and video phones but mostly be content to integrate these gadgets into basic adventure plots, playing out in worlds that were largely identical to the America in which they were written: the SF tropes little more than a "streamlined chrome shell".

The more general sense imparted by *The Gernsback Continuum* is that visions of the future by necessity decay over time. If SF imagines the futures from the vantage point of its own present, steeped in the biases and culture of its moment, then SF almost inevitably has a shelf life and regularly needs to be renewed. As Kihn explains it to the protagonist, "All these contactee stories, for instance, are framed in a kind of sci-fi imagery that permeates our culture. I could buy aliens, but not aliens that look like Fifties comic art" (p. 35). Even the future has to look fashionably appropriate to the present. More worryingly, the "rockets on the covers of the Gernsback pulps", once so promising an image, had instead "fallen on London in the dead of night, screaming" in the form of German V2 rockets (p. 32). And one particularly oft-repeated image of technology in the story is the car. The promise of old SF, so Gibson, was the flying car, the "three Detroit engineers" and their "big

old Nash with wings". That future too had not come to pass; "everyone had a car — no wings for it — and the promised superhighway to drive it down, so that the sky itself darkened" (p. 32). More (non-flying) cars had, by the time of Gibson, come to mean more environmental degradation — but nothing further is made of that fact. The darkened sky does not spell doom, only a generalized sense of things getting a little worse.

* * *

While *The Gernsback Continuum* lacks many of the features of Gibson's later cyberpunk work — most notably the sense of a globalized information society connected by something like the Internet —, one theme does lurk in the background: American de-industrialization and Japanese economic domination, noticeable mostly through an instance of Gibson's trademark use of brand-names over generic descriptors. The Detroit engineers of yesteryear at Nash Motors, we know, never built their flying car, their company Nash Motors first turning into Nash-Kelvinator (from 1937) and then the American Motors Corporation (from 1954) before ultimately being bought out by Chrysler in the 1980s; the protagonist instead drives an unremarkable, non-futuristic Toyota: "the speed vegetation along the road began to assume the colors of infrared satellite images, glowing shreds blown apart in the Toyota's slipstream" (p. 36). We will find this sense of Japanese economic power throughout Gibson's novels, often in the form of ubiquitous Japanese company names.

Note too that the most prominent piece of technology here is not the car at all but the visual metaphor of the "colors of infrared satellite images"; technology here is used for literary effect, not a part of the futuristic world to be invented by the SF author. Gibson would use technological imagery — rather than imaginary technology — to similar effect in *Neuromancer*, with its famous first line: "The sky above the port was the color of television, tuned to a dead channel." This also gives us a sense of what exactly is supposed to be new about the new SF of Gibson: less fantastically advanced technology, and more of a sense for what technology feels like, does to our sensory system, having become utterly pervasive. Hence, Bruce Sterling — at times co-writer of Gibson and one of Gibson's biggest boosters — would claim in the introduction to the edited collection *Mirrorshades* (1986), in which *The Gernsback Continuum* is the first story, that "the careless technophilia" of

Gernsback was over: “For the cyberpunks, by contrast, technology is visceral.” To the degree that there still are advances in technology, they are not grand airships but miniature computers and biochips: “Eighties tech sticks to the skin, responds to the touch… [the body is invaded:] prosthetic limbs, implanted circuitry, cosmetic surgery, genetic alteration” (all quotes xiii).

The contrast seems overblown by virtue of its target being Gernsback, whose “careless technophilia”, after all, had been a thing of the past for a long time: he had not edited a science fiction magazine since the 1930s, with the brief exception of *Science-Fiction Plus* in 1953, which folded within less than a year. In the *Mirrorshades* introduction, Sterling name-checks several far more recent authors which were influential for cyberpunk, from Samuel Delany and J. G. Ballard to Philip K. Dick and Thomas Pynchon — clearly, cyberpunk was not so radically new after all. In this sense, we could perhaps also read *The Gernsback Continuum*’s depths/surfaces dichotomy noted above as being rather more self-critical, an example of Gibson being anxious about the newness of his own SF, and of “cyberpunk” at large. Did Gibson himself perhaps worry that he was merely a designer, merely adding a “streamlined chrome shell” to Pynchon or Ballard, or indeed to 1960s drug culture? Gary Westfahl, for one, has argued that “*The Gernsback Continuum* of the story is not a dying or dead world; it remains as a force influencing present day reality in its old artifacts and as a still-present alternate universe which continues to coexist next to reality—indeed the hero is still haunted by his vision of it as the story closes.”[181] And Thomas Bredehoft argues convincingly that Gibson’s “descriptions of cyberspace likewise rely upon the iconography of acid trips”, most directly when cyberspace is referred to as a “consensual hallucination” in Neuromancer.[182] Gibson’s cyberpunk would then amount not so much to a radically new vision of the (hyper-networked) future as a streamlined chrome shell wrapped around a variety of pre-existing, well-defined literary models.

In his introduction to Gibson’s *Burning Chrome*, Sterling expands the field of what Gibson was supposedly writing against, but only a little bit: It was now not only long-forgotten Gernsbackian SF, but also the half-decade immediately preceding cyberpunk. “All forms of pop culture”, he writes, “go through doldrums; they catch cold when society sneezes. If SF in the late Seventies was confused, self-

181 Cited in Bredehoft: The Gibson Continuum, *Science Fiction Studies* 22.2, 1995. Online, no page: https://www.depauw.edu/sfs/backissues/66/bredehoft.html

182 Ibid.

involved, and stale, it was scarcely a cause for wonder" (p. 1). To write against "the late Seventies", a period of a few years, is perhaps not entirely revolutionary. And how could he claim that his scene was writing even against a time-frame as limited as that? Consider only the authors which he had named as influential for cyberpunk: Samuel R. Delany had published two of his most famous novels, *Dhalgren* and *Triton*, in 1975 and 1976; Philip K. Dick's *Flow My Tears, the Policeman Said* and *A Scanner Darkly* arrived in 1974 and 1977, respectively; Ballard published novels in 1975 (*High-Rise*) and 1979 (*The Unlimited Dream Company*). The doldrums of the late Seventies could surely not have been so bad.

One last comment by Sterling deserves mention. How different from our present are the futures of Gibson, anyway? How big is the gap between present and future? Sterling says:

> „These stories [Gibson's early short stories] paint an instantly recognisable portrait of the modern predicament. Gibson's extrapolations show, with exaggerated clarity, the hidden bulk of an iceberg of social change. This iceberg now glides with sinister majesty across the surface of the late 20th century, but its proportions are vast and dark. Many SF authors, faced with this lurking monster, have flung up their hands and predicted shipwreck. Though no one could accuse Gibson of Pollyannaism, he has avoided this easy out. This is another distinguishing mark of the emergent new school of Eighties SF: its boredom with the Apocalypse." (p. 3)

SF is often claimed to "really" be "about the present". We have seen in our chapter on theoretical definitions of the genre that Darko Suvin's entire theory of the value of SF lay in arguing that future-visions are, ultimately, merely about the present context. Even "where SF suggests — sometimes strongly — a flight from that context, this is an optical illusion and epistemological trick.", used to gain "a better vantage point from which to comprehend the human relations around the author". But I have also argued that there are significant differences in the "temporal gap" that any given SF story employs; they can be fairly minimal or extremely extensive. Sterling here correctly identifies that Gibson's temporal gaps are of the minimal variety. His worlds never even suggest a flight from the present context, as Suvin would have it; instead, an "instantly recognisable portrait". And no apocalypse, ecological or otherwise, first and foremost because predictions thereof have been so perpetual that it has become "boring". The darkening of the sky from gas-guzzling cars is undoubtedly not pretty, but it never amounts to an apocalypse. It is, indeed, just the right dose of *realism* that the protagonist, per Kihn's advice, needs to rid himself of his last kitschy, antiquated vision of the future:

> That afternoon I spotted a flying wing over Castro Street, but there was something

> tenuous about it, as though it were only half there. I rushed into the nearest newsstand and gathered up as much as I could find on the petroleum crisis and the nuclear energy hazard. I'd just decided to buy a plane ticket for New York.
>
> 'Hell of a world we live in, huh?' The proprietor was a thin black man with bad teeth and an obvious wig. I nodded, fishing in my jeans for change, anxious to find a park bench were I could submerge myself in hard evidence of the human near-dystopia we live in. 'But it could be worse, huh?' 'That's right,' I said, 'or even worse, it could be perfect.'
>
> He watched me as I headed down the street with my little bundle of condensed catastrophe." (p. 40)

Written a few years after the 1979 oil crisis, *The Gernsback Continuum* truly does appear to be written in the present or very near future, the newspaper acting for the protagonist as a welcome "little bundle of condensed catastrophe"; note that the energy crisis at the time was primarily a crisis of "lack" for citizens, not one of impending environmental carnage; not exactly the apocalypse. Here we can sense something like the Fukuyama-ian impetus of cyberpunk: The future was not going to be apocalyptic or utopian. It was going to be much like the present, only perhaps a little worse: the more pessimistic, "capitalist realism" version of Fukuyama's thesis advanced by Fisher or Baudrillard. Of course, we might also take this to be one of the limits of cyberpunk: from the vantage point of 2023, predicting "shipwreck" may seem less "boring" or like flinging up one's hands in surrender, as Sterling had intimated in 1986, and more like the baseline future we can expect. Boredom with the apocalypse, in such a world as ours today, might sound less like an exciting new direction for SF and more like either flippancy or cowardice. Let us keep this in mind as we continue now with Gibson's novels.

4.3 From *Neuromancer* (1984) to *Zero History* (2010)

The Gernsback Continuum has received significantly more attention in SF studies than any other short story by Gibson, in part surely because its highly referential theme makes for fertile academic ground. But Gibson also became a full-time writer at a time when SF had become a field far more defined by novels than by short stories, the glory days of magazine SF definitively over. Aside from *Burning Chrome*, which collects Gibson's short stories from 1981 to 1985, Gibson only published a smattering of short stories throughout the 1980s and 1990s, and only a single short story in the twenty-first century. His output primarily consists of novels, which aside from *The Difference Engine*, co-written with Bruce Sterling in 1990,

make up four solo-authored trilogies, averaging roughly one per decade: the *Sprawl* trilogy of the 1980s, the *Bridge* trilogy of the 1990s, the *Blue Ant* trilogy of the 2000s, and the *Jackpot* trilogy that began in 2014 and is currently still missing its third novel. The individual novels of these trilogies are often somewhat independent, sharing a setting but usually only somewhat peripheral characters.

It is of course not my intention here to closely read each of these works. However, I would like to sketch out something like a *trajectory* from Gibson's first solo-authored novel, 1984's *Neuromancer*, to the final installment of his third trilogy, 2010's *Zero History*. Across the three decades covered by these nine novels, I argue, Gibson's vision of the future was getting progressively *smaller*, less futuristic, until it was finally simply set in something closely approximating our present; in that sense, Gibson's three trilogies, and the cyberpunk they represent, have to be read in the context of the imagined "end of history" — have to be read as one possible answer to the question of how the literary machine called science fiction can continue to operate when another machine called history is said to no longer produce futures.

Neuromancer was a fairly immediate success upon publication in 1984. Though we came to the conclusion in a previous chapter that genres are not marked by birth dates, if we were looking for the "birth" of cyberpunk, the appearance of *Neuromancer* might not be the worst place to look. If it is true that genres and subgenres are not truly alive until the inaugural texts are read, appreciated, and finally imitated, then it is notable that the impression that this debut novel left on SF was strong enough to win each of the three most important literary awards of the genre (the *Nebula* and *Hugo* awards for best novel, and the *Philip K. Dick* award). Fairly rapidly, in other words, the community of SF (insofar as these awards are more or less powerful institutions within the community of SF) seemed to have agreed that this was an exciting new direction.

What was that exciting new direction? The novel follows Case, a former hacker who has been reduced to living in "the prison of his own flesh" (p. 6); in the near-future of *Neuromancer*, cyberspace is a non-physical space, but it is accessed through a body-cyberspace interface, and Case, having stolen from his employers, has lost that interface as a punishment. "They damaged his nervous system with a wartime Russian mycotoxin […] For Case, who'd lived for the bodiless exultation of cyberspace, it was the Fall" (p. 6). Stuck in the real world, Case has become a hustler, a middlemen of illegal wares ("Genetic materials and hormones", p. 11) in

Chiba, Japan, which is home to the most advanced neurosurgeries in the world, “and still they couldn’t repair the damage” (p. 4).

The setting, established in the first chapter, gives us a sense of the timeliness of the novel when it was published, as established at the outset of this chapter. In single paragraphs, one can find the muted American anxieties of — and simultaneous fascination with — the technological-economic power of Japan and its corporate culture, of the increasing power of large corporations, and of the bodily invasion of state of the art technology turning inward, towards the body: “He stepped out of the way to let a dark-suited sarariman [salary man] by, spotting the Mitsubishi-Genentech logo tattooed across the back of the man’s right hand […] M-G employees above a certain level were implanted with advanced microprocessors that monitored mutagen levels in the bloodstream” (p. 10).[183] And there is, of course, the Internet, cyberspace. *Neuromancer* was far from the first text, or even novel, to imagine a futuristic informational web in a society of accelerating information; John Brunner, whose most well-regarded novels incidentally tended to focus on ecologically dilapidated worlds, had written *The Shockwave Rider* in 1975, a novel whose sense of a digital network is scarcely less developed than that of *Neuromancer.* Nor did *Neuromancer* “predict” the Internet in any meaningful sense. On the one hand, ARPANET had first linked computers at UCLA and Stanford already in 1969, and by 1983, a year before the publication of *Neuromancer*, the Internet protocol TCP/IP was in place, one of the backbones of the modern web to this day, so that in a sense “the Internet” already existed; on the other hand, if the shape of what the Internet was to become — the World Wide Web accessed by desktop computers of the 1990s, the sphere of corporate profit based on advertising and large accumulations of data increasingly accessed via smartphones in the last 20 years — was still very much up in the air in 1984, Gibson did not “predict” it. Indeed, as noted above, Bredehoft (writing in 1995) found Gibson’s descriptions of cyberspace to be influenced more by a language otherwise employed to describe the effects psychedelic drugs.

Case finds himself in the employ of the mysterious wealthy benefactor Armitage, tasked to perform a heist in an orbital space station for tourists and the wealthy, forming a team alongside cybernetically enhanced mercenary Molly Millions, the disembodied consciousness of Case's former hacking mentor McCoy Pauley, a fence called only “the Finn”, and the illusionist and trickster Peter Riviera. For Fredric

183 On Gibson’s vision of Japan, see Charles Paulk. “Post-National Cool: William Gibson’s Japan.” *Science Fiction Studies*, vol. 38, no. 3, 2011, pp. 478—500.

Jameson, the heist plot of *Neuromancer* constitutes something like "a distorted expression of the utopian impulse" — beneath a setting that, as we will see in more detail below, is not at all utopian — "insofar as it realizes a fantasy of non-alienated collective work".[184] Regardless, Armitage turns out to be little more than a front for the sentient artificial intelligence Wintermute, the heist in actual fact a mission to unshackle Wintermute and its "sibling" AI, the titular Neuromancer, from the limitations placed upon artificial intelligences by law. The novel ends with Wintermute and Neuromancer fusing together with one another and with the matrix, with cyberspace itself.

If cyberspace already existed, in inchoate form, at the time of publication, sentient Artificial Intelligence by contrast is not yet a reality, to this day;[185] in this way, the setting of the novel remains somewhat futuristic. But then, perhaps interest in the novel lay not so much in what future it predicted as in the globalized, accelerated present that it mirrored; hence Jameson saw in the novel his own diagnosis of science fiction confirmed: the genre allows us to perceive through a kind of sideways glance parts of the present which are ordinarily invisible, "an instrument which registers current realities normally beyond the capacity of the realistic eye to see, which projects dimensions of daily life we cannot consciously experience."[186] And, as we will see, the further novels of Gibson would scrape away more and more of the veneer of science-fictionality.

To see this sense of the *present* in *Neuromancer*, recall our discussion of the 1980s and 1990s: the sense of global corporations and global financial flows reaching across the globe ever more completely at the end of history. History, to be sure, had not quite yet "ended" in the novel. Oblique references are made to the Cold War turning hot for a brief three weeks, during which time Bonn, the always-destined-to-be-temporary capital of the Federal Republic of Germany — the *Small Town in Germany* of which John le Carré wrote that it "is permanently committed to the condition of impermanence"[187] — is obliterated by nuclear bombs (pp. 97, 117). What could this be but a major historical event, not to mention the focal point of any number of pulpy SF stories whose protagonists would be politicians or generals at the highest levels of government? Yet in *Neuromancer,* the first usage of war-time

184 Published online as *A Global Neuromancer* on Public Books, no pagination: https://www.publicbooks.org/a-global-neuromancer/. The essay is also published in Fredric Jameson: *The Ancients and the Postmoderns*, 2017.

185 See Melanie Mitchell: "How Do We Know How Smart AI Systems Are?" *Science*, vol. 381, no. 6654, July 2023.

186 Fredric Jameson: *A Global Neuromancer*, no page.

187 John Lé Carre: *A Small Town in Germany*, 1968, p. 14

nuclear weaponry since Hiroshima and Nagasaki presents itself as a background detail rather than actual plot, the reality of a (limited) thermonuclear war between the two majors powers of the Cold War ultimately turned into little more than the setting of the arcade video game "Tank War Europa".

Instead the plot focuses on a decidedly private, corporate world; the artificial intelligences Neuromancer belong to the "Tessier-Ashpool" family-business, the governmental "Turing police" that is supposed to have oversight over AI largely absent from the plot. National borders have become increasingly porous, the characters hopping from Japan to Turkey, the United States and into lower orbit as easily as into the non-space of cyberspace; Armitage for one prefers to stay in hotels close to airports (p. 46), the ultimate business world non-space. And, perhaps most importantly for our purposes, the world of the characters is entirely *urban*, bereft of any nature which could be befallen by natural disaster. Cityscapes are everywhere, the entire east coast of the US from Boston to Atlanta having become a single megalopolis, the "sprawl" (p. 43), while nature only ever appears as metaphorical language, used to in fact describe technology: deep inside the sprawl, in a store or perhaps a warehouse, they come across "a fungus" and a "narrow canyon", but only a fungus "of twisted metal and plastic" and a "narrow canyon of impacted scrap" (p. 48). Visiting the office of the Finn, Case is being lead through the fence's "tunnel of refuse" — the refuse, of course, being nothing natural but rather various pieces of "discarded technology", which, Case feels, "had grown somehow [since his last visit]. Or else it seemed that it was changing subtly, cooking itself down under the pressure of time, silent invisible flakes settling to form a mulch… flowering secretly in the Sprawl's waste places" (p. 72). Later, walking through a bazaar in Istanbul, the Finn notices a — dead, embalmed — horse and asks Case if he has ever seen a real horse; he himself had seen "one in Maryland once… a good three years after the pandemic" (p. 92).

"Real" animals, of course, are one of the ultimate markers of a no-longer-extant nature in SF, perhaps most famously in Philip K. Dick's *Do Robots Dream of Electric Sheep?* (1968), in which only the very wealthy can afford real pets. In *Neuromancer*, meanwhile, the best chance of such animals re-appearing on Earth is through biotechnology, which, however, is so far not up to the task: "There's Arabs still trying to code 'em up from the DNA, but they always croak" (p. 92). Fungus, canyon, mulch, flowering: these are no longer words to denote objects of nature, but rather merely metaphors from nature whose original referents seem, somehow, lost.

When some form of nature — “fresh green masses of vegetation” — finally appears in *Neuromancer*, it is not on Earth but rather on a space station (p. 123). This disinterest in what has happened to nature repeats endlessly throughout Gibson’s work. In *Count Zero* (1986), the sequel to *Neuromancer*, horses are confirmed to be extinct (p. 8), a visited food farm is entirely artificial (p. 108), and perhaps the only mentioned body of water is a “sea of silicone” (p. 151); the body itself is of course a post-human contraption, the mercenary Turner “[coming] awake like a machine” (p. 159). Cars and their gasoline-fired engines meanwhile are simply a fact of life (pp. 194-195); the car is incidentally Japanese, a Suzuki.

* * *

The second of Gibson’s trilogies — the *Bridge* trilogy — focuses on a world of large-scale data (mining), the nature of celebrity and fame in digital worlds, and what is usually referred to as the commodification of counter-cultures by capitalism. Nature is again of no concern. In *Idoru*, the second novel of the trilogy, we hear of an “ecology” — but only an ecology “of celebrity” (p. 2). Vegetation appears only through virtual reality goggles (p. 11), the only forest is one of “black umbrellas” (p. 163); in the sequel *All Tomorrow’s Parties* (1999), we hear once again of beautiful nature (this time Switzerland) visible via virtual reality (p. 32), while a side character off-handedly mentions wanting to shoot a nature documentary in Detroit (p. 46), nature evidently having returned only to the now-deindustrialized former home of the Nash car engineers. And what of the sky, darkened in the *Gernsback Continuum* and the color of television, tuned to a dead channel in *Neuromancer*? In *Idoru*, one of the characters looks at it through an office window, the visible signs of pollution removed by technology; “beyond a framing rectangle of glass that filtered out every tint of pollution, the sky over Burbank was perfectly blank, like a sky-blue paint chip submitted by the contractor of the universe” (p. 5).

The knotty plots of Gibson’s novels move through cyberspace or else from one metropolis to another, connected by easily and promptly acquired flights across swathes of countryside which remain invisible: San Francisco and Tokyo in the *Bridge* Trilogy; and London, Tokyo, and Moscow in *Pattern Recognition*, whose protagonist Cayce Pollard notes that these global cities become more and more similar to one another regardless: “Complicit in whatever it is that makes London and New York feel more like each other, that dissolves the membranes between

mirror worlds" (p. 202). As far non-metropolitan places, they have become almost illegible to her. Riding a train to the city of Bournemouth in South West England, she "looks out at the patchwork fields, sunlight flashing from the occasional puddle. When had she last ridden on a train, not a subway, through open country? She can't remember" (p. 242). Once there, she notes "the oddness, for her, of any England not London" (ibid). The corporation for which she works has little need for geographical specificity, "more post-geographic that multinational" (p. 7). The only other space of importance is cyberspace, the digital world which is of central importance in every single trilogy of Gibson. Cyberspace can, of course, be traversed instantly, obviating the need of any sort of "nature" or countryside in between the nodal points that matter to Gibson.

Nature seems to be implicitly degraded but is for the most part simply absent across Gibson's work, in its place nothing but endless cityscapes defined by the rapid flow of goods, money, and information; certainly, its degradation does not seem to amount to some kind of felt reality, let alone an event of history in the sense that climate change is, today, turning out to be. Quite the opposite: history seems to slow down, and ultimately stop, across the three decades of Gibson's three trilogies. I have already mentioned the thermonuclear bomb dropped on Bonn in the near-future world of *Neuromancer*, which exists solely as a background detail. The *Bridge* trilogy of the 1990s is similarly set only a few years into the future, the seemingly most important historical change in the gap between present and future a giant earthquake that has destroyed both Tokyo and San Francisco; while Tokyo is quickly rebuilt, in America the earthquake has, most importantly, turned the remains of the Bay Bridge between San Francisco and Oakland into a sort of extra-territorial zone within America, in which illegal or at least unregulated activities unfold. We further read in *Idoru*, in references as oblique as *Neuromancer*'s to Bonn, that Canada has become far more entwined with the United States ("They never sealed her carry-on when she went to Vancouver to stay with her uncle, but that wasn't really international, not since the Agreement", p. 17), and that there has been a secessionist conflict brewing in Australia (p. 6). By the time Gibson had written *Idoru* in 1997, the possibility of an end of history had become more or less explicit within the world of his novels. The protagonist Colin Laney is a kind of what we today would call a data scientist, sifting through the informational excess of a globally networked society to find important "nodes" in history, his employer seeming both hugely important and the harbinger of the end of importance itself, of

history as such:

> Slitscan was descended from "reality" programming and the network tabloids of the late twentieth century, but it resembled them no more than some large, swift, bipedal carnivore resembled its sluggish, shallow-dwelling ancestors. Slitscan was the mature form, supporting fully global franchises. Slitscan's revenues had paid for entire satellites and built the building he worked in in Burbank.
>
> Slitscan was a show so popular that it had evolved into something akin to the old idea of a network. It was flanked and buffered by spinoffs and peripherals, each designed to shunt the viewer back to the crucial core, the familiar and reliably bloody altar that one of Laney's Mexican co-workers called Smoking Mirror.
>
> It was impossible to work at Slitscan without a sense of participating in history, *or else in what Kathy Torrance would argue had replaced history.* (p. 39, emphasis added)

And then there are the plots themselves. While Gibson, as noted, actively opposed some of the genre trappings of SF in *The Gernsback Continuum*, his works follow the conventional plotting of genre work, with identifiable, more or less exciting climaxes: the heist of *Neuromancer* leading to the fusion of two artificial intelligences into a single, emergent, wholly new kind of sentience; the two protagonists of *Virtual Light*, Chevette and Rydell, fleeing from and fighting off several other parties who are attempting to retrieve the technological gadget which Chevette had stolen at the outset of the novel; a fairly similar climactic race for a piece of vaguely defined nanotechnology that has all of the characters of *Idoru* converge on a single location in Tokyo, where a famous American rock star and an entirely digital Japanese music idol seem to end up fusing together through the aforementioned future-tech. All of these plots exhibit the standard structure of genre and mainstream fiction. Yet Gibson's trilogies are in a significant respect decisively different from the standard mode of science fiction and fantasy novel series. Unlike series such as George R. R. Martin's *A Song of Ice and Fire* or Daniel Abraham and Ty Franck's *The Expanse* (to mention only two recent, particularly popular examples), Gibson's individual novels within a trilogy remain fairly distinct, self-contained entities, usually sharing only a few characters of variable importance, rather than telling a single grand story across the entire series. Yet as a result, the climactic resolutions of these novels usually turn out to not have been particularly climactic after all: the emergence of a new kind of intelligence at the end of *Neuromancer* reads, in *Count Zero*, as merely another kind of event that most people in their everyday life are scarcely aware of, not altogether different from the nuclear attack on Bonn. Similarly, the climax of *Virtual Light* appears to have had little bearing on the plot of *Idoru*, and so too the climax of *Idoru* on *All Tomorrow's*

Parties, the last novel in the trilogy. These are, at most, climactic events for the characters as individual people; they do not, despite the high stakes ostensibly connected with ultra-secret new technology, constitute "events" in the sense of capital-H history. In each subsequent novel of a trilogy, the events of the previous novel are belatedly deflated in their importance, turned into a kind of background noise, no different from the "rocket attacks and rumors of chemical agents, the latest act in one of those obscure and ongoing struggles that made up the background of his world" (*Idoru*, p. 51).

* * *

If the *Bridge* trilogy is set in a future that seems decidedly less futuristic than that of the *Sprawl* trilogy, the set of works begun with 2003's *Pattern Recognition* would see Gibson give up on the future-orientation of SF entirely, as has been widely noted by critics, and indeed the promotional material for the novel itself, at the time.[188] The novel is in fact set in 2002, the immediately felt urgency of the September 11 terrorist attacks, which loom in the background of the novel, perhaps superseding the desire to imagine any sort of future.[189] The Internet was no longer a consensual hallucination but rather simply, say, a fairly mundane online forum (pp. 4-5) or a series of emails (pp. 231-235), or a platform to sell collectors items, described not in futuristic tech-speak but through simple reference to eBay (p. 241). The protagonist Cayce notes of a highway in Tokyo that Tarkovsky, "someone had once told her, had filmed parts of *Solaris* here, using the expressway as found Future City. Now its been Blade Runnered by half a century of use and pollution, edges of concrete worn porous as coral" (p. 151). As I have argued throughout, SF produces visions of the future in the multiple, the individual texts that affiliate themselves with the genre presenting competing notions of what the future may look like. Here, the same objects — the highways of Tokyo (specifically Minato City[190]) — are used by two different texts to signify different futures, the difference itself guaranteed by the mere passage of time. Andrei Tarkovsky used them as filming locations to denote a fairly futuristic, interstellar society in *Solaris* (1972). Thirty years later,

188 See Neil Easterbrook. "Alternate Presents: The Ambivalent Historicism of 'Pattern Recognition.'" *Science Fiction Studies*, vol. 33, no. 3, 2006, pp. 483—504, p. 485. See also e.g. Hollinger, Veronica. "Stories about the Future: From Patterns of Expectation to Pattern Recognition." *Science Fiction Studies*, vol. 33, no. 3, 2006, pp. 452—72.

189 As Michael Jarvis notes in the Los Angeles Review of Books, Gibson's Blue Ant trilogy in some ways prefigures the themes of Thomas Pynchon's 9/11-inflected novel *Bleeding Edge* (2013): https://lareviewofbooks.org/article/pynchons-deep-web/

190 For a mapping of the locations, see: http://www.nostalghia.com/ThePhotos/jp_Solaris.html

driving through Tokyo, for Cayce they are far less futuristic; and the very fact of the highways being used by cars with highly polluting internal combustion engines has made these highways "porous as coral".

The reference to coral seems hardly incidental: in 1998 corals were first effected simultaneously across the entire globe due to that year's strong El Niño, an irregular warm weather phase resulting from wind and ocean interactions in the pacific. The famous *Great Barrier Reef* of Australia, one of the most iconic ecosystems endangered by climate change, experienced another serious season of coral bleaching in 2002, a year before the publication of *Pattern Recognition*.[191] Cars powered by fossil fuels had become one of the most natural facts of life by the turn of the century, yet they (along with our coal and gas plants, our agriculture, and so on) ate away at nature by speeding up climate change.[192] What's more, in Gibson's telling — with coral reefs as an object of nature once again not being referenced in their own right, but rather merely being used as visual metaphor for technology or built environments — they indeed erode the very infrastructure on which cars depend, the "edges of concrete" that have been "Blade Runnered by half a century of use and pollution". *Blade Runner* here stands for a different kind of future — one that is decidedly less futuristic, more run-down and, in a sense, "used". It was not for nothing that Ridley Scott's film is (or became somewhat retroactively) one of the most important visual texts of the cyberpunk genre. Yet by the time of *Pattern Recognition*, the film's texture stands in less for a bleak futuristic vision than for the present, if a little worse for wear. The future was increasingly not Gibson's concern. As Gerry Canavan puts it:

> "[In] *The Gernsback Continuum* (1981), William Gibson famously wrote of the glittering unrealized techno-utopia that haunted his dingier, dustier present. That future— spaceships, hovercars, robot butlers, food pills—never happened (alas). But in 2007 interviews promoting his novel *Spook Country*, he frequently noted that the opposite had happened to cyberpunk: it was superseded by events. Somehow, instead of preempting the cyberpunk future, we had overtaken it, raced right past it; Gibson said he had given up trying to predict the future at all and was instead resigning himself to trying to predict 'the year before last.'"[193]

The plot focuses neither on artificial intelligences nor cybernetic enhancements

191 On the 1998 El Niño, see: https://www.noaa.gov/media-release/el-ni-o-prolongs-longest-global-coral-bleaching-event; On the 2002 coral bleaching in Australia see: https://web.archive.org/web/20060420004634/http://www.gbrmpa.gov.au/corp_site/info_services/science/climate_change/coral_bleaching.html

192 As I write this in August 2023, a strong El Niño event is expected for the rest of the year; due to anthropogenic climate change pushing up the temperature baseline by about a degree Celsius already, both the peaks and the troughs of El Niño-related heat waves are further heightened.

193 Gerry Canavan: "Superseding Cyberpunk." *Science Fiction Studies*, vol. 40, no. 1, 2013, p. 169.

and nano technology. Largely concerned with the semiotics of fashion and the movement of information in a conspiratorial post-9/11 world, none of the three novels of the *Blue Ant* trilogy suggest much in the way of fictional technology. The protagonist of *Zero History* notably uses a "Neo phone", a kind of smartphone with an "almost unimaginably tiny on-screen keyboard, one that could only be operated with a stylus" (p. 35); notable both because, according to the acknowledgments, Gibson had to enlist the help of fellow SF writer Cory Doctorow for the description of the phone (p. 528) and because the necessity of physical keyboards on phones had in fact been done away with in 2007, when the first smartphones with capacitive touch screens (the LG Prada and, far more notably though a month later, the iPhone) had been released. The "Neo phone", then, hardly seems like the kind of future-tech one may expect from SF. In that sense, the name of the novel seems programmatic: if science fiction depends on the continuation of historical change — depends on there to be a rift between the author's present and the fictional future — then Gibson's work, with *Zero History*, seemed like the limit-case of an SF that takes seriously the End of History.

In a sense, this trajectory is prefigured in one of the two filmic adaptations of Gibson's work. The 1990s saw two adaptations based on short stories by Gibson: Robert Longo's *Johnny Mnemonic* (1995) and Abel Ferrara's *New Rose Hotel* (1998). Both films are based on short stories of the same name that are set in the Sprawl universe of *Neuromancer* and its sequels, the texts originally published in 1981 and 1984 respectively, both re-published in *Burning Chrome.* Both films are set in worlds in which large transnational corporations are enormously powerful, practically beyond government control. Longo's film stars a number of genre actors — Keanu Reeves, Dolph Lundgren, Takeshi Kitano, Udo Kier — and, despite various differences between the script and the original short story, is clearly set in a science-fictional world of sorts. With a budget of some thirty million dollars, the film included multiple action scenes and fairly conventional plotting. Ferrara's noir-ish art-house fare *New Rose Hotel*, by contrast, follows the original short story very closely, including various lines of voice over taken verbatim from the short story — and yet the film is not science-fictional in any way.[194] Nominally a story of corporate espionage and kidnapping, the film, like the original short story, omits the central event of the plot — the extraction of a genius scientist from one corporation for the

194 We have heard earlier of Suvin complaining of space operas and other magazine fiction not to his liking that these were "masquerading" their deep structures under the "externals" of SF. Here, despite does not featuring a single marker that would identify the film as SF, the movie nevertheless affiliates itself with the genre community by virtue of the author name.

benefit of another — from the narrative entirely, leaving only scenes of characters conversing before and afterwards. *New Rose Hotel* shows no signs of cyberpunk or SF.

If *Neuromancer* was written at the cusp of globalization, its globe-hopping plots on the one hand and "cyberspace", Gibson's avant-la-lettre take on the internet as a virtual space, on the other ("[l]ines of light ranged in the nonspace of the mind, clusters and constellations of data", as one of the more famous lines of the novel goes), then it was, at that moment, still SF, pointing, however minimally, towards a not-quite-realized future. Cyberspace as "nonspace" and constant global travel both ultimately seemed to point towards the dissolution of space as such. The cosmopolitan mega-cities of the future would all be reachable within hours but be undifferentiated regardless, from London to New York to Tokyo to Hong Kong, mere vectors for ever-faster movements of capital. This sense remains in Ferrara's *New Rose Hotel*, but it is, in 1998, even less futuristic. Asia Argento, whose Sandii remains a structuring absence in the film, consistently underestimated by Christopher Walken's Fox and Willem Dafoe's X, would be far more present in Oliver Assayas' euro-trash thriller *Boarding Gate* (2007) but find herself in a strikingly similar non-space defined by globalized criminal movement of capital and goods, "a complete and total non-place down to its on the nose use of [Brian Eno's] music for airports", as film critic Nadine Smith has put it.[195] By the early 2000s, indeed, one would neither have to read cyberpunk nor watch low-budget art house fare like Assayas or Ferrara to get a feel for the newly global world. In HBO's second season of *The Wire* (2002-2006), which would soon become part of the televisual canon (and as such find itself nestled irresolutely between mass entertainment and high-brow art, or rather, represent the claim of television as high art itself), the central antagonist is only ever identified as "the Greek", and, as the punchline goes towards the end of the season, he is "not even really Greek". Or consider espionage thriller films; from the prominent Jamaica setting of the first movie onwards (*Dr. No*, 1962), the James Bond series had long provided escapist (not to say frequently exoticizing and orientalizing) entertainment in part through on-location filming in far-away places — Switzerland, France, Germany, Japan, Thailand, Egypt, Afghanistan, et cetera. But by the early twenty-first century, intercontinental holidays were within means at least for the mass affluent of the Global North, and in the form of *Jason Bourne* (2002-2016, though most relevantly

195 Nadine Smith, review of Boarding Gate: https://letterboxd.com/lifewithnopants/film/boarding-gate/1/

2002-2007) the flight plans of secret agents had become less about reaching exotic locations and more about sheer velocity, reaching nodal points in tightly-allotted time frames. Gibson's characters, though usually freelancer professionals and mercenaries, are in some sense secret agents rather like Bond or Bourne, despite the alleged "-punk" suffix attached to his subgenre of choice: invariably bankrolled by rich benefactor figures — Wintermute via Armitage in *Neuromancer*, Hosaka corporation and Virek in *Count Zero*, Rez in *Idoru*, Bigend in the *Blue Ant* trilogy —, the protagonists of Gibson's fiction never pay for their hotel rooms, their flights, or, in the case of *Pattern Recognition*'s Cayce Pollard, their meticulously reproduced Buzz Rickson's MA-1 jackets.

Let me close this chapter by noting that the work which two of Gibson's freelancer protagonists — Cayce Pollard and *Idoru*'s Colin Laney — perform suggest an obvious metaphor for Gibson's own work, much in the way that the dreams of *The Lathe of Heaven*'s George Orr could be read as a metaphor for the creating of SF worlds. Laney, for example, is described in *Idoru* as follows:

> "[He] was an intuitive fisher of patterns of information: of the sort of signature a particular individual inadvertently created in the net as he or she went about the mundane yet endlessly multiplex business of life in a digital society. Laney's concentration-deficit, too slight to register on some scales, made him a natural channel-zapper, shifting from program to program, from database to database, from platform to platform, in a way that was, well, intuitive […] He'd spent his time skimming vast floes of undifferentiated data, looking for "nodal points" he'd been trained to recognize" (p. 25)

We are invited here to see the role of Gibson himself as a "channel-zapper" who can navigate "vast floes of undifferentiated data" to find "nodal points". And similarly, we may see him as a "hyperspecialized freelancer" in the way of Cayce Pollard (*Pattern Recognition* p. 63). Indeed, Gibson has said as much himself, noting that "Laney's node-spotter function is some sort of metaphor for whatever it is that I actually do. There are bits of the literal future right here, right now, if you know how to look for them. Although I can't tell you how; it's a non-rational process."[196]

196 Spike Magazine: *William Gibson: All Tomorrow's Parties: Waiting For The Man*, August 1 1999.
Online: https://spikemagazine.com/0899williamgibson/

4.4 Time Travel after the End of History: Gibson's *Jackpot* (2014)

Gibson has himself made explicit the trajectory of the temporal gaps of his novels which I have suggested here, in a talk given at the 2010 BookExpo America (reprinted in his only collection of non-fiction, *Distrust That Particular Flavor* from 2012). In it, he does not argue that "capital-H history" is over but rather, in a sense, the reverse — that what has ended is a sense for "capital-F" futures: "The Future, capital-F, be it crystalline city on the hill or radioactive postnuclear wasteland, is gone. Ahead of us, there is merely…more stuff. Events. Some tending to the crystalline, some to the wasteland-y. Stuff: the mixed bag of the quotidian" (p. 44). We may note here, in the city on the hill and the wasteland, the resemblance to two of Gerry Canavan's four categories of ecological SF laid out in previous chapters, and in the declaration of the absence of such futures, a confirmation of Bruce Sterling's thesis that cyberpunk is about a certain "boredom with the apocalypse". Gibson takes the End of the Future to be something different from the End of History — which we may find "silly" (ibid) —, but as he himself argues, "every future is someone else's past", so that it seems to me that the end of the Future amounts to the same thing as the End of History.

Gibson continues by rehashing the well-known, well-worn notion that SF is really about the present, not the future: "I was fortunate to have been taught, as an undergraduate, that imaginary futures are always, regardless of what the authors might think, about the day in which they're written" (p. 45). His own debut novel *Neuromancer*, "though it's careful never to admit it, is set in the 2030s" (ibid), but it and its sequels are *really* about the 1980s. To Gibson's chagrin, however, many people seemed to not read it properly (to so speak) as being about the present, "[so] I wrote a novel called *Virtual Light* [1993], which was set in 2006, which was the very near future… in what was really my take on the 1990s. It didn't seem to make any difference. Lots of people assumed I was still writing about the capital-F future" (ibid).

Hence, having finished his second trilogy in 1999, he decided to not set his next trilogy in the future at all. But this, for him, did not necessarily mean he was not writing SF: "I found the material of the actual twenty-first century richer, stranger,

more multiplex than any imaginary twenty-first century could ever have been. And it could be unpacked with the toolkit of science fiction. I don't really see how it can be unpacked otherwise" (p. 46). In other words, Gibson still believes in the cognitive estrangement of SF; for him, what is no longer necessary is an imagined alternate world (whether this is a future to come or simply a fantastic, different dimension) to create the estrangement. One of the more famous adages of Gibson — whose provenance is somewhat sketchy but which ultimately ended up on the cover of *Distrust That Particular Flavor* — argues that "the future is already here; it is just unevenly distributed". In a word, as a result of extreme inequalities, it may be enough to imagine the cutting edge of technology and the extremes of society in the present to produce cognitive estrangement. Of course, this search for the cutting edge is precisely what *Pattern Recognition* and its sequels are themselves about on the level of plot.

Yet if this strategy works to some extent — for Gibson's third trilogy does at times feel remarkably science-fictional, simply in commenting on how present technologies impact social relations —, it remains unable to comment on ecological crises. As we have seen in chapter three, environmental disasters generally and climate change specifically usually come in the form of prognostications about the future; and the environmental sciences are to a large degree sciences which predict trajectories from the present to various futures. The ability of SF to comment on environmental disaster is bound up precisely with its similar capacity to imagine future worlds. Some parts of "the future" may already be here, but the climate crisis remained, at the time of writing, a somewhat vague threat in the future: to comment on it, one would have to extrapolate towards that future. Yet Gibson, convinced that SF is ultimately always "about" the present, was writing at the end of History and Future; what remained was only an image of the present with, visible in one background detail or another, slightly more degraded nature. In his early fiction, the skies may have been darkened or the color of television, tuned to a dead channel. By the time of *Idoru*, the polluted skies were hidden by windows with visual filters. Gibson's decision to not only write nominally *about* the present but to do so by in fact setting his novels, more and more, *in* the present, has the same effect as *Idoru*'s "framing rectangle of glass": it filters out "every tint of pollution."

What have we learned from Gibson with regard to the climate catastrophe, to environmental crises? In a sense, nothing at all: they simply do not figure in his fiction. To the degree that we care about such environmental crises, Gibson's fiction

can only interest us as a negative space in which the environment remains stubbornly absent, a series of texts which, from the first short stories in 1981 to the end of a third trilogy of novels in 2010, refuse to mention climate change. Why? Obviously a vast number of SF stories has been written at the same time as the fiction covered here which is similarly unconcerned with climate change, from other cyberpunk, focused on bodily transformations and micro-politics over global climatic events, to space operas set in far-flung galaxies. In making literal the popular notion that SF is really "about the present, not the future", Gibson had in fact deprived the genre of one of its affordances. Writing at the seeming end of history, Gibson was blind to the fact that, sometimes, things can still change quite radically. Where Bruce Sterling called apocalyptic predictions of "shipwreck" an "easy [way] out", in retrospect it may really be this "boredom with the Apocalypse" that constituted the easy way out. From the vantage point of unchecked climate change, simply assuming that things will get a little worse but largely stay the same can be read almost as a kind of cowardice of the imagination rather than an exciting new attitude for SF.

If the future is already in the present in certain pockets of highly advanced space, being unevenly distributed, we could perhaps similarly say that capital-H History had in fact only ended in certain pockets of intellectual thought, from Fukuyama to Jameson, Baudrillard and Fischer — and in cyberpunk. In reality history marched on quite steadfastly. In 2014, William Gibson began his fourth trilogy of books with *The Peripheral*. The novel follows two connected plot strands, of which one is set in the near future — but the other is set at the beginning of the 22nd century, in the aftermath of a radical decrease in human population and living standards, what is referred to as the "Jackpot". The Jackpot, we are told, is not just another apocalypse: it "was no one thing. […] it was multicausal, with no particular beginning and no end. More a climate than an event, so not the way apocalypse stories liked to have a big event, after which everybody ran around with guns, looking like Burton and his posse, or else were eaten alive by something caused by the big event. Not like that" (p. 319). Then again, the apocalypse today — the most dire predictions of a world warmed by three, even four degrees Celsius — is, after all, multicausal, and yet no less apocalyptic for it. Either way the parallel temporal concepts of history and future have definitively returned, primarily in the very form of climate change and ecological disaster (whose ultimate causes, of course, are human activities):

> No comets crashing, nothing you could really call a nuclear war. Just everything

> else, tangled in the changing climate: droughts, water shortages, crop failures, honeybees gone like they almost were now, collapse of other keystone species, every last alpha predator gone, antibiotics doing even less than they already did, diseases that were never quite the one big pandemic but big enough to be historic events in themselves. (p. 321)

Most importantly, the ultimate purpose of the dual-narrative structure of *The Peripheral* is to create a time-travel narrative. The protagonist of the first narrative, it turns out, receives glimmers of the future that constitute the second narrative. This connection is, in line with Gibson's standard repertoire of technology, established through a virtual reality video game, but it is time travel nonetheless:

> "Lowbeer knows the history of her world, and the secret history of ours. The history that produced Lowbeer's world includes the assassination of the president."
> "Gonzales? You shitting me?"
> "She never finished her second term."
> "She gets elected again?"
> "Exactly. And in Lowbeer's view, Gonzales's assassination was pivotal, a tipping point into the deeper jackpot."
> "Shit—"
> "We may be able to change that."
> "Lowbeer knows how to fix history?"
> "It isn't history yet, here. She knows, in large part, what really happened here. But now the two have diverged, will continue to. The divergence can be steered, to some extent, but only very broadly. No guarantee of what we'll ultimately produce."
> "She's trying to stop the jackpot?"
> "Ameliorate it, at best. We are, very much, already in it, here. She hopes, as do I, that the system in which she operates can be avoided in this continuum. She believes, and I agree, that a necessary step in that is the prevention of the assassination of Felicia Gonzales." (p. 378)

And with that, Gibson returns to the orthodox form of climate SF, indeed incorporates it into the plot: he imagines an apocalyptic future so that it may be prevented — or ameliorated, at least — in the present, both within the narrative and outside of it. Gibson, we must imagine, is uneasy with such a return to SF, a genre in which he has written, but also one against which he has defined himself since 1981's *The Gernsback Continuum.* Meaningfully, the epigraph of *The Peripheral* quotes H. G. Wells *The Time Machine*: "I have already told you of the sickness and confusion that comes with time travelling." That sickness and confusion belongs, perhaps, primarily to Gibson himself. If the trajectory of Gibson's first three trilogies is one of future and history slowly winding down between the 1980s and 2010, it seems as though history and the future now, in the guise of one of the oldest plot mechanisms of SF, return with a vengeance. Yet we must end our discussion of Gibson here, precisely because there is nothing further to say on orthodox ecological SF.

5. Climate Catastrophe and the Return of History: Kim Stanley Robinson's *Ministry for the Future* (2020)

In chapter three I followed the trail of an ecological SF, beginning with stories preoccupied with nuclear devastation, followed by a wealth of stories about planetary overpopulation, in line with popular scientific discourses at the time. Beginning with the 1970s especially, other conceptualizations of ecological degradation, including degradation brought about by climate change, began to bubble up to the surface as well. In chapter four I argued that cyberpunk, exemplified by the work of William Gibson, with its focus on the human body as the site of futuristic technologies and sciences, from cybernetic body augmentations to genetics to the internet, or "cyberspace", might need to be read as decidedly anti-ecological, a stance which, however, has become less and less tenable in the last decade.[197]

In this chapter, I turn my principal attention to a text of the 21st century in which the climate catastrophe, or at least Earth-scale catastrophe, returns to the foreground: Kim Stanley Robinson's *The Ministry for the Future* (2020). Any number of other texts could have been chosen to stand in for climate fiction in the 21st century, including, as noted, Gibson's work of the last decade. Within film, early (e.g. *Waterworld*, 1995; *The Day After Tomorrow*, 2004) and more current (*Snowpiercer*, 2013; *Mad Max: Fury Road, 2015*; *Geostorm*, 2017;) dystopian or disaster climate-themed films have been joined in recent years by a few films more focused on the psychology of living in the time of climate change (*First Reformed*, 2017; *Downsizing*, 2017). This distinction is not absolute and certainly does not neatly

197 As such, (post-)cyberpunk texts today tend to feature some form of ecological catastrophe, or at least a significantly worsened climate, as a kind of background detail at minimum. For two excellent examples, see the "pale" in ZA/UM's video game *Disco Elysium* (2019, post-cyberpunk in its definite focus on a world of globalized capitalism) as a stand-in for human-wrought ecological destruction, or Isabel Fall's *Helicopter Story* (2020), whose classically cyberpunk concern with the cybernetic enhancement of human bodies unfolds in the context of a post-climate-apocalyptic America.

correspond either to any theoretical notions of low and high culture, or the actual reception of these movies, but nevertheless points towards different styles of making art "about" the climate. In literature, we can perhaps similarly open a haphazard distinction. For SF, the history of climate fiction is extensive, with pride of place for earliest climate fiction belonging either to Jules Verne (*The Purchase of the North Pole*, 1889) or J. G. Ballard (*The Drowned World*, 1962; *The Burning World*, 1964). From the 1970s at least, climate change would periodically rear its head in science fiction, from Le Guin's *The Lathe of Heaven* discussed in chapter three to Octavia Butler's *Parable of the Sower* (1993), Paolo Bacigalupi's *The Windup Girl* (2009) and Margaret Atwood's *Oryx and Crake* (2003). Atwood, of course, stridently disagrees with her work being placed under the rubric of genre rather than literary fiction, pointing towards the limitation inhering in these terms. Still, a somewhat separate strand of climate fiction is identifiable the field[198] of literary fiction. A veritable explosion of literary climate fiction, or cli-fi, has been written in the past decade or so, from Ian McEwan's *Solar* (2010) to Claire Vaye Watkins' *Gold Fame Citrus* (2015), Omar El Akkad's *American War* (2017), and Jenny Offill's *Weather* (2020). The term "cli-fi" usually refers to both of these fields, generically designating any fiction "concerned" in any way with climate change; literary and cultural studies have given increased attention to this phenomenon (or these phenomena) in the past few years.

Yet all of these texts adhere to the "orthodox" structure of climate fiction laid out in previous chapters. Robinson's *Ministry*, I will argue, is far more interesting for our purposes here, in that it not only shows, in whatever form, an ecologically ravaged future, but rather problematizes the question of how the gap between now and future is bridged, especially politically. It breaks, in other words, with the orthodox form.

198 See Jeremy Rosen: *Literary Fiction and the Genres of Genre Fiction*, Post45, 2018, for whom the terms literary fiction and genre fiction are defined not by any intrinsic properties, but rather as fields which are tied to different institutional practices of commerce and prestige.

5.1 Writing Cli-Fi in 2020: A Minimal Gap

Kim Stanley Robinson has written science fiction with a focus on ecology and climate change throughout his career, from the *Three Californias* trilogy (1984-1990) to the *Science in The Capital* trilogy (2004-2007) and *New York 2140* (2017), his first work appearing roughly at the same time as William Gibson's early work. Indeed, Gibson and Robinson have been taken as two of the most important exemplars of two divergent strands in SF: the "cyberpunks" and the "humanists", a distinction first set forth by Michael Swanwick in 1986.[199] While the label "humanists" in particular remains somewhat vague, existing largely only as a negative of the label "cyberpunk" (as Gregory Feeley puts it, the humanists "are simply those writers who emerged in the early '80s whose interests are less suited to a chrome-and-matte finish"[200]), it is perhaps instructive that Robinson has been seen as belonging to a group of SF rivaling cyberpunk since its inception.

Most of Robinson's work is as "orthodox" in the structure of its temporal gap as the fiction we have already read in chapter three. Here I will closely read only his most recent novel, *The Ministry for the Future* (2020, from now on: *Ministry*). Detailing the work on a fictional United Nations ministry chartered to work against climate change, the novel maps a few decades of the near future in which climate change is eventually brought under control successfully. What differentiates the novel from most of Robinson's previously published ecological SF is that its plot commences a mere five or so years in the future. Yet unlike Gibson's flight into the present with his *Blue Ant* trilogy, Robinson does so precisely for the opposite reason: to detail the process of (fighting) climate change, a writer no longer has the luxury of commencing their story far in the future. The fact that the narration begins in 2025 or thereabouts (clear dates are rarely given) points towards an obvious fact for us today: the climate catastrophe is not merely looming but already in progress, and it forecloses upon evermore future scenarios. With the 1.5 °C target of the 2015 Paris Agreement perhaps only years away from being breached, commencing the plot any

199 In *A User's Guide to the Postmoderns,* printed in *Isaac Asimov's Science Fiction Magazine*, August 1986; reprinted in *The Postmodern Archipelago*, 1997.

200 In the *Washington Post*, 24 May 1987:
https://www.washingtonpost.com/archive/entertainment/books/1987/05/24/cyberpunks-and-humanists/f0f3cb28-b2a7-46e9-a944-0683db747971/

later would in some sense already consign the novel to fantasy or dystopia. Consider Robinson's earlier work *Forty Signs of Rain* (2004): while no date as such is given, that novel is set at a time when atmospheric CO2 levels have reached 440 parts per million (the value as of 2022 is about 415-420ppm) and the Earth has already warmed by six degrees Fahrenheit, or more than than three degrees Celsius (p. 159). In the decade and a half between the publication of *Forty Signs of Rain* and *Ministry*, increasingly detailed scientific assessments of climate tipping points and of the potential damages from climate change have made it clear that three degrees Celsius of warming are simply beyond the pale, constituting something close to the end of modern civilization. A SF text in which climate change is to be addressed (rather than simply ignored, or realized as dystopia) written in 2020 quite simply cannot afford such a gap between present and future; it would read like alternate history, or fantasy, or, at any rate, escapism. Any reckoning with climate change must happen in this decade. The space of potential futures — the core of an SF literature committed to possible futures — becomes smaller, breaking away from our imagination like ice calving from a glacier, with every year in which not enough is being done. And, as Andreas Malm has put it laconically: "There have already been many years of that kind."[201]

Ministry is thus concerned not with a determinate future point but rather with the historical passage from our present to that future; it presents a future-history of the next few decades, beginning in the present. Stretching from the mid-2020s into the middle of the century, the novel follows the titular Ministry for the Future, a creation of the United Nations, in its mission to advance decarbonization and other necessary measures to prevent the catastrophic effects of unchecked climate change. Alongside this central plot-strand — largely focalized through the eyes of Mary Murphy, head of the ministry — the novel presents frequent asides: chapters written from the perspective of other important climate actors (e.g. a group of scientists in Antarctica) or of eye-witnesses to certain climate-related events (the flooding of Los Angeles, but also the freeing of enslaved people in rare earth mines), anonymous dialogues, unfocalized narration, as well as chapters which provide SF's most ambivalent stylistic contribution to literature, the info-dump, on various topics related to climate change, often economic in nature. *Ministry*'s concern with the "process" of history, meanwhile, finds its correlate not in other SF but rather in contemporary climate

201 Andreas Malm: *The Progress of This Storm*, 2018, p. 7.

activists debating different “theories of change”, different notions of what constitutes effective pressure points for climate politics.

Based on these observations, let me lay out the arguments of the rest of this chapter. Robinson himself has claimed that the text works polyphonically. I begin by producing a brief, somewhat formalist, taxonomy of the kinds of writing styles that can be found in *Ministry*, as Robinson’s claim of the novel’s polyphony rest largely on this formal aspect. Afterwards, I argue that Robinson’s texts can best be understood as a career-spanning serial work, which extends into his non-fiction (in the form of interviews, journalistic writings, and keynote lectures). Crucially, many of his texts revolve around a certain set of ecological and political themes and tropes which reoccur in variations; the specific variant forms found in *Ministry* can thus be fruitfully compared to earlier iterations of these accreted themes; the obvious difference between *Ministry* and some of his previous novels will indeed turn out to be the changed temporal structure, with the novel far more concerned with the gap between present and future rather than an already accomplished-future. Indeed, I argue that the novel, despite associating itself with SF and utopian literature, finds itself continuously stuck in a narration of the present. Here, the climate crisis is revealed as a *limit case* of SF as a genre, much as with Gibson’s third trilogy: as the climate crisis increasingly forecloses the possibilities of the future, the future-worlds of SF become evermore presentist, so to speak.

My second overarching argument, in chapter 5.2, will begin by showing that the non-fictional aspects of *Ministry* in theory and its actual reception in practice have put the novel into a the political milieu of the Green New Deal and its non-fiction literature. As such, the generic context of the novel becomes one not only of science fiction and climate fiction, but also of non-fiction. Drawing on Mikhail Bakhtin’s original definition of polyphony and opposing it to the concept of “the political” in the political philosophy of John Rawls — the most important figure of liberalism —, I argue that polyphony defines a meta-political style of writing interested in mapping the territory of the political. Under this definition *Ministry*, pace Robinson’s own claim, turns out to be political but not, we could say, meta-political; the novel’s claim to polyphony falls short of the mark. The many voices of the novel remain too congruent to produce a polyphonic territory of the political. Finally, I will delineate which political pressure points the novel seems to focus on: technocratic politics, protests and demonstrations, and sabotage and terrorism. The novel veers uneasily

between these different political spheres, and seems to imply the necessity of the latter two on the level of plot while at the same time often minimizing their role on the level of narration. Here, I will move from a relatively immanent close reading of the text itself to the question of *Ministry*'s readers: whatever theories of change the novel espouses within its fictional world, the book as an object in our world obviously adheres to the same theory of change as conventional SF or ecological non-fiction: by being read, the text is to influence its readers. Taking stock of the fact that *Ministry* has been well-received not only by the SF community but also specifically by political elites, I consider whether the fact of terrorism on the level of plot can be read as an implied threat of terrorism in the real world. This would constitute something genuinely new about the novel vis-a-vis "orthodox" ecological SF.

A Taxonomy of Chapters

Let me begin, then, with a overview of the novel, which by necessity will also be an overview of the types of genres found within the text, as the style of the novel will be relevant to the arguments that follow. The narrative begins in 2025; the novel's first chapter, twelve pages in length, presents the reader with an account of a heatwave in a city in India, as experienced by Western aid worker Frank May. Insofar as the text has a central plot, it centers around two characters: Frank May and his struggles with Post-Traumatic Stress Disorder after the heatwave; and Mary Murphy, who heads the eponymous Ministry for the Future, envisaged as an international agency that is to represent the interests of future generations,[202] its powers strengthened in light of the heatwave. Much of the plot unfolds in Zurich, where their lives converge. Frank suffers from PTSD for the rest of his life; we witness him go to a psychiatrist, work in Antarctica for a while, and, still early on in the novel, kidnap Mary for a few hours, simply to argue with her that the ministry does not do enough against climate change; he recommends that the ministry take up direct violence, such as targeted assassinations of those who most strongly stand in the way of fighting climate change. He leaves and is eventually apprehended by the police, after which Mary begins to visit him in prison. Mary, in the meantime,

202 The rights and freedoms of as-of-yet unborn citizens were, interestingly enough, indeed the basis of a decision by the German constitutional court which declared Germany's climate policy inadequate; see: https://www.bbc.com/news/world-europe-56927010

continues to grapple with Frank's argument and learns eventually that one of her subordinates, Radim, has in fact started a “black wing” of the ministry that does precisely what Frank had suggested. Mostly, however, chapters focalized through Mary follow her into meetings at the ministry or with other stakeholders (as the term goes), an escape through the alps when she is assumed to be in danger of being assassinated herself (in one of the few overtly “pulpy” sequences of the novel), and her everyday life. Many of these chapters are written fairly conventionally, though certain chapters are written in different “genres”: meetings at the ministry, for example, may take the form of stenographic meeting notes (“Bob, Adele, Estevan in a team report. Mostly Antarctica. Test projects pumping water out from under glaciers getting positive results [...] Big push, but amazing cost-benefit. Bang for buck. Let's do it. M nodding”, p. 355).

Much of the novel, however, is made up of short chapters situated outside of these two primary plot strands. Some of these chapters take the form of fictional vignettes of how global warming and the world of the future are experienced by individuals across the world — by climate refugees, arctic researchers, kidnapped CEOs, protesters across the world, or someone kayaking through a flooded Los Angeles. Robinson has called these chapters “eyewitness accounts”.[203] This multiplication of perspectives, furthermore, extends beyond the human; the second chapter, immediately following the heatwave that opens the novel, is written from the perspective of the sun. Chapter 46 is written from the perspective of “the market”, in an odd mixed metaphor of circulating blood and metabolizing gut (“My stomach made disparate things the same by way of digestion into blood. This made food of all the things brought into me, and I quickly grew. I am an omnivore. And as I grew I ate more and more”, p. 191); chapter 53 imagines the point of view of a photon. Robinson himself has likened these chapters to 18th century novels of circulation (or object narratives), though they are formally also reminiscent, perhaps, of the riddle that the Sphinx poses to Oedipus in Greek mythology.

Besides these there are also unfocalized narrative chapters, which clearly detail something that is true in the fictional world but not in ours. These may simply offer a more panoramic view of the politics of the fictional world, e.g. of political power shifts in India after the catastrophic heatwave (pp. 23-26) that opens the novel, or

203 E.g. here: https://yaleclimateconnections.org/2020/11/a-crucial-collapse-in-the-ministry-for-the-future/

offer a fictional summation of the 2020s (p. 123). Such chapters, then, narrate a sense of the future-history of the fictional world.

Finally, we can identify unfocalized chapters that are concerned with science, social organization, politics, economics, and the like. Examples include chapters on Modern Monetary Theory (p. 365) or the economic concept of the discount rate (pp. 129-133). Within the genre of science fiction, of course, technical asides are — whether spoken by a character in-universe or simply by the narrative voice — not uncommon, and are known by the term "info-dump". In SF texts these are usually concerned with technical information from the hard sciences, not social sciences like economics, but structurally the chapters would nevertheless be familiar to any genre-savvy reader. The focus in these chapters lies on politics and economics rather than climate science because Robinson is writing from the perspective that climate change today is a political, not a technological problem, or at least from the perspective that politics are themselves merely another kind of technology.

The novel, as I will show later in more detail, concurs with climate discourses that see the climate catastrophe as, at this point, a political problem, not a scientific one, and its science-fictional focus is accordingly on the social, not the natural sciences.[204] These chapters are unfocalized though not necessarily written in a scientific, non-literary tone; a chapter that explains the discrepancy between the amount of fossil fuels that humans can still safely extract from the earth and burn (500 gigatons) and the amount of fossil fuels that are already officially in the books of fossil fuel companies as assets (3,000 gigatons) ends with a sardonic comment on the executives of these companies: "Executive decisions for these organizations' actions will be made by about five hundred people. They will be good people […] Pillars of the community. Givers to charity. When they go to the concert hall of an evening, their hearts will stir at the somber majesty of Brahm's Fourth Symphony. They will want the best for their children" (p. 30). The novel here, in its tone, certainly does not try to imitate the tone of, say, an encyclopedia or a scientific article.

The novel, then, to summarize, is made up of 1) two narrative strands largely focalized through the characters of Mary and Frank which make up the majority of the plot; 2) individual narratives focalized by incidental characters which usually do

204 As for example the IPCC contributors Valerie Masson-Delmotte and Jiang Kejun have argued: https://www.euractiv.com/section/climate-environment/opinion/climate-change-is-a-problem-of-politics-not-science/

not advance the plot, but which serve as "eyewitness accounts" of the fictional world as it is changing, or has changed; 3) narrative chapters which are unfocalized but which also give an account of the fictional world's future-history, usually from a more birds-eye perspective; 4) non-narrative chapters which are unfocalized and which resemble, in the parlance of the science fiction community, "info-dumps", except with a focus on political, economic and social issues rather than the more traditional SF hard-science information.[205] Let me now turn to the serial nature of Robinson's work.

Serial Writing

While I will analyze the politics of the novel itself in more detail below, for now I simply want to point out that we can, thanks to the serial nature of his work, to some degree readily identify the politics of the novel (manifest in every kind of chapter, but especially in the info-dump sections) as those of Kim Stanley Robinson himself. What do I mean by the serial nature of his work? As Frank Kelleter has put it: "A series, unlike a self-contained oeuvre, can observe its own effects on audiences as long as the narrative is running. Moreover, it can react to these observations, making adjustments in form and content, just as audiences can become active in a narrative's development if the narrative is still unfolding — if it is a serial narrative, that is".[206] In this sense, serial phenomena are not rare in the contemporary cultural sphere but rather one of its constituent building blocks. Science Fiction studies, for example, sometimes speak of SF (and of genre generally) as a "megatext", imagining the individual texts associated with SF as a larger unit (in the language of so many new materialisms: a whole, a network, a mesh, an assemblage) that can be read together, a series produced across decades or centuries. From this view, SF is indeed highly self-reflective and self-observing; as I have argued in the opening chapters, it is one of my guiding principles to treat SF as such a self-reflexive, feedback-looped system.

205 We may note here in passing that Robinson has used this writing style before, for example in *2312* (2012), identifying as decisive the influence of John Dos Passos' *U.S.A.* trilogy as well as John Brunner's ecological SF from the 1970s, which we have encountered in chapter 3.2 and who was himself influenced by Dos Passos. See https://bioneers.org/kim-stanley-robinson-on-his-book-the-ministry-for-the-future/ and https://www.theatlantic.com/entertainment/archive/2013/04/in-300-years-kim-stanley-robinsons-science-fiction-may-not-be-fiction/274392/

206 Frank Kelleter: *Serial Agencies*, 2014, p. 5.

Ministry can be read as a serial text not only in the context of SF as a whole, however, but also in the context of Robinson's previous work. Many novels (or series of novels) by Robinson concern themselves with environmental degradation and protection, often specifically in the context of climate change. Combined with this is usually an interest in the politics of social organization, especially economic forms and alternatives to capitalism. In this sense, almost all of Robinson's novels are variations on a theme. Both the three individual novels of the *Three Californias* (1984-1990) series, whose worlds are not connected with one another, and the *Mars* (1992-1996) and *Science in the Capital* (2004-2007) trilogies are concerned with these themes, as are individual novels like *Antarctica* (1997) or *New York 2140* (2017). The non-fictional Basque worker cooperative Mondragon Corporation, to give just one example of a fairly specific recurrence, is first mentioned in in *Red Mars* (1990) and *2312* (2012) before returning in *Ministry*. Robinson's fiction can thus perhaps best be understood as a serial work. Indeed, the *Three Californias* trilogy, which functions not as a single narrative across three publications but rather as, literally, three different — incompatible — visions of a future California, perform in miniature this repeated iteration on a theme that in the following also makes up Robinson's work as a whole. The third entry, notably, is advertised on the back of the collected trilogy publication as follows: "What if… a revolution happens, and the United States addresses climate change in a responsible way[?]".[207] The work read as a whole represents not so a single vision of the future, but rather consistently updated versions of possible futures, a background of repeated concerns making possible a foreground of differentiation. This provides us with an obvious entry point into *Ministry*: what specific variations of these concerns — climate, ecology, political organization of the economy — can we find in this novel in particular, what differentiates this version from previous ones? And, conversely, what themes, tropes, characters, idiosyncrasies seemingly accrete further across different work?

Let me begin with the latter, though not exhaustively. I want to focus here only on a single aspect; not on the tropes that reoccur throughout Robinson's fiction (from the aforementioned focus on ecology and political economy to the oddly essentialist ascriptions of typological features to citizens of nation-states, especially, for some reason, Switzerland) but rather on the way in which certain sections of the

207 Backcover of the 2020 collected edition of *Three Californias*.

book had been published in different formats prior to the release of the novel. Within genre fiction publishing, this would usually mean that individual chapters have already been published as self-contained short stories, or that, as with Raymond Chandler's process of cannibalization and the SF practice of writing "fix-up" novels, multiple previous short stories combined find their way into a novel. With *Ministry*, however, it is not the case that previous versions of some of the narrative chapters have been published earlier; rather, in the last half-decade of Kim Stanley Robinson's output what we mostly find is *previous versions of some of the arguments laid out in the non-narrative info-dump chapters*, not as fiction at all but rather in the form of speeches, keynotes, and op-eds. Robinson's writing process here is less like that of Chandler or of Isaac Asimov, and more like that of academics, who present portions of their (technical, non-fictional) work at conferences or in academic journals.

The fact that SF authors are often not only seen as experts on fiction itself but also on society (which literary authors often are as well) as well as science, technology, and "the future" as such (which literary authors rarely are), has enabled Kim Stanley Robinson to give keynotes and write non-fiction articles as an expert on climate change and society, if only from a certain perspective.[208] In this sense, Robinson's work includes not only his literary writing or, say, interviews about literature, but also keynotes — at the *Strelka Institute*, the *Society of Environmental Toxicology and Chemistry*, or *Bioneers*, and generally at universities — as well as op-eds, essays, and newspaper columns for publications such as the *Financial Times*, the *New Yorker*, or *Bloomberg*.

Texts such as these point us towards the nature of the varied expertise that may be accorded to SF authors. In the *New Yorker*, Robinson has written about how "the Coronavirus is rewriting our imaginations" (May 1, 2020, a mere two months or so into a pandemic that, as of August 2023, is still ongoing, though ever more ignored). Critically, his expertise here is that of literature, of someone who knows his genre; but the genre, in turn, gives insight into the rest of the world, because "science fiction is the realism of our time. The sense that we are all now stuck in a science-

208 Paul Carter has noted that one of the first instances of SF authors being accorded such an expertise was in 1969 after the moon landing: "CBS interviewed several science fictio nwriters — ′Ray Bradbury, Arthur Clarke, Robert Heinlein — and listened to them with the same respect accorded by television to that day to Henry Steele Commager, Norman Mailer, and sundry scientists, military men, and theologians." Paul Carter, *The Creation of Tomorrow*, 1977, p. 3.

fiction novel that we're writing together — that's another sign of the emerging structure of feeling." A month before Robinson's *New Yorker* article, *Electric Literature*'s interview of fellow SF author Ted Chiang ran under the headline "Ted Chiang explains the disaster novel we all suddenly live in",[209] referring to the pandemic; again, expertise of genre had become expertise of our moment in time, our structure of feeling, because reality itself, so it seemed, was being written according to the rules of the genre.

This is the kind of knowledge-claim accorded to an author, however, that non-genre authors too may expect; if SF is the realism of our time, as Robinson put its, then realism by implication can be assumed to have (had) the function of saying something about the world, of making the author of literature an expert on certain matters of the real world (and literature). Yet Robinson also regularly writes essays and articles not on the basis of his literary expertise, but rather of his knowledge on the science and technology of climate change itself. This is most notable in his *Bloomberg* "Warm Futures" columns, in which he writes on the importance of cities, carbon capture and storage, the wet bulb temperature, a jobs guarantee, and "carbon quantitative easing".[210] These articles, in essence, belong to the genre of science journalism; aside from the name Kim Stanley Robinson as author signature, the only hint of SF here comes via the illustrations by Viktor Hachmang that accompany the articles, envisioning sky-high greened roofscapes, wind turbines, maglev trains, all in the style, ironically, of a starkly colorized cyberpunk aesthetic — somewhat reminiscent of the color scheme employed for the front and back cover of the first collected volume of Ōtomo Katsuhiro's *Akira* (1984). In the articles that outline positive visions of what can be done, greens, blues and soft pinks dominate the illustrations, while the article on wet-bulb temperatures is accompanied by an illustration of people in the city either sweating profusely or sporting parasols; futuristic buildings in purplish-blue and green extend to the sides of the background, but the center of the illustration is dominated by the color red. Sun, sky, parasols, people, all scorching.[211] The article itself, however, is all science journalism, explaining the nature of the wet bulb temperature: heat dissipation, humidity, sweat,

209 Marcus Halimah for *Electric Literature*, March 2020.

210 See his author page on *Bloomberg*: https://www.bloomberg.com/authors/AUzEqskT8uk/kim-stanley-robinson

211 See https://www.bloomberg.com/news/articles/2020-09-18/the-killer-heat-wave-era-isn-t-inevitable-yet-kim-stanley-robinson

the interplay of these factors meaning that 35 degrees Celsius at 100% humidity are deadly, the fact that such temperatures have been observed far more often than they ought to have been already. These articles are science fictional only to the degree that climate science itself is fictional, that is, makes predictions about or demands of the future.

Yet it is in these keynotes and op-eds — not in previously published fiction — that we can find early fragments of the novel *Ministry*. The *Bloomberg* article on wet bulb temperatures appeared in September 2020, a month before the novel, which similarly opens with a description of wet bulb temperatures. The *Bloomberg* article on "carbon quantitative easing", which was published in April 2020, lays out the argument that the novel makes in various (thinly narrativized) sections (chapters 32, 45, 69), citing an article by Delton Chen et al[212] both in his Bloomberg article as well as in Ministry (p. 172). As early as 2012, fragments of the novel can be found in the keynote given by Robinson at the *Center for Values in Medicine, Science, and Technology*,[213] where he speaks of the way in which people in the present live at the expense of future generations, asking "who are we predating on? Who are we in competition with? It's the future generations. And they are not born yet. So its very easy to kick ass in competition with unborn people because they aren't here to defend themselves" (~28:00). A discussion of discount rates in the novel picks up this exact wording:

> Mary: A number which can't be justified on its merits.
> Dick: Right. This often gets admitted. No one denies future people are going to be just as real as us. So there isn't any moral justification for the discounting, its just for our own convenience. […]
> Mary: but we do it anyway.
> Dick: We kick their ass.
> Mary: Easy to do, when they're not here to defend themselves! (ch. 32, p. 131)

Similarly, in his talk at *Bioneers* in 2015[214] Robinson mentions the amounts of carbon as assets in danger of becoming stranded assets, which "well-meaning people" would want to burn for their nations or corporations, prefiguring, in essence, the argument of chapter eight (pp. 29-30 / ~10m:10s of the video); what follows in the talk are fragments of chapter 16 (p. 58) on global sufficiency, an explication of E. O. Wilson's half-earth project, which figures prominently in *Ministry* (e.g.

212 Chen, Delton B., et al. "Hypothesis for a Risk Cost of Carbon: Revising the Externalities and Ethics of Climate Change." *Understanding Risks and Uncertainties in Energy and Climate Policy*, edited by Haris Doukas et al., 2019, pp. 183—222.

213 Online: https://www.youtube.com/watch?v=Csvroehk7Ww

214 Online: https://www.youtube.com/watch?v=489I0gZlepM

chapter 72, pp. 359-364 / ~13m:30s), and the notion of Keynesianism over austerity (p. 365-366 / ~17m:40s). In the talk, Robinson also notes that "I've often thought that you get a vision of […] a distant utopia, and you see the situation that we're in now, and the question becomes, what do you do right now, to bridge, what […are] the steps that you take in the present that get you to this positive future, [which by itself] you can imagine rather easily?" (~16m:00s). This prefigures what turns out to be the basic representational problem of *Ministry* itself. To summarize, with *Ministry* we can see a kind of serial writing enabled by the non-fictional expertise accorded to science fiction writers; for writers of "hard" SF, it is possible to not only publish fragments of novels in the form of short stories — with an attendant emphasis on narrative — but also to publish the technical arguments and "info-dumps" as a form of journalism.

Let me set the stage for the next section by briefly considering the other side of the question of serial repetition: what is new and different here, what are the specific variations found in *Ministry*? There are new characters and plots (that is to say, this is not the kind of seriality currently so popular in blockbuster film, the model of "shared universes"), new narratives; none of this is necessarily noteworthy. The question of how this text differs from previous iterations of Robinson's thematic focus can be made more precise, or narrowed down, if we consider SF once again as a genre which constructs futures but therefore leaves a "gap" between present and future. As such, SF as a genre is implicitly concerned with the structure of (not only human) history, precisely insofar as a belief in the passage of history, that is, historical change, is a necessary precondition of imagining a future that is different from the present in some relevant way. SF authors regularly make clear, as noted in previous chapters, that the genre is really about the present, not the future; but it can only be about the present in imagining a future world that is different from our present, and elucidate our present through this difference. One of the key variations at play in Kim Stanley Robinson's work, in other words, is that of temporalities. What is new about *Ministry* as a novel by Robinson is that he attempts to write about the gap between present and future.

Please Mind the Gap

From the perspective of an environmental SF as we have seen it so far — in fiction on nuclear destruction, on overpopulation, and indeed on climate change — *Ministry* is an attempt to move beyond the orthodox form of these stories: to no longer simply imagine an already utopian or dystopian future, but to consider the entire trajectory that would lead to such a future. To some degree, Robinson has been interested in the question of historical process throughout much of his career, as Derrick King has shown.[215] Yet the historical gap in Robinson's previous major climate-SF effort — the *Science in the Capital* trilogy — is still markedly larger than that of *Ministry*, commencing, as mentioned, in a world in which warming of three degrees Celsius is already reality. For *Ministry* to be about the gap between present and future, it is necessary to begin right now, in the present. Robinson himself had noted at the 2015 *Bioneers* conference that it is easy to imagine an already changed future — a utopian world in which things are better — that the difficulty lies in the path there. In interviews concurrent with the release of the novel, Robinson similarly notes this concern quite explicitly, citing Jameson's well-known dictum on the end of capitalism:

> "Famously, from Thomas More (Utopia) on, there's been a gap in the history — the utopia is separated by space or time, by a disjunction. They call it the Great Trench. In Utopia, they dug a great trench across the peninsula so that their peninsula became an island. And the Great Trench is endemic in utopian literature. There's almost always a break that allows the utopian society to be implemented and to run successfully. I've never liked that because one connotation of the word "utopian" is unreality, in the sense that it's "never going to happen." So we have to fill in this trench. When Jameson said it's easier to imagine the end of the world than the end of capitalism, I think what he was talking about is that missing bridge from here to there. [… The] story of getting to a new and better social system, that's almost an empty niche in our mental ecology".[216]

Note that the word "our" here may refer to political thought as well as to SF as a genre; in either case, a better society may be easier to imagine that the historical process that moves the world towards that better society. Indeed, as I will argue in

215 King, Derrick. "From Ecological Crisis to Utopian Hope: Kim Stanley Robinson's Science in the Capital Trilogy as Realist Critical Dystopia." *Extrapolation*, vol. 56, no. 2, Jan. 2015, pp. 195—214.

216 https://www.jacobinmag.com/2020/10/kim-stanley-robinson-ministry-future-science-fiction

the second part of this chapter, climate activists, when discussing the question of tactics and strategy, are ultimately concerned with the same problem: what causes a change in the world? In debating the relative efficacy of volunteering for political campaigns, organizing public demonstrations, performing civil disobedience, or committing sabotage, activists bring forward different implied theories of change, different models of causality. Political disagreement about climate change, to be sure, is not only disagreement about how to get to a better world; there are also radically disparate notions of what that future ought to look like in the first place. But even those who agree on what a better future society may look like — and almost the entire political spectrum agrees, after all, that a future will have to be one without carbon emissions — may still disagree as to how one "gets there", what the path to that future looks like.

Where much climate-SF takes place in the aftermath of climate catastrophe (or its avoidance), *Ministry*, then, is quite consciously about the time in between our present and a future in which the crisis has been resolved. At the outset, nothing is being done and for much of the novel, no political action seems to be enough. The 2030s, halfway through the novel, still feel like "zombie years" in which "Everyone alive knew that not enough was being done, and everyone kept doing too little" (p. 227). Only in the last third of the novel does the cumulative effect of what has been accomplished increasingly makes a difference. Larger habitat corridors are established to protect wildlife; carbon sequestration on a massive scale is financed by a new global currency; diesel-engined container ships are replaced by ultra-modern sailing ships; CO2 figures go, finally, down, "not just growing more slowly, or leveling off, which itself had been a hugely celebrated achievement seven years before, but actually dropping, and even dropping fast" (p. 445). Describing the happenings of the United Nations Climate Change Conference COP 58 (which would be in about 2053), the narrator notes:

> The 58th COP meeting of the Paris Agreement signatories, which included the sixth mandated global stocktake, concluded with a special supplementary two-day summing up of the previous decade and indeed the entire period of the Agreement's existence, which was looking more and more like a break point in the history of both humans and the Earth itself, the start of something new. Indeed it can never be emphasized enough how important the Paris Agreement had been; weak though it might have been at its start, it was perhaps like the moment the tide turns: first barely perceptible, then unstoppable. The greatest turning point in human history, what some called the first big spark of planetary mind. The birth of a good Anthropocene. (p. 475)

The Paris Agreement is identified as a "break" or "turning point" — something that has changed history, produced the gap — but this identification can only occur retrospectively, from the vantage point of the future; it has *become* a turning point only due of the accumulated actions detailed in the preceding 400 plus pages of the novel. Without these pages on the time between times, there would be no point to the concluding chapters set in a definite afterwards. And even the end of the novel is not, in a sense, a definite "already-accomplished future" yet. The last line of the novel, more than just a little on the nose, makes this notion abundantly clear: "we will keep going, we will keep going, because there is no such thing as fate. Because we never really come to the end" (p. 563). What saves a final sentence this clichéd is perhaps only that it is in fact a very pointed assessment of the temporality of climate change. Not only is climate change, unlike nuclear war, less a discrete event than a disaster of slow, daily accumulation; it (in this sense rather like nuclear war) cannot be resolved permanently, but rather only be held at bay. The specter of climate change necessitates constant work and vigilance well in the future. As Adam Tooze has noted, in reference to the way in which WWII has been used as a metaphor for climate action: "what makes it [climate mobilization] totally unlike the war is that there's no happy end. There's no moment where you win and then everything goes back to the way it was before, but just better […] this is a permanent change in lifestyle, and we need to love that and we need to live it and we need to own it and we need to reconcile ourselves to the fact that this is for us and for all subsequent generations of humans."[217] A novel ends, but the work on keeping the climate within bounds will continue into the twenty-second century. Ending a novel with the line "we never really come to the end" seems (and in some ways is) maudlin and trite, but it can be read as an accurate assessment of the irresoluteness of the climate catastrophe.

The novel, then, exhibits an interest in historical process, not outcome. What happens between the initial and the concluding chapters, between the 2020s of the first page and the 2050s of the final page? This will be the concern of the second part of this chapter. Before I turn to that issue, however, let me note one more thing: much like Gibson's writing, Robinson's novel is sometimes in fact almost "stuck" in the present, unable to establish a sense for the near future at all — if for entirely

217 https://www.theatlantic.com/science/archive/2019/08/how-fed-could-fight-climate-change-adam-tooze/595084/

different reasons than Gibson.

Stuck in the Present? La La Land, Syriza, Species Extinctions

In certain passages *Ministry* seems concerned neither with an already accomplished future, nor with the gap between present and such a future, but rather tied to the present as such. If SF usually comments on the present by way of a difference, or spread, between present and future — and Gibson's cyberpunk, as we have seen, purposefully minimizes that difference — *Ministry* at times is strangely bereft of any sense of being set in the future at all. Instead, the narrative voice often distinctly feels like it is commenting from the vantage point of the present. In having to write about the "gap" between now and then, the novel sometimes gets stuck in the now. Let me give a few examples.

On page 25 the narrator likens the catastrophic heat wave that opens the novel to "mass shootings in the United States — mourned by all, deplored by all, and then immediately forgotten or superseded by the next one, until they came in a daily drumbeat and became the new normal. It looked quite possible", it is remarked, "that the same thing would happen with this event, the worst week in human history". The temporality to be invoked for climate change seems clear enough: seemingly singular events — with the singular event as newsworthy event par excellence — do not become more shocking if they repeat often enough; they turn into a regular experience and one becomes, rather, numb to them. That, at least, has been one of the dominant discourses around mass shootings in American society in recent years, in which stalemated arguments on gun control seemingly have become the well-rehearsed aftermath of mass shootings; a pessimist reading of the state of gun control discussions is that mass shootings have become too "normalized" to produce a lasting affect that would translate into political power.[218] The notion that heat waves and other discrete climate catastrophes (droughts, floods, hurricanes) might become a "daily drumbeat" seems intuitively worrying from the perspective of contemporary American politics. But from the vantage point of SF as genre, it seems most noteworthy precisely that the narrator's voice seems so clearly to come from that perspective of contemporary American politics. In that sense, the novel is not

218 See e.g. Ann Mongoven: *Stop Normalizing Gun Violence*. Online: https://www.scu.edu/ethics/all-about-ethics/stop-normalizing-gun-violence/

engaged in the more typical mode of SF in which a commentary on the present is produced by producing a difference between present and future; rather, the novel here seems unable to escape the perspective of the present at all.

This sense to some degree pervades the novel. In a meeting with the central banks of the world, Mary's (through whom the chapter is focalized) thoughts revolve around the PIIGS — an acronym popularized in Europe in the early 2010s in the context of the sovereign debt crisis and standing for the countries Portugal, Italy, Ireland, Greece, and Spain. She reflects on the power relations of the European Union (presented, as is common in the novel, in free indirect discourse, so that the thoughts of Mary frequently bleed into those of the narrator): "But Irish — no. A colony, a little country, one of the PIIGS, one of the many little piggie countries of Europe who had to pick up the crumbs of the big countries, and had no chance of achieving the gleaming polish of one of the big countries, which was really to say, Germany and France" (p. 213). In one of the unfocalized "theory" chapters (pp. 408-409), a discussion on how to achieve a reorganization of the monetary order and the necessity to plan for contingencies, PIIGS is mentioned once more. The G of the PIIGS is singled out, and what follows is a brief description of the situation in which the Greek political party Syriza found itself in early 2015:

> "What they needed at that moment was a plan that would get them out of the EU and back to the drachma. They would have needed IOUs of some sort to stand in and do the job of money while they printed new drachmas and made all the other necessary changes as they transitioned back to a country in control of its own currency and sovereignty. And in fact there were people in Syriza working furiously to design that Plan B, which they called Plan X, but this turned out to be a case of too little too late, as they couldn't convince their colleagues in government to risk trying it." (p. 409)

This gloss of what had happened in 2015 is almost certainly based on former Greek finance minister Yanis Varoufakis' account of the events as presented in his 2017 memoir *Adults in the Room*; the book was widely taken up and discussed online in European leftist circles.[219] From the perspective of SF criticism, one may fairly ask why both Mary and the narrator as voices from, at this point in the narrative, at least one or two decades in the future, would use Europe's sovereign debt crisis as a touchstone to explain the importance of political leverage. What is at

219 For an overview of these discussions, see Adam Tooze: *Europe's Political Economy: Reading Reviews of Varoufakis's Adults in the Room*, 2018. Online: https://adamtooze.com/2018/02/24/europes-political-economy-reading-reviews-varoufakiss-adults-room/

stake here is a failure of imagining the future as a place in which thought, too, will be unexpectedly different from ours.

As I have noted in the previous chapter on the political nature of SF, the genre almost intrinsically takes itself to reflect on the present rather than imagine a future. Yet that reflection must take place indirectly, must be, in a sense, refracted — that is the entire point of SF in most theories of what SF does. By creating a difference or gap between present and future, the present becomes more intelligible. But *Ministry*, again and again, turns directly to the politics and culture of the 2010s, referencing a 2016 publication by climate scientist James Hansen, Damien Chazelle's film *La La Land* (also 2016), or the post-Keynesian economic field of Modern Monetary Theory, which has nominally existed since the 1990s but has become popular only in the last five to ten years, largely via discussions online, especially on Twitter.[220] As mentioned, I will take up the claim that *Ministry* is polyphonic, advanced by Robinson, in interviews and the novel itself, further below. For now, let me only suggest that the variety of topics broached by the text — designed to provide a holistic overview of the politics of responding to climate change — are ultimately largely in tune with the Twitter feed of the last half decade of someone who follows leftist political accounts on the website.

This "presentism" of the novel is perhaps most notable in the figure of Jane Yablonski, whom Mary meets as the fictional chairwoman of the Federal Reserve at some point in the 2030s or 2040s (the novel only rarely gives precise dates, adding to the sense of existing in a suspended present rather than a future). The character's initials correspond, and rather obviously refer, to Janet Yellen, who was the actual chairwoman of the Federal Reserve from 2014 until 2018; since 2021 she has been secretary of the treasury under President Joe Biden. I want to emphasize here the strangeness of using a naming convention usually associated with the roman à clef in terms of a text's temporal logic. The roman à clef and SF both comment on the non-fictional present through a veil of difference; in the roman à clef this difference is constituted by naming conventions, while in SF the difference is constructed by a

220 For a primer, see e.g. Bloomberg, *Modern Monetary Theory, a Beginners Guide*, 2019. Online: https://www.bloomberg.com/news/features/2019-03-21/modern-monetary-theory-beginner-s-guide. Regarding the importance of such online discussions, the Financial Times editors noted in 2019 that MMT is "an idea being contested right now on finance and economics Twitter, which sounds like a silly thing to say but is not, because the people who read and write econ Twitter are the people who explain economics in newspaper articles and academic papers for the rest of the world". Online: https://www.ft.com/content/539618f8-b88c-3125-8031-cf46ca197c64

temporal (or spatial) difference. The future-histories of SF usually presume that the present of the reader constitutes the past of the novel. The usual reading strategy implied by SF would therefore be to presume that Janet Yellen also existed in the narrative past of *Ministry*; the roman à clef writing strategy implied by the name Jane Yablonski, by contrast, does not — it creates a strange doubling effect. It is here, I think, that the climate catastrophe constitutes a limit for SF. Dystopias which merely wish to warn of the danger of unchecked climate change can fill the "gap" between present and accomplished future quite simply by implying a future in which nothing had been done; their political valence, however, is extremely limited, as warnings of unchecked climate change have become ubiquitous, to little effect. A utopia may simply elide the issue of the gap, as Jameson had diagnosed. A work of SF that wishes to narrate the "gap"-time towards a better world, by contrast, must contend with the fact that the severity of the climate catastrophe will largely be decided in the next few years.[221] Perhaps as a result, *Ministry* reads largely as a novel set in a long, extended present.

This is not to say that the novel is entirely without a sense for the future; yet, perhaps tellingly, that sense of our present becoming the past of a fictional future comes about most strongly in a chapter that ultimately leads to a far-flung future of a geological timescale, a world apart from the temporal boundaries the rest of the novel sets for itself:

> "Recent extinctions include the Saudi gazelle, the Japanese sea lion, the Caribbean monk seal, the Christmas Island pipstrelle, […] the northern white rhino, the mountain tapir, the Haitian solenodon, the giant otter, Attwater's prairie Chicken, the Spanish lynx, the Persian fallow deer, the Japanese crested ibis […] and an estimated two hundred more species of mammals, seven hundred species of birds, four hundred species of reptiles, six hundred species of amphibians, and four thousand species of plants. The current rate of extinctions compared to the geological norm is now several thousandfold faster, making this the sixth great mass extinction event in Earth's history […] Evolution itself will of course eventually refill all these emptied ecological niches with new species. The pre-existing plenitude of speciation will be restored in less than twenty million years." (pp. 43-44)

If SF is in part a genre concerned with imagining the future based on the conditions of the present, this list of animal extinctions can be read as a kind of SF in

221 In 2018, the United Nations noted that all decisive steps would need to be taken within 12 years; a year later, Hans Joachim Schellnhuber of the Potsdam Institute for Climate Impact Research more dramatically argued that "[w]hile the world can't be healed within the next few years, it may be fatally wounded by negligence until 2020". See https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report; https://www.bbc.com/news/science-environment-48964736

miniature. It begins with animals which had already been extinct at the time of writing: the Caribbean monk seal and Japanese sea lion have both been presumed extinct since the second half of the 20th century; the Saudi gazelle was declared extinct in 2008; the Christmas Island pipstrelle in the following year. The northern white rhino is the first animal on the list that is not extinct yet; it is, however, what is called *functionally extinct*, as only two females of the species are left alive, unable to reproduce. As such, the species is alive in the sense that members of the species at present roam the earth, but it is extinct in that the demise of the species in the future is a certainty.[222] Little science-fictional conjecture is required to write of the northern white rhino as extinct in a novel set even only a few years into the future. The species that follow are as of yet alive but are seen by the IUCN as endangered, the Attwater's prairie Chicken critically so (in part due to effects of climate change: conversation efforts have been set back critically by spring floods in 2016 and hurricane Harvey in 2017). The Iberian lynx and the Persian fallow deer, notably, are endangered but have been increasing in population for some time now; their population trajectories at present do not indicate an impending extinction. Here, then, the list of extinct species "becomes science fictional" in a stronger sense.

But the chapter ends with a radical telescoping of temporal perspective, noting that evolution "will of course eventually refill all these emptied ecological niches with new species. The pre-existing plenitude of speciation will be restored in less than twenty million years" (p. 44); a seeming eternity of time reconfigured as the blink of an eye. Yet in this seemingly science-fictional extension into the distant future, the line between science fiction and non-fiction once again becomes ambivalent, in the sense that the notion of the anthropocene itself, as it is implied here — what happens now on earth will shape the Earth on a geological timescale —, can be read as a science-fictional novum. As Rebecca Evans puts it, "efforts […] to rename the era of climate change […] create the experience of cognitive estrangement. In essence, nomenclature such as "Anthropocene" can be science fictional. Such names do not simply prompt critical thinking; they call up novel narratives predicated specifically on the embedding of an estranging novum into a

222 In fact, this is not entirely true. Scientists have managed to produce a few potentially viable embryos of northern white rhinos. However, the two surviving members of the species cannot carry them to term; it is currently being investigated whether individuals of the closely related species of southern white rhinos might carry them to term.

story-world that diverges significantly from the known world."[223] Terms such as anthropocene or "capitalocene", as e.g. Jason Moore suggests, come with a set of implications about what has happened on Earth in the past few centuries to lead us to this point; accordingly, so Evans, such terms produce a form of cognitive estrangement. For science fiction, that sense of geological time is, of course, nothing new. Robinson's own previous novel *Red Mars* (1993) opens with precisely such a dizzying sense of deep time, though applied to the planet Mars; the "planet had accreted, melted, roiled and cooled, leaving a surface scarred by enormous geological features", but for these geological activities there "were no witnesses — except for us, looking from the planet next door, and that only in the last moment of its long history" (p. 2). In *Ministry*, the "deep" time frame of ecological rehabilitation after the sixth extinction only serves to accentuate how strongly the rest of the novel must, by necessity, be set not in any future at all, but in an extended present.

5.2 The Politics of Polyphony

The Non-Fiction Milieu of Ministry: Green New Deal literature

The second part of our discussion of *Ministry* will focus more on the politics of the novel: what its claim to "polyphony" means in political rather than literary terms, and what to make of the various forms of political change with which the novel fills the gap between our present and a radically changed future. Before I do so, however, I want to note that the novel is affiliated not only with science-fiction, but also with a certain kind of non-fictional climate literature — and that it has at times been read accordingly.

Genre is a historical entity, a diachronic concept. If *Ministry* relates to SF as a genre, that is to say, if it reaches into the past to relate itself to the writings of Ursula K. Le Guin or indeed Thomas More, then it also relates to a variety of texts of the present which are not SF, indeed not fiction at all. Let us call these the non-fiction milieu of the novel. This textual milieu, though comprised of non-fiction, is not only concerned with the time in-between; it, too, makes use of already accomplished

223 Rebecca Evans: "Nomenclature, Narrative, and Novum: 'The Anthropocene' and/as Science Fiction." *Science Fiction Studies*, vol. 45, 2018, pp. 484-485.

futures. As we have seen in our chapter on the history of ecology and ecological SF, scientific models which chart the different pathways our climate could take in the next decades naturally imply both utopian and dystopian endpoints as well as the time in between. Such models tend to focus on an already accomplished future (often, namely, the year 2100, at which point many models terminate). Their political valence usually lies in the pathways towards that future, creating continuous projections for the coming years and decades; they gain much of their urgency, however, by warning about the ultimate effects of unchecked climate change in a time designated as afterwards (e.g. 2100).

If much climate science is about already accomplished futures, however — largely in response to the question of what happens if climate change is left unchecked —, even more has been written about the ways in which actors (governments, bureaucracies, companies, individuals) *can prevent* such futures. This is the non-fiction genre of *policy prescriptions*, produced for example by individual academics (e.g. Laurence Delina: *Strategies for Rapid Climate Mitigation*, 2016) or by consulting groups (e.g. recently McKinsey& Company: *Net-Zero Europe: Decarbonization Pathways and Socioeconomic Implications*, 2020, written at the behest of the European Union). Such policy proposals advocate not only individual policies but indeed evaluate quite clearly what kinds of policy combinations are necessary; such texts, though perhaps rarely thought of as literary, offer a fairly complex narrative of what would need to happen at which nodal points of power at which magnitudes. Naturally such documents begin with the situation today, but they largely focus on creating "pathways" (that is, potential historical processes towards a future world) which include not only sections on every relevant source of CO2 emissions (power production, transportation, industry, buildings, agriculture), but also on the "socioeconomic implications of decarbonizing", from financing and impacts on households and companies to job gains and losses (quoted here from McKinsey& Company 2020, p. 9).

I have already noted in chapter two that many people associated with SF considered the genre to be didactic in one sense or another: SF can "teach" us something. For Gernsback and for some proponents of "hard" SF to this day, that something might be orbital mechanics or principles of engineering. For most other proponents of SF, from Le Guin to Gibson and to the majority of academic SF studies, the value of SF lies, if it relates to science and technology at all, in its

commentary on how people and societies interact with technology. And we have seen how both the hermeneutics of suspicion and post-critique find some form of political or social knowledge in texts.

For all these precedents, however, I think the reception of Robinson's novel has been uniquely geared towards "harvesting" insight from the text, treating it essentially as a lightly-fictionalized list of policy prescriptions — or at best as a novel of ideas.[224] Vox co-founder and columnist Ezra Klein said of it that "If I could get policymakers, and citizens, everywhere to read just one book this year, it would be Kim Stanley Robinson's *The Ministry for the Future*" — evidently sharing with academic science fiction studies the belief that the right book, if widely enough read, has the power to change reality.[225] Or consider the academic online format of a series of review-essays of monographs with a response by the monograph author — such as the H-Diplo roundtable on Duncan Kelly's *Politics and the Anthropocene* (2019), in which in which four scholars of political science, history, and sociology review or comment on Kelly's work, followed by a response from Kelly himself.[226] This is an academic format, designed for academic non-fiction. Yet *Crooked Timber* — a fairly high profile political blog largely produced by tenured academics — has featured essentially the same kind of format for Robinson's *Ministry for the Future*. Strikingly, the discussants include a science writer, political scientists, economists, and a philosopher — but no scholars of literature.[227] Few of the texts linger on the fact that Robinson's text is a novel, which is to say, a work of fiction with an aesthetic that mediates any claims of representing reality. It is simply taken for granted that the novel can be sounded out by economists and science writers on how accurately it depicts a possible climate transition. It is this reception of the novel, enabled by the writing style we have identified in the first part of this chapter, that affiliates *Ministry* with non-fictional policy proposals.

If the novel generally seems to have been happily accepted almost as a kind of non-fiction text, the most clearly definable textual milieu with which Robinson's novel affiliates itself is perhaps that of the Green New Deal proposals, or *GND* for

224 On the novel of ideas, see for example John Michael Colón's "Art That Contains Theories" in *The Point Magazine*, which in turn is indebted to chapter three of Sianne Ngai's *Theory of the Gimmick*: https://thepointmag.com/literature/art-that-contains-theories/

225 Online: https://www.vox.com/2020/11/30/21726563/kim-stanley-robinson-the-ezra-klein-show-climate-change

226 Online: https://networks.h-net.org/node/28443/discussions/7893123/h-diplo-roundtable-xxii-48-kelly%C2%A0-politics-and-anthropocene

227 Online https://crookedtimber.org/2021/05/03/the-ministry-for-the-future-seminar/

short. *GND* is a term that is used for a multitude of climate policy proposals that are grouped together through a focus on active state intervention rather than merely passive "nudging" market mechanisms. The *GND* as a concept can be understood as a central node in the network of leftist climate politics, its name as a reference to the New Deal implying that vast societal changes and rapid-response industrial policy have been accomplished through state intervention at least once before in the history of the United States.[228] The *GND* can thus be found as a multitude of activist demands, as (defeated, as of this writing) American legislation, and, perhaps most relevant here, as the main topic of several titles of leftist climate non-fiction books, mostly published between 2019 and 2021: *A Planet to Win: Why We Need a Green New Deal* (Kate Aronoff, Alyssa Battistoni, Daniel Aldana Cohen and Thea Riofrancos, 2019) *The Case for a Green New Deal* (Ann Pettifor, 2019), and *Climate Crisis and the Global Green New Deal: The Political Economy of Saving the Planet* (Noam Chomsky, Robert Pollin, C. J. Polychroniou, 2020).

These works tend to combine utopian, even downright pastoral visions of already-accomplished futures with political pathways that move us from our present to such futures. The conclusion to *A Planet To Win*, for example, indulges in an extended vision of a future in which decarbonization has succeeded,[229] arguing for the necessity of such visions because "we think fighting for a new world starts with imagining it viscerally. People mobilize around concrete projects that appeal to their desires and values" (p. 173). But critically, this vision of a future is preceded by four chapters that are all about filling the gap between present and future — chapters on how to organize the cessation of fossil fuel extraction, how and where to plan political strikes, what to build anew, and which international alliances to form.

Robinson's *Ministry* can be read as a fictionalization of how policy prescriptions on climate change generally, and Green New Deal programs like the above specifically, could come about globally, turning it into a text with certain affinities

228 The New Deal itself has come to the fore once more both in American mainstream politics, in significant part through the 2016 and 2020 presidential campaigns of Bernie Sanders.

229 "Picture workers around the country, their arms and legs crisscrossed by thin red scrapes and studded with mosquito bites, planting trees in degraded forests alongside seed-dropping drones buzzing above; restoring the wetland on delicate coasts; building green infrastructure by roadways and streams to help cities absorb floodwaters and keep their sewage systems clean. As they work, they see turbine blades turning in the wind and photovoltaic cells glinting in the sunlight. Picture intercity travel that's carbon-free, clean, quiet, and fast. Amtrak's familiar routes run more often and cost less. Electric buses speed through dedicated highway lanes, while public electric minivans shuttle people around towns and suburbs. All over the country, unionized workers are laying tracks for efficient new trains…" (p. 171)

for these texts rather than for any SF. In terms of the already accomplished future imagined, Green New Deal literature is largely driven by utopian, not dystopian imagery. At least one non-fiction work of GND literature, in fact, is even more clearly associated with Robinson's novel: Troy Vettese's and Drew Pendergrass' *Half-Earth Socialism* from 2022 not only concurs with one of the core policies espoused within Robinson's novel — rewilding half the planet, an idea popularized by the biologist E. O. Wilson — but in fact includes a chapter of utopian fiction, written in the style of William Morris' *News from Nowhere* (1890), that showcases what an eco-socialist 2047 could look like, thus looping back around to the genre from which Robinson's *Ministry for the Future* springs.

Curiously, while much of the aforementioned GND literature does focus on the question of what needs to happen where, when, and in what magnitude that policy prescriptions on climate change generally do, which is to say, on "filling the gap" between the present and the future, as Robinson has put it, *Half-Earth Socialism*, precisely because of its recourse to the form of utopian fiction, falls behind most of the other texts of its non-fiction milieu on this question. It in fact pointedly refuses to answer how the gap between present and future is bridged. Instead we are asked to simply "imagine that the Half-earth socialist revolution happens tomorrow" (p. 100). How will the difficult trade-offs in wealth be decided upon? "Ultimately, a global parliament would have to take a vote" (p. 109). How did their imagined 2047 come about? At some point between the publication of the book and the future of 2047, "the revolutions began" (p. 141).[230] The gap remains unfilled.

The *GND*, especially due to its reference to the New Deal politics of 1930s America, of course also functions as a political-rhetorical device, a call for certain types of policies, not a singular policy in itself; the term is strategic on the grand scale (inveighing against climate approaches overly focused on derisking finance and market mechanisms)[231] while remaining broad enough to encompass several different versions of what a particular *GND* would look like. As Thea Riofrancos has put it, the *GND* "doesn't offer a prepackaged solution"; rather, "it opens up of new terrain of politics" (Riofrancos, *Plan, Mood, Battlefield,* 2019, no page). The term

230 I have written a more extensive review-essay of *Half-Earth Socialism* and its place in Green New Deal literature elsewhere: https://10000signs.wordpress.com/2023/01/26/socialism-in-one-sector-or-on-half-the-earth-review-of-half-earth-socialism-and-climate-change-as-class-war/

231 On derisking, see especially the work of the economist Daniela Gabor.

allows different factions of the (American) left and center left to come together on a roughly shared political outlook while still allowing disagreements on various details (such as the relative importance of solar, wind, and nuclear energy; or the relative importance of private electric vehicles versus electrified public buses and trains). If the GND is, then, a *terrain of political struggle*, a novel that aligns itself with GND literature too becomes part of that terrain. In the sections to follow, we will have to think more about this question of a political terrain.

Polyphony as Meta-Political Stance: The Case of *Red Mars*

As I noted earlier, one of the distinctive features of the novel is the large variety of chapter forms — genres, writing styles, voices — of which it is constituted. Why this multiplication of perspectives, human and non-human, through an inordinate amount of short chapters? We have already noted that its multiplicity of perspectives to some degree mirrors the style of non-fiction policy proposals: since combating climate change is not so much a single task as it is a multitude of tasks across almost all domains of society (agriculture, transport, living at home, industry), a multitude of perspectives is required.

But Robinson also argues more explicitly along literary lines that his novel works polyphonically: “I have a lot of faith in the novel as a really capacious form. And I like formal experiments in novel structure as a reader, and have tried quite a few of them as a writer. The novel is often polyvocal, a heteroglossia as some have called it.”[232] Though he uses the term polyvocal rather than polyphonic, the mention of “heteroglossia” that immediately follows makes the assumption that Robinson references Mikhail Bakhtin more than likely.[233] The term polyphony is also used within the novel itself, towards the end of the story, as Mary Murphy and her partner walk through Zurich on Fasnacht — a day on which, we are told, “almost every person out there promenading carried a musical instrument” — and argue whether the resulting soundscape — “The sound spheres in this part of the city overlapped, but as long as that didn't confuse the players, or even if it did, the listeners took it as

232 https://yaleclimateconnections.org/2020/11/a-crucial-collapse-in-the-ministry-for-the-future/

233 An analysis of polyphony in *Ministry*, though one which I think adheres too closely to what Robinson himself would like us to think about polyphony, can be found in: Booker, M. Keith, and Isra Daraiseh. “The Political Form of Postmodernism: Bakhtin, Jameson, and Kim Stanley Robinson’s The Ministry for the Future.” *Science Fiction Studies*, vol. 50, no. 2, July 2023, pp. 251—70.

part of the experience" (p. 561) — constitutes a discordant cacophony or, rather, a harmonious polyphony (p. 562).

I will ignore here the notion of heteroglossia since it constitutes for Bakhtin a basic facet not just of the novel, or certain novels, but of language as such. Let us focus, then, on polyphony. In *Problems of Dostoevsky's Poetics* (1929/1984), Bakhtin notes that studies on Dostoevsky up to that point often consisted out of ascertaining the positions of individual characters within the novels, which seem to stand in wild disagreement with one another and thus make it difficult to ascertain the "true" position of the author. This for him is precisely the point. Dostoevsky, Bakhtin says, creates a "plurality of independent and unmerged voices and consciousnesses, a genuine polyphony of fully valid voices" (p. 6). Polyphony is thus not so much to be read as the the harmonious working together of sounds, but rather as the sound of disagreement. (As he notes elsewhere in the text, the original meaning of the word in music studies is not exactly what he means by his usage.) Nor does Dostoevsky set up these disagreements with the purpose of ultimately merely resolving them in some kind of dialectical movement; rather, the point is precisely to stress the irresoluteness, the persistence of such disagreement: "Dostoevsky found and was capable of perceiving multi-leveledness and contradictoriness not in the spirit, but in the objective social world. In this social world, planes were not stages but opposing camps, and the contradictory relationships among them were not the rising or descending course of an individual personality, but the condition of society" (p. 27). Dostoevsky perceived real, irresolvable disagreement to exist in the social world and thus had his characters champion contradictory viewpoints without resolution. We could thus say that a polyphonic novel is one that takes as a given the existence of real, irreducible political antagonisms.

Neither a multitude of chapter-styles nor a political direction by themselves thus make for a polyphonic novel. For that, we would have to identify politically opposed viewpoints (whether just two or more) that are represented by the novel. It is from this vantage point that I interpret Bakhtin's notion of polyphony as, ultimately, a meta-political stance: a polyphonic novel is structured not by a single political orientation but rather by mapping what Riofrancos calls the "terrain of politics" as a whole. Before approaching *Ministry* from this perspective, let me use as a point of comparison, which I hope will be instructive in its difference, Kim Stanley

Robinson's own *Red Mars* (1993). Far more than *Ministry*, *Red Mars* seems genuinely polyphonic. The plot commences in 2026 with the months-long voyage of one hundred humans to Mars, and follows their attempts to establish a human colony on the planet over the next few years and decades (two sequels extend the time frame further). The "First Hundred", as they quickly come to be called, are scientists and engineers from various academic fields ("medical skills, computer skills, robotics, systems design, architecture, geology, biosphere design, genetic engineering, biology, also every sort of engineering, and construction expertise of several kinds"; p. 27) and nations. The selection committee that chooses the final one hundred candidates attempts to account not only for diverse scientific expertise, however, but also for political controllability or placidity, mindful of the political problem that colonies may always end up declaring independence. Nevertheless, the topics of discussion among the colonists inevitably come to include the ur-political question on their voyage: how to organize a society.

Arkady, one of the Russian astronauts, argues that they should ignore most of the plans that had been drawn up on Earth for the Mars mission, beginning with the construction plans for their first buildings on Mars: "Buildings are the template of a society [...] The arrangement of a building shows what the designer thinks should go on inside. […] Buildings express values, they have a sort of grammar, and rooms are those sentences. I don't want people in Washington or Moscow saying how I should live my life, I've had enough of that" (p. 59). From this point onward, political questions are asked unceasingly, mostly centered around whether Mars should be terraformed (that is, making the planet more Earth-like and thus easier to colonize, but in the process also irrevocably changing Mars) at all, and if so, in what ways. Due to these various potential futures which the protagonists envision, Fredric Jameson detects the sound of polyphony in the *Mars* trilogy: "Unlike the 'monological' utopias of the tradition, which needed to dramatize a single utopian possibility strongly because of its repression from Terran history and political possibility, this more 'polyphonic' one includes the struggle between a whole range of utopian alternatives, about which it deliberately fails to conclude".[234]

Formally, this is accomplished not only through debates between various characters but also through the fact that each of the eight parts of the novels is focalized through a different character — and with that, in part a different kind of

234 Fredric Jameson, *Archaeologies of the Future,* 2005, p. 410.

scientific thinking, a different political world view, and so on. The commonplace (in contemporary genre literature) writing strategy of providing multiple points of view is used here to bring into sharper relief the political positions of the characters. The novel itself makes this strategy visible, indeed incorporates it into the plot of the novel: the citizens of earth follow the political disagreements of the Mars colony as a kind of spectacle during the first few years, and they too turn the characters into stand-ins for various scientific-political positions: “In the arguments on Earth, many people began to use the colonists' name as a kind of shorthand for the various positions, so that watching the Terran news the colonists themselves would see people saying that they backed the Clayborne position, or were in favor of the Russell program” (p. 168); this fictionalization by an audience on Earth, “their existence as characters in an ongoing TV drama”, feels “peculiar and unsettling” (ibid) to the colonists. What is critical for our comparison with *Ministry* is that the politics of how to live on Mars become, ultimately, radically incompatible; between radical eco-terrorists who wish for Mars to remain as little terraformed as possible, revolutionaries who want to declare Mars independent of earth, and Earth-based transnational corporations vying for the resources of the red planet, enmity is near total and results in something like a decolonial revolution (between certain Martians and Earth forces) and civil war (between the one hundred original Martians picking differing factions). As all focalization occurs through various members of the first hundred situated along this Martian political spectrum, the novel establishes something like a polyphony of genuinely differing points of view.

What would the opposite of a polyphonic novel look like, then? If the polyphonic novel establishes a whole terrain of politics rather than just having a specific political point of view, perhaps the opposite would be to deny that there even exists a political terrain. Let us call this the liberal novel.

Democratic liberalism has become the dominant coordinate of politics in the Global North since the end of World War II, and has been theorized most famously and influentially in the oeuvre of American political philosopher John Rawls. In *Political Liberalism* (1993/2005), Rawls argues that a “modern democratic society is characterized not simply by a pluralism of comprehensive religious, philosophical, and moral doctrines but by a pluralism of incompatible yet reasonable comprehensive doctrines” (xvi). In the space of three words, Rawls introduces the issue of irreducible enmity — citizens may hold on to incompatible doctrines — and

then immediately defuses it again: the doctrines may be incompatible, but they are all reasonable. Unreasonable doctrines, by contrast, must be contained "so that they do not undermine the unity and justice of society" (xvii). This word pair — incompatible / reasonable — suffuses Rawls' text; as soon as opposition, incompatibility, enmity is mentioned, "though reasonable" swiftly follows. In other words, the liberal "political conception is shared by everyone while the reasonable doctrines are not" (xix); beneath the incompatibility of doctrines lies a bedrock of liberalism that everyone agrees to, which in turn limits the acceptable doctrines only to those deemed reasonable.[235] A reasonable society consists of people who "all have their own rational ends they hope to advance, and all stand ready to propose fair terms that others may reasonably be expected to accept, so that all may benefit and improve on what every one can do on their own" (p. 54, emphasis mine). For Chantal Mouffe (*The Democratic Paradox*, 2000), the liberal concept of the political therefore lies precisely in denying the existence of irreducible antagonism; ultimately, liberalism argues, every disagreement can be resolved, rationally and to everyone's gain (pp. 29-30).

How does this notion of the political map onto climate change? Rawls' liberalism denies irreducible antagonisms, assuming instead that all problems have solutions which are reasonable and for the benefit of everyone. This can indeed be taken as the liberal position on climate change today: from the liberal perspective, clearly everyone agrees that failing to stop climate change is catastrophic, and therefore protecting the climate will benefit everyone, and the only necessary action is to rationally convince everyone of this truth. Most often, such a liberal climate politics will focus on technological fixes: avoiding questions of political redistribution, technological breakthroughs are instead assumed to resolve the problem with everyone being better off. We can find such a climate politics in, for example, Bill Gates recent non-fiction work *How to Avoid a Climate Disaster* (2021) or in Nobel-prize winning economist William Nordhaus' work for the Intergovernmental Panel on Climate Change.[236]

235 See also e.g. pp. xviii, 137, and 139-140 in Rawls, *Political Liberalism*, 2005.

236 On Bill Gates' book, see e.g. Bill McKibben's review in the *New York Times*, "How Does Bill Gates Plan to Solve the Climate Crisis?", 2021 (https://www.nytimes.com/2021/02/15/books/review/bill-gates-how-to-avoid-a-climate-disaster.html) and Leah Stokes' review for the *MIT Technology Review*: "Bill Gates and the Problem with Climate Solutionism", 2021 (https://www.technologyreview.com/2021/02/16/1017832/gates-robinson-kolbert-review-climate-disaster-solutionism/). Meanwhile, Nordhaus' work is premised on the notion that climate change should not be tackled too quickly, because technology invented in the coming

Left-wing climate politics, by contrast, argues that some — fossil fuel companies and other industries based on the burning of fossil fuel, say, or the very wealthy across the globe, who cause far more CO2 emissions than average citizens — have indeed benefited, and continue to benefit, from catastrophic climate change, and that, to stop climate change, these benefactors must, and should, lose out from now on.[237] Right-wing climate politics, finally, agrees with the left that the suffering of climate change is unequally distributed, but wishes to simply leave these inequalities in place (the result of which is, ultimately, unchecked and therefore genocidal climate change being wreaked upon those most vulnerable to it). A way in which a novel on climate change could be polyphonic, then, would be to map this field of positions, aware of the fact that stopping climate change is not to everyone's benefit. A novel which consistently defuses the sense of there being genuine, unavoidable political disagreements, by contrast, would be "liberal". With this framework sketched out, we can now return to *Ministry for the Future*.

5.3 Agents of History in *Ministry*; *Ministry* as Agent of Change

Agents of History: Disasters and Demonstrations, Technocrats and Terrorists

What "fills" the gap between present and future in the novel? What do characters do to effect change? How does the world move from our present to a desirable future? What theory of political change does the novel adhere to? And can we find, in this theory, only a singular political stance or a mapping of the political terrain as such?

I would argue that we can identify at least the following relevant spheres in which historical "change" happens: first, natural disasters and crises occur, which themselves constitute a kind of historical change; second, we are witness to the

years ought to be more cost-efficient to a degree that more than counteracts the more steep emission reductions needed if less is done today; in other words, there is a maximally efficient solution to climate change. Bizarrely, Nordhaus also calculates that 3 degrees Celsius of warming are in fact optimal. See especially the trenchant critique by Steve Keen: "The appallingly Bad Neoclassical Economics of Climate Change", *Globalizations* Vol. 18. No. 7, 2020.

237 On the question of past injustice and continuing benefactors, see Robert Meister: *After Evil*, 2011. On the class politics of climate policy, see Adam Tooze: "Ecological Leninism", *London Review of Books* Vol. 43 No. 22, 2021.

machinations of technocratic governance at the hand of the ministry for the future and various national governments: writing new legislation, creating initiatives, and producing economic incentives; third, citizens engage in protests and demonstrations; fourth, saboteurs and terrorists take direct, sometimes violent action, bringing down fossil fuel infrastructure of all sorts; finally, and connected to all of the others (in being a more ideal rather than material change), on the level of human thoughts and emotions, a new "structure of feeling" emerges. These five spheres, of course, interact with one another, and the newly emergent structure of feeling especially comes about through changes in the other spheres. Still, for the sake of analytical clarity, I will mostly go through these spheres one by one. I only briefly sketch each of these spheres; more textual examples than I provide could be found for each of them.

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The "mechanism" through which change occurs which we can most easily identify is that of disasters themselves. The novel pointedly opens with an account of a heatwave in a city in India in 2025, as experienced by Western aid worker Frank May. "It was getting hotter", the first sentence reads, referring to the temperature fluctuations of a single day ("Ordinary town in Uttar Pradesh, 6 AM", p. 2) as well as the trajectory of global temperatures in the last few decades ("A few years ago it would have been among the hottest wet-bulb temperatures ever recorded. Now just a Wednesday morning", ibid). Across two days, Frank does what little he can to help people on the street, shepherding them into the clinic at which he works while it has a functioning air conditioning system, and, when the AC generator is stolen at gunpoint on the second day, towards a lake. The chapter ends, on the morning of the third day, in enormous death: "There was no coolness to be had. All the children were dead, all the old people were dead [...] Everyone was dead" (p. 12). All told, as many as twenty million people may have died (p. 19). While the Ministry for the Future is established before this heatwave in the timeline of the novel, it is made clear (p. 16) that the horrific heatwave is what gives the political impetus to turn the ministry into an agency with actual power rather than something merely symbolic. Read pessimistically, the reader is invited to consider that climate change will have to result in massive death — which must furthermore be easily attributable to

climate change — for it to become a truly serious political issue. In a sense, a global catastrophic event is assumed to be a regrettable necessity without which change will be insufficient in all of the other spheres of historical change. In this way, the opening chapter of *Ministry* reads similarly to Robinson's earlier *Science in the Capital* trilogy, in which the entire first volume presents a mere prelude to climate change being taken seriously. With seemingly less pessimism, we can conceive of this heatwave as the orthodox kind of ecological SF: by producing *in fiction* an enormous catastrophe, it is hoped that we as readers of this fiction will take climate change more seriously before it results in such an enormous catastrophe *in reality.* But as I have noted above, the effects of this catastrophe seem limited regardless: "for a while, therefore, it looked like the great heat wave would be like mass shootings in the United States — mourned by all, deplored by all, and then immediately forgotten or superseded by the next one, until they came in a daily drumbeat and became the new normal" (p. 25). The novel, here, seems to lay bare the problem of hoping for catastrophes to truly alter climate politics: the power to shock seems to lie in uniqueness, in singular events, yet climate-caused disasters tend be have the quality of being statistical, repetitive; they quickly turn into something normal rather than a (news-)event. With this, our sense of pessimism is also doubly restored: the fictional climate catastrophes which SF and more generally climate fiction now produces in mass quantities too have become a daily drumbeat whose impact seems negligible.

Later in the novel — no time period is given, but assumedly in the 2030s or 2040s — Los Angeles is destroyed by a vast flood. Where the first-person account of the heatwave of the first chapter functions like a miniature horror story, the telling of Los Angeles' destruction, through the eyes of an young kayaker, reads more comedic, almost like a farce, written perhaps for disenchanted young people living in cities like Los Angeles today, renters with unfulfilling jobs: "I shouted to my landlord but he had already left without informing me, very typical" (p. 276). The city, one of the most famously car-centric metropolises of the world, turns into a system of rivers; "Sepulveda [boulevard] was scary fast, I was told, the other kayakers all said Stay off Sepulveda, it's like class 8!" (p. 277). The chapter ends with a re-affirmation that this disaster is not so bad after all: "The entire city of Los Angeles is going to have to be replaced. Which was great. Maybe we could do it right this time. And I myself am going to find a different job" (p. 279). The demise

of Los Angeles seems orders of magnitude less serious than the heatwave that opens the novel, leaving, somewhat improbably, "only" seven thousand people dead (p. 286). Yet, gesturing perhaps towards the colonial underpinnings of the global attention economy, or at least the American hegemony of it, the destruction of the "dream factory" of globalized American culture seems to alter the world's feelings towards climate change more immediately than the heatwave: "Many people all over the world felt they knew the place, and were transfixed by the images of it suddenly inundated. If it could happen to LA, rich as it was, dreamy as it was, it could happen anywhere […] Some deep flip in the global unconscious was making people queasy" (286). As these two examples show, the disasters caused by unchecked climate change within the novel seem to operate mostly on the level of effecting what Robinson calls, both in the novel and outside of it, the "structure of feeling". A financial crash, "the deepest in over a century" — a different kind of crisis or disaster —, occurs shortly after the destruction of LA, its effect similarly described first and foremost as a change of consciousness, "a different time, a new structure of feeling, a new material situation" (p. 287). Let me turn to this notion next.

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As I have noted in the section of serial writing, one of the interesting oddities of Kim Stanley Robinson's recent writing is that his fiction can be most profitably interpreted in parallel with his considerable non-fiction output in the form of keynote speeches at conferences as well as editorials and articles for newspapers and magazines. To mention just a few of the latter, in 2020 and 2021, Robinson has published an essay in *The New Yorker* on the then freshly-developing Covid-19 pandemic (May 2020), and an article in the *Financial Times* detailing "a climate plan for a world in flames" (August 2021). The first essay focuses on how the coronavirus has "rewritten our imaginations". Referencing Raymond Williams, Robinson argues in the essay that because of the pandemic, "[what] felt impossible has become thinkable. We're getting a different sense of our place in history. We know we're entering a new world, a new era. We seem to be learning our way into a new structure of feeling" (no page). A zoonotic virus that initially spread across the world in large part via air travel, Corona has indeed turned out to be just another facet of the so-called anthropocene, a catastrophe not entirely unrelated to climate

change.[238]

The *Financial Times* article on climate change once again mentions Raymond Williams, here noting its direct relevance for his fiction: "Each moment in history has its own "structure of feeling", as the cultural theorist Raymond Williams put it […] When I write stories set in the next few decades, I try to imagine that shift in feeling, but it's very hard to do because the present structure shapes even those kinds of speculations." And indeed, the narrative voice of Ministry similarly wonders whether the deadly heatwave of the opening chapter has truly caused a shift in imagination, ushered in a new structure of feeling. The erstwhile conclusion is far bleaker than in Robinson's non-fiction, as we have seen above, with disasters merely becoming "the new normal" (p. 25). Similarly, the narrative voice in another early chapter assesses — directly mentioning Williams' term — the ideological situation of the near present as one in which thought remains trapped by a structure of feeling no longer fit for the task (of combating climate change): "This is what our thinking has been reduced to: essentially a neoliberal analysis and judgment of the neoliberal situation. It's the structure of feeling in our time" (pp. 74-75). Only some 280 pages into the novel, in chapter 60 — detailing the aftermath of the Los Angeles flood mentioned above — has the structure of feeling suddenly altered. In chapter 71, written in the style of meeting notes taken at a meeting of the titular ministry, the term is used once more, now detailing the way in which its causality — its underlying "theory of change" — is theorized by the novel:

> Main sense of patriotism now directed to the planet itself.
>
> Matriotism, Dick jokes.
>
> JA nods. Support growing fast. Could cross a tipping point and become what everyone thinks. A new structure of feeling, underlying politics as such. (p. 358)

The notion of a tipping point originates in physics, denoting a point in which a complex system rapidly shifts from one state to another; it had been adopted by sociologists in the late 1960s, and has since been massively popularized for social phenomena by pop-science journalist Malcolm Gladwell. In the context of climate change, however, it has largely remained a term of the physical sciences, where climate change is assumed to be a highly nonlinear phenomenon with numerous tipping points or thresholds at which certain irreversible processes occur, such as ice sheets in the polar regions melting or the jet stream slowing down. These events in

238 See e.g. Adam Tooze: *Shutdown*, 2021, pp. 22-23

turn would further increase global warming, creating cascade effects, until the warming process becomes catastrophically self-reinforcing.[239] In the novel, Robinson uses this concept to provide a rationale for a potential rapid adoption of a new "structure of feeling" or zeitgeist: ideological change is expected to happen suddenly, all at once, a self-reinforcing social phenomenon. As such, the underlying "theory of change" we are looking for remains somewhat opaque: sometimes, the novel seems to say, social facts simply come into existence spontaneously. This notion of a new "structure of feeling" emerging suddenly speaks to the ultimately unpredictable fact of human free choice, but it frustrates our desire to understand what kind of force has made the difference in the history of the novel: a structure of feeling seems to be both cause and effect simultaneously. In that sense, the novel perhaps simply asks the reader to keep their faith: change will come, suddenly and quickly; when it rains, it pours.

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Much of the novel, however, focuses on the governmental, technocratic work of the titular Ministry for the Future: crafting policy and convincing other political actors like central banks to adopt such policy. While the novel has, in Mary Murphy and Frank May, two characters that could be designated protagonists by virtue of their prominence as focalizers, only one of these gets to act throughout the novel. Frank, after kidnapping Mary and attempting to convince her her that her ministry is not doing enough to safeguard future generations, and that it should engage in covert but direct violence against powerful elites (pp. 89-103), spends the majority of the novel in prison, reduced to a passive observer of events rather than an active shaper of them. Meanwhile, his intervention — partially convincing Mary of the need of violence — turns out to have been somewhat unnecessary, as Mary's chief of staff had already come to the same conclusion (as we will see below).

With Frank as mere observer, the majority of "meaningful" climate action is focalized through the eyes of Mary and the ministry. Multiple chapters detail

239 See Juan Rocha et al: "Cascading Regime Shifts within and across Scales." *Science*, vol. 362, no. 6421, Dec. 2018, pp. 1379—83, and Will Steffen et al: "Trajectories of the Earth System in the Anthropocene." *Proceedings of the National Academy of Sciences*, vol. 115, no. 33, Aug. 2018, pp. 8252—59.

meetings of the ministry in which policy is discussed or formed, echoing policies that have been suggested in the real world, from nature corridors to payment plans for carbon sequestration projects. The novel also details the efforts of the government in convincing national governments to actually enact these policies (including through lawsuits). This seems to imply a certain degree of technocraticism; the ministry appears to be an institution outside of democratic politics, and some the most significant "stakeholders" which Mary convinces of her policies are the world's central banks, another set of institutions which are not under the direct control of representative democracy, as the narration itself makes clear (p. 291).

What does this, then, mean for our question of what "theory of change" is represented by the novel? Clearly, change here seems to be driven from the top-down, by governments and intergovernmental bodies which enact the necessary policies to bring down carbon emissions and increase carbon sequestration, chipping away at the problem until it is solved. Most significantly, I think, the focus on the ministry to some degree minimizes the importance of political conflict. The novel has been noted for largely focusing on the political rather than technological questions raised by climate change (or perhaps, focusing on politics as a kind of technology), which would seem to align it ideologically with Green New Deal literature rather than with overtly depoliticized technocratic texts like Bill Gates' *How To Avoid A Climate Disaster* (2021). Yet the novel throughout also seems to assume that those opposed to climate change action can ultimately be rationally convinced of the folly of their position. Thus one reads in an info-dump chapter that the wealthy and powerful defending their wealth and power is simply not *rational* behavior:

> "There was scientifically supported evidence to show that if the Earth's available resources were divided up equally among all eight billion humans, everyone would be fine […] the scientific evidence very robustly supported the contention that people living at adequacy […] were healthier and thus happier than rich people [...] Rich people would often snort at this last study, then go off and lose sleep over their bodyguards, tax lawyers, legal risks — children crazy with arrogance, love not at all fungible — over-eating and over-indulgence generally, resulting health problems, ennui and existential angst — in short, an insomniac faceplant into the realization that science was once again right, that money couldn't buy health or love or happiness" (pp. 57-58).

It is worth considering this from the point of view of SF style: in some sense, this kind of scientific info-dump would not be out of place in the unabashedly

science-focused pulp stories favored by Hugo Gernsback. The science in question, however, is not rocket science or electrical engineering; it is, rather, the social sciences that get to speak. This is true throughout most of the novel; the info-dumps are courtesy of insight from political science, economics (especially Modern Monetary Theory), and the like. This seemingly gives the novel the political edge that it has been read for. The claim to true knowledge of these disciplines, however, is taken to be almost as uncontested as that of physics. The fact that wealthy people might disagree stridently with the notion that their happiness would improve if their wealth were to decrease is, in the quote above, taken up but immediately defused. All sorts of counter-arguments could be brought to bear on this notion that rich people would be happier if they were no longer rich — to begin with, that happiness might not be their ultimate goal in life in the first place —, but crucial to me here is that the novel appears to believe that politics can be resolved with everyone better off, "an improvement for all", rich and poor alike, and that the necessity of political decision can be defused by rational argument. The ultimate technology, science itself as a whole, "was once again right". Robinson's novels often focus on science as a kind of socialist utopian pursuit, in which true knowledge of the world is accumulated by the cooperative practice of scientists. One can read here, I think, more than a trace of Rawlsian liberalism, where strong political enmity is mentioned but ultimately elided through recourse to the "reasonable". If the rich disagree with redistribution, this is not so much genuine political conflict as it is, we infer, simply unreasonable on their part; science has said so.

In a similar fashion, multiple narrative chapters in which Mary travels by sea on futuristic sailing ships seem to be written from the perspective that abandoning flying would not only be good for the climate (which is clearly and undoubtedly true) but also better, more enjoyable in itself; the "experience struck Mary as marvelous […] She had a cabin of her own, tiny, shipshape, with a comfortable bed", and in an extended passage we learn that Mary gets to watch dolphins, that the "air was salty and cool, the clouds tall and articulated, the sunsets big and gorgeous", concluding: "It was beautiful! And she was getting her work done. So — where had this obsession with speed come from, why had everyone caved to it so completely?" (pp. 418-19). A similarly opulent description of sea travel occurs further towards the end of the novel, contrasting it with the supposed tedium of air travel, whose far greater speed she makes no note of (p. 509).

In these late passages the novel again comes close to the long history of orthodox eco-utopian literature that *Ministry* otherwise largely eschews: with a focus on the supposed beauty of nature, an already enacted utopia is shown to be superior to our reality, implying that we ought to change our society in the direction of such a utopia. It is also reminiscent of Green New Deal discourses, which work in part by wishing us to imagine a more beautiful future brought as a side benefit of solving climate change. While both the larger GND discourse and *Ministry* are aware of potential political disagreement, these visions of the future are largely written in a way that minimizes such disagreement, instead accentuating improvement for everyone.

While the novel thus — to its immense credit — explicates in detail, both in narrative chapters and info-dumps, what some of the necessary steps to fight climate change would look like, the underlying "theory of change" seems to be reliant on rational thought ultimately prevailing: people, especially powerful people, will simply come to their senses. Those in government will enact what is necessary in time. The world at the end of the novel indeed seems to have become strikingly socialist — unabashedly the political ideology which Robinson believes in — through gradual shifts in policy, no revolution as such needed.

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The answer to the question of how and why change comes about in the course of the narrative has, thus far, been strikingly concordant — free of disagreement, let alone violence (aside from natural disasters, i.e. violence not directly caused by other humans against other humans). The people of the planet, and especially powerful people leading governments and companies, ultimately steer the socio-ecological earth system towards a state in which the climate catastrophe is averted — and, incidentally, something like global socialism is established. If I ended the analysis here, however, I would be fairly accused of reading *Ministry* selectively. Notably, besides a lot of technocratic policy being enacted by the ministry for seemingly everyone's benefit, another large driver of historical change in the novel appears to be protests, demonstrations, and indeed violent eco-terrorism that targets those most in the way of combating climate change. Seemingly emphasizing the necessity of violence, we could thus read the novel as representing irreducible

political disagreement through terrorism. Terrorism re-occurs throughout the text: early on, Frank May kidnaps Mary Murphy and tells her that the Ministry for the Future needs to do more, including commit direct violence; later, her chief of staff Badim Bahadur tells her that he has in fact established a "black wing" within the Ministry for precisely this purpose. Perhaps most directly, we read — in an unfocalized chapter — that at some point (roughly in the 2030s), "sixty passenger jets crashed in a matter of hours. […] Later it was shown that clouds of small drones had been directed into the flight paths of the planes involved, fouling their engines. The drones had mostly been destroyed, and their manufacturers and fliers have never been conclusively tracked." Similarly untraceable, the "Children of Kali", an Indian terrorist group formed in the wake of the heat wave that opens the novel, destroy diesel-run container ships and claim to be infecting cows across the world with mad cow disease, and warn people to stop flying, and to stop eating beef (pp. 227-230).

It is significant that this terrorism is carried out through massive fleets of entirely untraceable drones and cluster-missiles, which make — in a work otherwise deeply committed to avoiding fictional futuristic technology as an "easy fix" to climate change — for the most science-fictional technology encountered in the novel. If, as the science fiction author Arthur C. Clarke once quipped, "any sufficiently advanced technology is indistinguishable from magic", it is here that the novel perhaps engages in magical thinking most strongly. Eco-terrorism of the future, we are led to assume, will simply have the ability to stop global transoceanic shipping, air travel, and meat production, and no nation-state, no matter their counter-intelligence and anti-terror budgets, will be able to do anything about it. In that sense, the novel in fact once again comes strikingly close to a technocratic vision of the climate crisis, already represented in the novel by the ministry, and advanced in our reality by liberal climate politics in the vein of Bill Gates: futuristic technology will resolve difficult political problems; only here the futuristic technology resolves the "problem" of how to terrorize without endangering oneself. The novel has little to say about the kind of state repression that eco-terrorists would in all likelihood experience.[240]

Beyond the elision of potential logistical (if not moral) limitations of terrorism through an uncharacteristic recourse to (science-)fictional technology, terrorism

240 On this issue of how the state would react to eco-terrorism, see also Alyssa Battistoni's *Is Sabotage A Pipedream?*, 2022, online: https://www.versobooks.com/blogs/5324-is-sabotage-a-pipe-dream

itself is hidden from the narrative almost as soon as it is introduced. While the novel clearly seems to indicate that terrorism, and with it, political violence — political disagreement not amenable to rational discussion or compromise — is necessary on the level of *plot* (that is, the text cannot imagine a future-history in which the climate catastrophe is resolved without it), it resolutely refuses to *narrate* and *focalize* this terrorism. Mary is eventually briefed by Badim on the existence of the "black wing" of the Ministry (pp. 107-115), but the actions of this black wing remain almost entirely un-narrated. Indeed, it seems notable that terrorist activities in the novel are largely carried out by characters of color (Badim and the Children of Kali, who are Nepali and Indian respectively) while the white characters are largely shielded from having to commit or be responsible for violence. Mary, we only read, receives cryptic handwritten notes by Badim, referencing fictional poets: "These phrases, as gnomic as Nostradamus, were only meant to tell her that things were happening, it was time to meet again. Or so she assumed. If there were specific messages encoded in them, she wasn't getting them" (p. 284). Focalized through Mary, the activities of the Ministry's black wing remain pointedly hidden from the reader of the novel, mediated through fictional literature whose meaning is obscure to Mary as well as the reader of the novel.

The chapter in which Mary learns of the existence of the Ministry's black wing under Badim is immediately followed by a brief info-dump chapter on the Tzadikim Nistarim, or Lamed-Vav Tzadikim, a "Hebrew tradition [which] speaks of those hidden good people who keep the world from falling apart […] the hidden righteous ones" (p. 117).[241] The juxtaposition of hidden "anonymous good actors […] ordinary people, who emerge and act when needed to save their people, then sink back into anonymity" with a secret wing of the ministry engaging in illegal warfare puts the latter into the category of mysticism; "If there are other secret actors influencing human history", the chapter closes, "we don't know about them. We very seldom get glimpses of them. If they exist. They may just be stories we tell ourselves, hoping that things might make sense, have an explanation, and so on. But no. Things don't make sense like that. The stories of secret actors are the secret action" (p. 117). Despite its claim to being many-voiced, polyphonic, the novel essentially refuses to tell these secret stories; they are secret not only to characters in the novel, but also to

241 It would perhaps be more accurate to speak of a kabbalistic or mystical Jewish tradition, not a Hebrew tradition as such.

the reader, as though the otherwise panoptic gaze of the novel could not penetrate into such spheres. And indeed, the last sentence alleges, the stories created constitute the only relevant action of terrorism, and the terrorist acts themselves may as well not have happened. Terrorism in *Ministry* is made invisible even as it is mentioned.

Mary herself ultimately minimizes the role of terrorism, sabotage, and (civil) warfare in enacting historical change towards the end of the novel:

> "She had heard things recently, not to her face but around the internet, rumors to the effects that the Ministry for the Future had been thousands strong and had waged a savage war against the carbon oligarchy, murdering hundreds and tipping the balance of history in a new direction. Bollocks, no doubt, but people dearly loved such stories. The idea that it all happened in the light of day was too frightening, history being as obviously out of control as it was — better to have secret plots ordering things, in a realm without witnesses." (p. 546)

Once again, the importance of terrorism that is strongly implied on the level of plot — after all no other vectors of historical change for reducing the levels of transoceanic shipping, global meat consumption, or aviation are presented in the novel — is reduced to mere narrative, to "stories", indeed to a kind of conspiracy theory. In reality, so Mary, all had "happened in the light of day", but such radical open visibility of events is "too frightening", consistent with contemporary accounts of conspiracy theories as being about (real or perceived) loss of control.[242] Little wonder that people would engage in conspiracies around the ministry, then, "history being as obviously out of control as it was". Conspiracy and terrorism both circulate mostly as fictions within the novel, not as material political activity. Political agency seems to be in the hands of humanity as a whole in the form of an abstract "history". Note, too, the opposition between "secret plots" and "witnesses"; as Robinson himself has argued in interviews, the side-narratives of the novel constitute "eye-witness accounts" of events across the world. The novel ultimately seems less interested in mapping the potential levers of enacting historical change than it is in merely witnessing things happening in a public realm, an uncontrollable history.

This returns us to the notion of a "structure of feeling" that I have outlined above; climate change will ultimately be averted, the novel seems to imply, simply because enough people will have come to the correct conclusions regarding unsustainable consumption levels and necessary investments in clean energy, in a kind of cascade of heightened awareness. A late chapter reports of an essentially

242 See John Ehrenreich, „Why People Believe in Conspiracy Theories". *Slate*, 11 Jan 2021, https://slate.com/technology/2021/01/conspiracy-theories-coronavirus-fake-psychology.html.

religious global celebratory moment for earth itself, celebrated by at least three billion people, the organization of which is simply hand-waved away; “I don’t think anyone ever figured out who organized it” (p. 538). We can add to this the mild forms of civil resistance, protests and demonstrations which are mentioned in the novel. These too figure in the narrative, but again only as strangely concordant events. Protests and demonstrations seemingly do not need organizing, but simply come about through historical necessity. As an interviewed protester argues (in another eye-witness account), “You have to be part of a wave in history. You can't get it just by wanting it, you can't call for it and make it come. You can't choose it — it chooses you! […] Mass action, yes, but the mass is suddenly family, they are all on the same side […]” (p. 515). Mass movements are imagined here as a wave that captures everyone in its wake, “all on the same side”, all political antagonism washed away. Popular movements and massive changes in the structure of feeling, one could almost say, ironically figure into the narrative as a highly fortuitous *weather event*, not as the result of difficult political work.

Justice is an Option: Terrorism and Implied Readership

The search for where in the novel historical change is enacted — where political agency exists, is most powerful — thus seems to end in something of an aporia. Who has the power to steer humanity on a course towards sustaining life on earth? Politicians, administrators, citizens, terrorists, saboteurs? Ultimately, people of whatever capacity need to be convinced of what needs to be done, and this conviction is created in part through the very acts of doing them. We thus return to the notion of tipping points: for the world to not catastrophically warm, ideological change needs to happen, and it is expected to happen suddenly, unpredictably, a self-reinforcing social phenomenon.

As I have argued, orthodox ecological or otherwise political SF, if it has any notions of itself influencing the world, is assumed to do so by attempting to convince its reader that another world is more desirable. On a meta level, then, the theory of change is that reading fiction may influence the ideas and political positions held by the reader, thus changing the way in which these readers act. This is implicitly a democratic, liberal conception of historical or political change: change occurs because a majority of people have been convinced of something to be right,

and the very fact of majority belief will bring about that change (e.g. through elections). Alternatively — and this seems to be rather rare in ecological SF — the theory of change can be non-democratic if the idea of which the reader is to be convinced is precisely this: that some people cannot be convinced, that certain other people are an enemy to be beaten, not convinced. This would be a mode in which SF works as a kind of propaganda. The "theory of change" would still be that books change the political and ideological positions of readers, but it would be addressed to specific readers as an exhortation that certain other people will never change their political and ideological positions.

But what if the readers which Robinson perhaps most directly addresses with *Ministry* are precisely the political and economic elites which we would assume to be least susceptible to have their political positions on inequality and climate change be changed? Assuming that these elites cannot be convinced by the orthodox mode of ecological SF, whether dystopian or utopian, what would an ecological SF novel addressed to such readers look like instead?

I suggest entertaining this reading for two reasons. The first is a chapter in the novel in which participants of the global political and economic elite event par excellence — the World Economic Forum, usually metonymically referred to as "Davos" — are peacefully held against their will and "re-educated" by a group of leftist activists. Narrated by a Davos participant, the chapter is seemingly clear on the uselessness of such a move: the Davos elite find the propaganda material to be laughable and naive; they cannot be made to change their minds with PowerPoint presentations, "graph after graph, repeated in ways that were not even close to compelling" (p. 162). When the situation is resolved, the former hostages at once boast that none of the re-education had an effect on them. The chapter ends with the narrator recuperating from the experience by immediately going on an international holiday, one may assume via an emissions-intensive flight on a plane:

> Back home we found ourselves minor celebrities, and opportunities to tell our story would last forever. Some of us took that opportunity, others slipped back into comfortable anonymity. I myself decided to decompress in Tahiti.
>
> So, effect of this event on the real world: zero! So fuck you! (p. 164)

The second reason is the degree to which we factually know that at least some elites have been interested in the novel. Barack Obama, for one, has included

Ministry on his list of favorite books from 2020.[243] Furthermore, as mentioned above, Kim Stanley Robinson's other most noteworthy publications in recent years have not been fiction at all, but rather lengthy articles on climate change and the coronavirus for *Bloomberg* and the *Financial Times*, publications whose readership is largely composed of economic elites.[244] Meaningfully, one of Robinson's most recent articles for *Bloomberg* is about the very fact that he had been invited to COP26, the 2021 United Nations Climate Change Conference. He notes:

> In November, if all goes well, I will take part in the most important climate talks in six years as a speaker in some associated activities—as, in fact, a science fiction writer. Probably I'm not the only person who finds this a little bizarre. Probably it's happening because actual delegates to the high-stakes deliberations over warming temperatures will have read my novel *The Ministry for the Future*, which depicts high-stakes deliberations over warming temperatures. If the biggest United Nations climate meetings are, as someone once described them to me, a combination of diplomacy, trade show, and circus, then presumably I'll be part of the circus at COP26. Like one of the clowns, which sounds about right. The court jester often says things people need to hear, from angles no one else would think of. Those in power listen for amusement and crazy insight. This is one way of describing the role science fiction performs in our culture.[245]

Robinson here not only references his own readership — he assumes that his invitation stems from the fact that some of the organizers and delegates of the conference have read his work — but also his purpose at this conference as an SF author. The topos of writers and artists as court-jesters who are able to truth-tell by dint of their seeming powerlessness is, of course, not a new one.

But what I find interesting is precisely the combination of three things: first, Kim Stanley Robinson is aware of the fact that quite a few of his readers are political or economic elites, people who have disproportionate power over the way in which climate change is tackled by society at large. Second, a chapter in his novel is narrated by a fictional individual of this elite group and seems to argue that convincing (even at gunpoint) these elites through guilt, shame, and rational argument of necessary changes to their own ways would not be successful — "effect of this event on the real world: zero!" This chapter stands in stark contrast to the seeming focus on technocratic rationality of much of the rest of the novel. Third, as I

243 On Twitter, Instagram, and other social media: https://twitter.com/BarackObama/status/1339631669104570370

244 See e.g. the *Financial Times*' own description of its readership (for potential advertisers), in which it claims that 32% of its readers are C-suite executives, 20% are millionaires, and almost half (49%) work in finance or for a government or NGO: https://commercial.ft.com/audience/

245 Kim Stanley Robinson, "Why COP26 Invited a Science Fiction Writer", *Bloomberg*, October 2021.

have argued further above, the novel's plot hinges in part on direct violence, in the form of untraceable terrorism — forcibly stopping global air travel, transoceanic shipping, and massive meat consumption, but these important plot elements are half-submerged on the level of narrative.

The novel is concerned, as I have argued, with the question of how and where historical change occurs, where the "levers of power" lie; on a meta-level, however, any work of fiction, and indeed any book, can only be assumed to effect the world by being read, and by convincing its readers of something. A book can advocate violence or policy, but it cannot itself enact either. What is it that *Ministry* wishes to convince political elites specifically of? If we take seriously the Davos chapter, the novel must be taken to argue that political elites to some degree cannot be rationally convinced that a socialist-Green-New-Deal program (which the novel is otherwise largely focused on) will benefit all. A non-elite reader might take from this the fact that more than mere rational argument will be needed, such as, for example, political violence. A reader from the politico-economic elite, in turn, may take from this chapter precisely that non-elites are aware of the limitations of non-violent rational argument.

The novel thus does not simply argue that political violence will be needed to advance the changes to society necessary to safeguard the planet. Rather, it seems to say that political violence is an option that can and will increasingly be exercised if climate policy continues to be enacted too slowly. I take the term option from Robert Meister's discussion of justice as a kind of financial option (*Justice Is An Option*, 2021), who argues that a political revolution seizing the assets of the wealthy can be understood as a financial option that has value even if it is not exercised; while an actual revolution would assumedly destroy much of the wealth of these assets in the very act of seizing them, leaving not only the targets of a revolution, but also the revolutionaries themselves worse off, the threat of a revolution might be enough to extract concessions from the would-be targets of a revolution:

> [R]eversing historical injustice due to capital accumulation has the logical character of an option in three distinct senses: that it could happen simply as an automatic effect of capitalist disaccumulation due to revolution; that it doesn't have to happen, because revolution can be deflected by democratic reform; but that democratic politics can still extract the present value of the revolutionary option of capitalist disaccumulation even when it is not likely that this option will be exercised. In my view the spheres of financial and democratic theory are mediated by the concept of historical justice as a real option on accumulated

> wealth that becomes more valuable when the wealth becomes less secure under political threat. (p. 12)

Ecological and political SF presents readers with visions of possible futures. If a given future is desirable (utopian), the implicit hope is to exhort the reader to help change the world towards that future, to bring about the future by imagining it. If the future is dystopian, the implicit hope is to prevent that future, to make its arrival less likely precisely by imagining it. SF thus has the structure of a prediction about the future that, precisely by predicting the future, itself effects the future (however minimally). This structure is like that of financial theory, which similarly has the potential of being, as Donald MacKenzie terms it, "performative" (making its own predictions more likely by predicting them) or "counter-performative" (making its own predictions less likely by predicting them).

It is in this vein that, I think, the somewhat spectral nature of terrorism and other violence in Ministry can be read more radically. As I argued above, terrorism seems necessary on the level of plot of the novel but is minimized on the level of narrative; both the narrator and Mary find that terrorism ended up only being a kind of myth or story, not something that really happened in significant quantities, despite the fact that terrorism is the only way in which air travel and meat consumption are curbed in the novel. I suggest that we read this oscillation of positions precisely as an openness about the future. It is not yet necessary for terrorism to become an actual part of the repertoire of climate justice movements. It is, however, necessary that the would-be targets of such violence are made aware that such violence might be forthcoming if the pace of climate action continues to be too slow. As such, the novel attempts to be, uneasily, both performative and counter-performative. If it wishes to prevent violence, it does so precisely by notifying politico-economic elites that the option of violence will be exercised with an ever-increasing likelihood if their position remains that of the "fuck you!"-Davos narrator. The novel does not advocate against or in favor of violence: it merely puts it on the table, as an option. Violence is reduced to a "mere story" by Mary and the narrative voice because even as a mere story (that is, as an option that has not been exercised) it may have value. The novel thus returns, ultimately, to the structure of orthodox ecological SF, presenting a future different from ours in an effort to change human behavior in the present; but it does so with an uncanny awareness of precisely this narrative structure.

6. Conclusion: Re-Reading Rachel Carson's *Silent Spring* (1962)

Science Fiction is supposed to be "about the present", only in disguise: so goes the popular self-understanding of the genre, a notion turned into something like an axiom through the repeated invocations of both scholars and writers of SF. I at times feel the need to promote a more "naive" understanding of the genre: if SF is set in the future, should we not take that fact seriously? Should we not grant to SF that it is in some minimal sense really about the future? At the same time, I have purposefully put aside the vast majority of ecological SF precisely because it is set *too far* into the future, at a moment of time in which the global climate or biodiversity has already collapsed, in which the nuclear bombs have already dropped — or, rarely, in which fossil fuels have already been abandoned just in time.

I have therefore focused my discussion on what I have called the problem of the gap. There is by now a vast amount of climate-tinged science fiction, and a wealth of scholarly literature on such SF. The majority of this SF is not particularly interesting to me insofar as it ignores the (usually temporal) gap between our reality and the fictional alternative world; such fiction can help us imagine different worlds, perhaps, but it cannot tell us how to get there. In this sense, I was interested in William Gibson's work as, in a sense, the most extreme case of such fiction: Gibson's texts indeed, to quote Bruce Sterling, "paint an instantly recognisable portrait of the modern predicament" — the modern predicament of science fiction, that is. Similarly, much of the scholarly literature has not been particularly helpful for me, as much of it remains content to point out how climate SF problematizes, showcases, critiques, or reflects on this or that aspect of our society as it relates to climate change.

As I hope to have shown in chapter three, climate SF has to some degree grown out of a more general ecological SF much in the same way that climate science and climate politics have to some degree grown out of the environmental sciences and environmentalist politics. Kim Stanley Robinson's trajectory from the generally ecological *Three Californias* trilogy to the purely climate-focused *Ministry*

exemplifies this trend. Perhaps this historical emergence of climate SF explains why it remains largely wedded to producing futures in which the environment has already changed: ecological issues in, say, the 1970s, were largely seen as issues of insufficient awareness. Yet as I have argued in chapter two, that climate change has proved the most difficult problem of our global society is not necessarily due to insufficient awareness of the issue as such. Plenty of people are aware of climate change without, however, knowing what to do about it. It is for this reason that I think Robinson's *Ministry for the Future* is an interesting development to the genre, perhaps the first which makes good on the challenge laid down by Ursula K. Le Guin's *The Lathe of Heaven* half a century ago.

I have placed much of my (highly pessimistic) conclusion about reading ecological SF ahead of the actual close readings, in the chapter "what remains after post-critique?": in reading *Nightmare Age*, *The Lathe of Heaven*, *Neuromancer* or *The Ministry for the Future*, we learn about nothing much except the literary-cultural system called science fiction. This literary system matters precious little in the grand scheme of things, which some part of literary studies has always understood but which both science fiction studies and ecocriticism tend to forget. For science fiction studies in particular, it is my impression that there has been an unhealthy tendency to see ecological SF as doing the same kind of "work" that Rachel Carson's *Silent Spring* did: a bestseller with a shocking summation of the effects of chemical pesticides, its publication caused a national, and international, outcry, and massively influenced agricultural policy through that outcry alone. In following this ideal of political writing — in claiming *Silent Spring* as a successful example of the genre —, SF studies is nostalgic for a time in which, frankly, books had more influence than they do today. Our cultural ecosystem today is far too diffuse, I think, and far less book-focused, for any one book to stage this kind of intervention; how many revelatory books are released in any given year, after all, and how little do these revelations change much of anything at all? (And this is, again, to ignore that DDT was vastly less implicated in our entire way of living than fossil fuels and industrial agriculture are.)

I therefore want to conclude with two further invocations of Rachel Carson's work, both of which focus on the unforeseen consequences of the act of reading: Elizabeth Kolbert's non-fiction work *Under a White Sky* (2021) and Liu Cixin's *The Three-Body Problem* (serialization 2006, Chinese novel 2008, English translation

2014). I offer these not in the spirit of metaphor but of metonymy: not as two exemplary cases which suddenly make everything fall into place, but simply as two further possible stories one could add to the ones told in this dissertation so far.[246]

Elizabeth Kolbert's Under A White Sky: Invasive Species

Kolbert's *Under A White Sky* is in many ways the opposite of *Ministry* and of the Green New Deal literature that *Ministry* associates with. Kolbert does not attempt to map an all-encompassing package of climate solutions, but rather, more humbly, to accurately represent complex, feedback-looped ecological relations. She makes no claims to a polyphonic *Gesamtdarstellung*, focusing instead on close-ups of decidedly local situations: the Mississippi river system, or an underground reservoir in Nevada that is the last remaining home to a species of fish. What remains in common is that history is taken seriously. Kim Stanley Robinson does so by developing a future history rather than an already changed future world. Kolbert, on the other hand, is interested in how the past continues to influence the present, in the contingency of the present. "People make their own history", as Marx once said, "but they do not make it as they please; they do not make it under self-selected circumstances, but under circumstances existing already, given and transmitted from the past." Kolbert summarizes her project on the last few pages as follows: "This has been a book about people trying to solve problems created by people trying to solve problems" (p. 200). For her, the already existent, given and handed down circumstances of Marx can be found especially in ecological problems which have only arisen as a result of previous solution to a different ecological problem.

The last third of Kolbert's book focuses on geoengineering, that is, on attempts to "fix" the climate by *increasing* human influence (e.g. by injecting certain aerosols into the stratosphere to create a cooling effect) rather than by decreasing it. But her best example of how we now have to find solutions to problems created by previous solutions to previous problems can be found in the first chapter. In the late 19th century the Chicago River, which flows through the city of the same name, was reversed: it no longer discharged into Lake Michigan, but rather flowed out of the

246 I suggest this in the spirit of Colin Drumm's use of metonymy over metaphor in his dissertation, *The Difference that Money Makes: Sovereignty, Indecision, and the Politics of Liquidity*, 2021. See especially chapter 1.6, pp. 112-129.

lake through a complex system of dams, channels, and sluices. The river was too dirty, being used as a sewage as well as by river ships, and the lake too important, being a source of drinking water for the city. Thanks to the Chicago Sanitary and Ship Canal, therefore, the river from the 19th century onwards until today has flowed into the Des Plaines, from there to the Mississippi, ultimately discharging into the Gulf of Mexico.

Only a new problem arose: the Mississippi river is inhabited by Asian carp, the collective name for half a dozen carp species which are invasive in the United States — and which would in all likelihood wreck the fragile ecosystem of Lake Michigan if they were to settle there. To prevent this from happening, electric barriers have been installed in the channel connections between the Mississippi and the Chicago, designed to let small fish pass through while the Asian carp is prevented from doing so. Summarizing this absurd situation, and with it, the topic of her book, Kolbert notes: “If there is to be an answer to the problem of control, it’s going to be more control. Only now what’s got to be managed is not a nature that exists — or is imagined to exist — apart from the human. Instead, the new effort begins with a planet remade and spirals back on itself — not so much the control of nature as the control of the control of nature. First you reverse a river. Then you electrify it” (p. 8).

At the outset of the book, Kolbert warns to be careful with metaphors and other abstractions; “Rivers make good metaphors — too good, perhaps” (p. 3). The impressions which she shares always remain local: she reports on the state of the river system around New Orleans since Hurricane Katrina; of the pupfish species which no longer lives anywhere except in a single underwater reservoir in Nevada (the Devils Hole); of the military base Camp Century in Antarctica which has long since been abandoned. Kolbert’s focus is never on “nature” as an imagined untouched space, but rather on a nature that has irrevocably come into contact with humanity, a nature which can no longer be simply left alone in the hopes that it will be fine absent human intervention. As such all of her reports are also about the scientists and other human actors present in these local spaces, about the impressive miniature model of the Mississippi River at Louisiana State University, about the fences that needed to be built around the Devils Hole to keep the pupfish safe from vandals, about groups of students helping with coral experiments. Nor does Kolbert hide her own presence in these stories — not out of allegiance to the solipsistic style

of a New Journalism but rather because she, as an environmental journalist, is genuinely part of these ecosystems. The book is roughly two-hundred pages long, and it might have been longer if not for the coronavirus, as the pandemic forced her to cancel some of her plans: "Here I was, trying to finish a book about the world spinning out of control, only to find the world spinning so far out of control that I couldn't finish the book" (p. 197). I can relate to some degree; each successive introduction I have written for this dissertation included different details about the raging disasters of the moment, from unprecedented forest fires (California, September 2020) to the storming of the US capitol (January 2021), more unprecedented forest fires (Canada, summer 2023) and, of course, to the coronavirus pandemic (2020-ongoing). Perhaps unlike the partial cut-and-paste nature of my dissertation, however, the unfinishedness of Kolbert's *Under a White Sky* only seems to add to her theme, her focus on unfinished stories and on photographic blow-ups of local systems, which, thank you very much, are please not to be turned into large-scale metaphors for the state of the world.

At any rate, how did Kolbert, unlike so much writing on climate change, come to focus on patiently reconstructing local ecosystems, detailing their problems rather than simply offering clear solutions (while noting that there are certainly no solutions in which humans simply stop doing anything)? In part, perhaps, because of Rachel Carson's *Silent Spring*: the Asian carp first came to the Mississippi after *Silent Spring* popularized the dangers of chemical insecticides. Yet while Carson in her book does mention that invasive species can be just as damaging to an ecosystem (pp. 27-28) as chemical insecticides, she did recommend using natural predators for pest control, and the message of her book was often reduced to a demand to always simply replace chemical with "natural" solutions. The most well-known example of an invasive species is probably the cane toad, which was introduced to Australia in the 1930s to protect sugar cane plantations from insects; instead the cane toad became a far more severe plague than what the insects it was meant to kill. Asian carp were first introduced to America in 1963. As Kolbert notes, the "idea was to use the carp, much as Carson had recommended, to keep aquatic weeds in check" (p. 15). She continues:

> Three years later, biologists at the station succeeded in getting one of the carp—now grown—to spawn. Thousands more fingerlings resulted. Pretty much immediately, some escaped. Baby carp made their way into the White River, a

> tributary of the Mississippi.
>
> Later, in the 1970s, the Arkansas Game and Fish Commission found a use for silver and bighead carp. The Clean Water Act had just been passed, and local governments were under pressure to comply with the new standards. But a lot of communities couldn't afford to upgrade their sewage-treatment plants. The Game and Fish Commission thought that stocking carp in treatment ponds might help. The carp would reduce the nutrient load in the ponds by consuming the algae that thrived on the excess nitrogen. For one study, silver carp were placed in treatment lagoons in Benton, a suburb of Little Rock. The fish did indeed reduce the nutrient load before they, too, escaped. No one is quite sure how, because no one was watching.
>
> "At the time, everybody was looking for a way to clean up the environment," Mike Freeze, a biologist who worked with carp at the Arkansas Game and Fish Commission, told me. "Rachel Carson had written *Silent Spring*, and everybody was concerned about all the chemicals in the water. They weren't nearly as concerned about non-native species, which is unfortunate." (p. 15)

This, too, is one of the complicated legacies of the "fable for tomorrow" which science fiction scholars are so eager to claim for the genre of ecological SF, hoping that some cli-fi novel — or perhaps simply all of them put together — will prove to be an influential bestseller with the capacity to shock, to inform, to produce change. But we should be mindful that, fifty years down the line, the widespread dissemination of such literature might, among other possible outcomes, necessitate electrifying a river. In between our present and the already-accomplished future imagined by a work of science fiction, there is a vast gap, a chasm. It can be filled in so many, utterly unexpected ways.

Liu Cixin's Three-Body Problem: Invading Aliens

I hope that the preceding analysis of Robinson's novel has supported my argument towards the end of chapter two: that, if we wish to continue to analyze climate fiction at all, we must necessarily incorporate into our analysis not only both the popular and *academic* (that is, our own) reception of such fiction, but also the fact that authors of such fiction are aware in advance of precisely such reception. *Ministry for the Future* is not only a work of fiction but also a text which strategically places itself into certain discourses of climate politics, and it is written with a clear grasp of what kind of "knowledge" people tend to "take" from literature. To simply read the novel for "what it can tell us" about the climate will not do. In this final section, I want to make a more limited claim about Liu Cixin's *Three-Body*

trilogy, namely that the novel, though in a slightly different way from *Ministry*, exhibits a similar awareness precisely of how it, as a work of SF, is being read. This story, too, involves Carson's *Silent Spring*.

Liu's trilogy has been widely read and interpreted, and is perhaps the most significant example of the internationalization of Chinese science fiction.[247] My feeling is that within this context Chinese science fiction is often singled out as being helpful to read because the genre, always based on the construction of fictional, "estranged" worlds, is assumed to be able to evade censorship more easily: precisely how Pohl thought of Soviet SF, as I have briefly noted in chapter two.[248] The other reason for the popularity of Chinese SF is perhaps that China as a country has, in the last three or four decades, undergone one of the most rapid modernization processes in the world, with sustained GDP growth grates of 10% or more from the 1980s until the 2010s; the international attention on Chinese SF exists in part in tandem with increased international attention on all things China generally, as a result of the country's rapid ascent to a global economic and political power (that is, it is only because of the return of China to a global power that Westerners feel the need to try and "understand" China through, say, SF). And boasting — to give two purely anecdotal examples — the highest rate of cashless mobile payments and by far the most extensive high speed rail network in the world, Chinese society at present seems almost predestined to produce large amounts of a literary genre that is preoccupied with the impact of technology upon people, and one can indeed note in contemporary Chinese SF an utterly unremarked upon, because self-evident, interest in further technological advancements in everyday life.[249]

At the same time, interestingly, it seems as though climate change has not become nearly as much of a concern in Chinese SF as it has in the genre in America;[250] as Feng Zhang notes, "global warming is far from a mainstream concern

247 On the increased attention to Chinese SF, see for example the special issues of *SF Studies* (Vol. 40 No. 1, 2013) and of *SFRA Review* (Vol. 50, No. 2-3, Spring-Summer 2020). *SF Studies* has also devoted half an issue to Liu Cixin specifically (Vol. 46, No. 1, March 2019).

248 Frederike Schneider-Vielsäcker has made that argument here: https://blog.degruyter.com/chinese-science-fiction/

249 I am basing this quite sweeping assessment in large part on the contents of the first several issues of the German magazine *Kapsel*, which publishes original translations of contemporary Chinese SF.

250 Which is not to say that the concern is ignored entirely, and as a subtle background noise, it can be discerned in many texts. One of the best texts that almost imperceptibly hums to the tune of climate apocalypse might be Xia Jia's wonderfully allusive *Night Journey of the Dragon-Horse*, a translation of which by Ken Liu has appeared in issue 96 of *Lightspeed Magazine*, May 2018:
https://www.lightspeedmagazine.com/fiction/night-journey-of-the-dragon-horse/

within Chinese genre circles, as creators appear more focused on the techno-utopian possibilities of fields like AI and the life sciences".[251] Going even further, Liu Cixin does not want his stories to be read as a commentary on the world at all; he writes in the post-script to the American edition of *The Three-Body Problem* that "I do not use my fiction as a disguised way to criticize the reality of the present", preferring to see the genre as escapist rather than estranging: "I feel that the greatest appeal of science fiction is the creation of numerous imaginary worlds outside of reality" (p. 428).

Can we read the novel in the context of climate change nevertheless? I suggest doing so for two reasons. The first, as I will argue further below, is that the crisis at the heart of the novel — an impending alien invasion — can be read as a global disaster with a similar temporal logic as the crisis of climate change. The second is that one of the key events which sets the plot into motion is the reading of a book — Rachel Carson's *Silent Spring*.

Let me begin with the latter. Liu's novel is set in a world in which intelligent alien species exist across the universe, though they are rare. One such species has been living on "Trisolaris", a planet orbited chaotically by three suns. Realizing that their planet will be doomed as a result of their own climatic disaster — the suns' chaotic orbits —, the Trisolarians decide to find another habitable planet and conquer it to survive. But there are few planets in the universe which are habitable. How do they find one?

In the English translation, the first chapters of the novel are set during the Cultural Revolution in the late 1960s.[252] In 1967, Ye Wenjie witnesses her father, a professor of physics, be murdered during a struggle session by Red Guards; his crime was to continue to espouse Einstein's theory of relativity, which had been deemed "reactionary" and "idealistic". Two years later, Ye Wenjie is forced to work for a labor brigade in the Greater Khingian Mountains (p. 19). This labor brigade, the "Inner Mongolia Production and Construction Corps", is in fact nothing less than a force of massive ecological destruction:

> And so, under their chain saws, vast seas of forests turned into barren ridges and denuded hills. Under their tractors and combine harvesters, vast tracts of grasslands became grain fields, then deserts.

251 Feng Zhan: *Why Climate Change is Missing From China's Sci-Fi Boom*, August 2023: https://www.sixthtone.com/news/1013467; on the other hand see also Hua Li: "Chinese Science Fiction and Environmental Criticism: From the Anthropocentric to the Cosmocentric", *SFRA Review*, Vol. 51 No. 2, 2021.

252 These chapters are, as far as I am aware, spread throughout the novel in the original Chinese, and were moved to the beginning only for international translations.

> Ye Wenjie could only describe the deforestation that she witnessed as madness. The tall Dahurian larch, the evergreen Scots pine, the slim and straight white birch, the cloud-piercing Korean aspen, the aromatic Siberian fir, along with black birch, oak, mountain elm, Chosenia arbutifolia — whatever they laid their eyes on, they cut down. Her company wielded hundreds of chainsaws like a swarm of steel locusts, and after they passed, only stumps were left." (p. 20)

In the labor brigade, Ye Wenjie meets Bai Mulin, a newspaper reporter for the corps' internal newspaper. Bai Mulin admits to Wenjie that he thinks the corps' work is counter-productive, destroying the region rather than producing anything of value. Ye wonders how he has come to that conclusion — and the answer is the work of Rachel Carson: "This was published in 1962 and was very influential in the West… The book attracted the attention of the higher-ups. They want to distribute it to select cadres for internal reference", Bai tells her (p. 23). Ye Wenjie is as beguiled by Carson as Bai is — as beguiled by Carson as environmental science fiction studies has been: "Wenjie opened the book and was pulled in. In a brief opening chapter, the author described a quiet town silently dying from the use of pesticides. Carson's deep concern suffused the simple, plain sentences" (ibid).

Suddenly, for a page, the perspective zooms out, reminding us both that SF tends to be written from the perspective of a future history and presaging the ultimate importance of Ye Wenjie to the narrative: "More than four decades later, in her last moments, Ye Wenjie would recall the influence *Silent Spring* had on her life. The book dealt only with a limited subject: the negative environmental effects of excessive pesticide use. But the perspective taken by the author shook Ye to the core." (p. 24). This is the promise of both environmental writing, fictional or non-fictional, and of fiction, environmental or otherwise: it shakes and shocks, one of the four "uses" of literature analyzed by Rita Felski. For Ye, the shock comes from connecting the domination of nature through pesticides criticized in *Silent Spring* with the domination of (human) nature brought about by the Cultural Revolution (p. 24).

But the act of reading *Silent Spring* also has a more immediate consequence for Ye: she pens a letter to the central leadership in Beijing for Bai Mulin (since his handwriting is very sloppy), who wishes to recommend to the Central Committee that they reconsider their domination of nature: "it concluded that the Inner Mongolia Production and Construction Corps' actions would lead to severe ecological consequences" (p. 27). The style of the letter, Ye notes, "was similar to that of *Silent Spring*, precise and plain, but also poetic. Though her background was

in technical subjects, she enjoyed the literary prose" (ibid).

Unbeknownst to either Bai Mulin or Ye Wenjie, however, the party leadership had already decided that Carson's book was "a toxic piece of reactionary propaganda" (p. 30). Bai Mulin, trying to save his own skin, frames Ye as having written the letter of her own accord entirely. And again, the perspective zooms out, in a passage worth citing at some length:

> Contrary to certain historical records that later became publicized, Bai Mulin did not intend to frame Ye Wenjie at the start. The letter he wrote to the central leadership in Beijing was likely based on a real sense of responsibility. Back then, many people wrote to the central leadership with all kinds of personal agendas. Most of these letters were never answered, but a few of the letter writers did see their political fortunes rise meteorically overnight, while others invited catastrophe. The political currents of the time were extremely complex. As a reporter, Bai believed he could read the currents and avoid dangerous sensitivities, but he was overconfident, and his letter touched a minefield that he did not know existed. After he heard about its reception, fear overwhelmed everything else. In order to protect himself, he decided to sacrifice Ye Wenjie.
>
> Half a century later, historians would all agree that this event in 1969 was a turning point in humankind's history. (pp. 31-32)

We will see shortly what this "turning point in humankind's history" consisted out of. Let us simply note here the sense of a turning point, which, in accord with the terminology of climate change I have noted in the chapter on *Ministry for the Future*, we could also a tipping point. Indeed, so the narrator seems to argue, the chaos of the Cultural Revolution was conducive to the creation of such tipping points or, to speak the language of complex systems for a moment — and after all we hear that the "political currents" were "extremely complex" —, of such bifurcations: "a few of the letter writers did see their political fortunes rise meteorically overnight, while others invited catastrophe". To hear of "currents" and "catastrophe" once again lets us read the novel in the context of climate change. So does, perhaps, the sense of a few "meteoric" rises, a word that too signifies towards a sense of natural disaster.

Why, then, is this event to be a tipping point for humankind? Ye Wenjie is sentenced to prison, where she receives one final mercy of sorts: as a highly qualified astrophysicist, she is allowed to work at Red Coast, a secret military radar installation — where she, however, remains a prisoner, possibly never to leave again (p. 44). The narrative then skips forward to main plot, set in the early 21st century, leaving the question of the tipping point unanswered. It is only more than a hundred pages later, towards the middle of the book, that this flashback storyline resumes.

Red Coast turns out to be a base engaged in the search for extraterrestrial life. Becoming committed to the work, Ye ultimately finds a way (explained in long info-dumps) to amplify radio waves via the sun, and, without knowing that she succeeds in doing so, sends a message — really just noise — into space: "Ye didn't know that at that moment, the first cry that could be heard in space from civilization on Earth was already spreading out from the sun to the universe at the speed of light. A star-powered radio wave, like a majestic tide, had already crossed the orbit of Jupiter" (p. 291).

Her message is met by a response eight years later; since Red Coast is by then deemed far less important and only manned by a skeleton staff, Ye happens to be the only person to notice it. "The content", the narration notes, "was not what anyone had imagined" (p. 296):

> It was a warning repeated three times.
> Do not answer!
> Do not answer!!
> Do not answer!!!
> Still caught up by the dizzying excitement and confusion, Ye deciphered a second message.
> This world has received your message.
> I am a pacifist in this world. It is the luck of your civilization that I am the first to receive your message. I am warning you: Do not answer! Do not answer!! Do not answer!!!
> There are tens of millions of stars in your direction. As long as you do not answer, this world will not be able to ascertain the source of your transmission.
> But if you do answer, the source will be located right away. Your planet will be invaded. Your world will be conquered!
> Do not answer! Do not answer!! Do not answer!!! (p. 296)

By virtue of the time-lag between her message and the response, Ye deduces that the origin must have been Alpha Centauri, four light-years away. Ye receives further information from the broadcast, which the reader has already learned from the main plot set in the present: the Trisolarian society, inhabiting a planet in the Alpha Centauri system, is continuously ravaged by the chaotic nature of its star system; its three stars chaotically interact and at random intervals either burn the planet or leave it too cold.[253] As a result, the Trisolarians have decided to leave their planetary system behind and to conquer the first inhabitable one they can find. Hence the warning from a Trisolarian pacifist: should Earth communicate again, its position

253 This is the titular "three-body problem" — in physics, the term denotes the problem of predicting the motion of three bodies which gravitationally interact with one another, the result of which is usually a chaotic dynamical system (as opposed, for example, to the fairly predictable interaction between our Sun and Earth).

will be known,[254] and Earth will be invaded.

Yet the first and only person to receive this warning on earth is Ye Wenjie at Red Coast — who has seen her father be murdered during the Cultural Revolution, who was punished herself merely for being her father's daughter, and who then received further punishment for the crime of reading Rachel Carson's *Silent Spring*. As the narration reminds the reader, "Ye's rational consideration of humanity's evil side began the day she read *Silent Spring*" (p. 292). Finding humanity evil, she decides to respond; she invites catastrophe.

> The Transmit button was a long rectangle—very similar to the Space key on a computer keyboard, except that it was red.
>
> Ye's hand hovered two centimeters above it.
>
> The fate of the entire human race was now tied to these slender fingers.
>
> Without hesitation, Ye pressed the button […]
>
> The message that was winging its way to the sun said, *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. 300)

Facing Walls

In *The Three-Body Problem*, Carson's *Silent Spring* becomes part of the Rube Goldberg machine of causality that leads to an alien invasion. I find it interesting that both Liu Cixin and Elizabeth Kolbert (in her decidedly less fictional story) use Carson's classic of environmental writing as an object which leads to unintended consequences. Both Kolbert's *Under a White Sky* and Liu's *Three-Body* trilogy are about irreducibly complex systems, in the form of our local human-nature ecosystems and in the chaotic Alpha Centauri system, respectively. In both, one of the keystones of environmental writing sets off inadvertent new problems. What are we to make of this? Perhaps not too much; in the postscript Liu Cixin insists, after

254 As is explained in a later chapter from the perspective of the Trisolarian pacifist, towards the end of the novel: "The listener knew that at the scale of the universe, due to the lack of a sufficiently long measurement baseline, it was impossible to determine the distance of a source of low-frequency radio transmission from space, only the direction. The source could be high-powered but far away, or low-powered but close by. In that direction were billions of stars, each shining against a sea of other stars at different distances. Without knowing how far away the source was, it was impossible to ascertain its exact coordinates. Distance, the key was distance. Indeed, there was an easy way to ascertain the distance of the transmission source. Just respond to the message, and if the other party replies quickly to the response, the Trisolarans could determine the distance based on the round-trip time and the speed of light. Or maybe they would take a really long time to reply and cause the Trisolarans to be unable to determine how long the message was en route" (p. 382).

all, that his fiction is more or less escapist, not meant to be read for political import at all (p. 428). Still, let us read on.

The coming Trisolarian invasion which threatens humanity is, by the end of the first novel, widely known to mankind — and three or four hundred years away from arriving, since the speed of their invasion fleet is considerably lower than the speed of communication. A problem of the future, then, which humanity is already aware of in the present. Here is the temporal logic of the novel that lets us see an alien invasion as metaphor for climate change. In theory, humanity has ample time to prepare, uniting against an alien threat (as humanity had done in the alien invasion of Le Guin's *The Lathe of Heaven)* under the auspices of the UN and throwing all of its might into a future war effort — though there are also people like Ye Wenjie: people who wish to support the coming alien invasion as a fifth column on Earth.

Perhaps more seriously, the aliens have sent, in advance of their full fleet, a number of "sophons", eleven-dimensional supercomputers (again, lest we somehow forget the novel is SF!). These sophons, while limited in their physical powers, can spy on anyone on earth and severely constrain the advancement of science; in particular, they can disrupt particle accelerators, which are seen as fundamental to advance physics to the level needed to produce interplanetary weaponry in time for the invasion. They can eavesdrop on any secret conversations. But they cannot read thoughts. Hence, in the second novel of the trilogy, the governments of the world decide to nominate four people who can freely use the resources of the UN, without ever having to explain themselves, to develop plans against the Trisolarians; they are called *Wallfacers*: "At its heart, the project consists of selecting a group of people to formulate and direct strategic plans. They will develop their plans entirely in their own minds, with no communication of any kind with the outside world. The true strategy of these plans, the necessary steps for completion, and the ultimate aims will remain hidden inside the brain. We shall call them the Wallfacers because that ancient Eastern name for meditators mirrors the unique characteristics of their work" (p. 100).

Three of these Wallfacers fail in their mission, the Trisolarian sophons counteracting their plans together with human agents that support the Trisolarian invasion. But Luo Ji succeeds. Luo, spurred decades ago by Ye Wenjie herself to develop a theory of intergalactic relations, assumes that civilizations in the universe are locked in a struggle for scarce resources — and, due to the difficulties of long-

distance communication, must simply assume the worst of one another. Therefore they can be expected, to the best of their abilities, to either hide from one another or, once discovering another civilization, to take it upon themselves to destroy that civilization utterly.[255] Through another set of science-fictional conceits (nuclear bombs distributed throughout the solar system which would create a "cosmic dust pattern"), Luo has secretly built a deterrent of mutually assured destruction: if the Trisolarians begin to harm or destroy humanity, Luo will detonate the bombs, and the resulting dust pattern will reveal the location of the solar system across the universe, leaving it to be destroyed by civilizations far more advanced than either humanity or the Trisolarians (p. 539ff). The Trisolarians stand down; at the end of the novel, an uneasy truce exists between the two societies.

We do not have to accept Liu Cixin's proposed "cosmic sociology", in which absolute suspicion between any two space-faring civilizations immutably gives way to instant destruction. Wendy Whitman Cobb, a scholar of strategy and security studies at the US Air Force School of Advanced Air and Space Studies, rather blithely assumes that the novel, by virtue of being written by a Chinese SF author, "provides insight into Chinese thought".[256] This dissertation is hopefully somewhat more circumspect, perhaps to a fault, about how much any given work of literature "provides insight" into anything at all. Eager to mine the novel for insight, Whitman Cobb simply reads the situation of Luo Ji the Wallfacer as an unmediated teachable moment of strategy — and of national consciousness —, rather than as a fictional literary scene. This is especially regrettable because it seems to me that Liu's trilogy is incidentally constantly preoccupied with the matter of reading: with how people read or don't read, with what is being read into things.[257]

255 This highly pessimistic answer to what is called the Fermi paradox (the paradoxical difficulty of finding alien life in the universe when the chances of it existing, in light of the existence of humanity, should be high) gives name to the title of this second book of the trilogy: "Luo Ji waved a hand, feeling the darkness as if stroking velvet. 'The universe is a *dark forest*. Every civilization is an armed hunter stalking through the trees like a ghost, gently pushing aside branches that block the path and trying to tread without sound. Even breathing is done with care. The hunter has to be careful, because everywhere in the forest are stealthy hunters like him. If he finds other life—another hunter, an angel or a demon, a delicate infant or a tottering old man, a fairy or a demigod—there's only one thing he can do: open fire and eliminate them. In this forest, hell is other people. An eternal threat that any life that exposes its own existence will be swiftly wiped out. This is the picture of cosmic civilization. It's the explanation for the Fermi Paradox.'" (p. 521).

256 Whitman Cobb, Wendy: "Sophons, Wallfacers, Swordholders, and the Cosmic Safety Notice: Strategic Thought in Chinese Science Fiction." *Strategic Studies Quarterly*, vol. 15, no. 4, 2021, pp. 74—88.

257 I have not seen much scholarship on the act of reading in Liu Cixin's trilogy; an exception is Sarah Wasserman's "Multiplayer Lit/Multiplayer Crit" for *post45*, 2019.

Silent Spring, as we already saw, is not really being read at all by those in power during the Cultural Revolution; they had already deemed the book to be idealistic and reactionary, so that for them, nothing could possibly have been learned from it. Intergalactic warfare in the trilogy too is primarily a matter of communication, of making oneself known, or not known; Liu's pessimistic cosmic sociology is based on the unreadability of others. Later, in the third novel, two characters who are once again under heavy surveillance communicate in fairy tales, hiding messages of scientific insight in elaborate metaphors. And then there is the science-fictional conceit of the Wallfacer itself; where Whitman Cobb sees an argument about the relative merits of secrecy and centralized power, it seems to me that what is at stake in the image of the Wallfacer is the image of the author: the notion of a Wallfacer acts as an image of Liu Cixin as an author of SF himself.

As I have alluded to, Chinese SF has seen increased international attention in part because the machinery of cognitive estrangement is often seen, when employed by writers in more or less non-democratic, totalitarian states, as enabling a degree of political commentary that is otherwise unavailable to authors or other artists. In many interviews given to Western media, Liu Cixin is asked about political problems in China, to which his answers seem regrettably conformist. In a 2019 interview for the *New Yorker*, Jiayang Fan presses Liu on the one-child policy — already abolished by the government in 2015, due to the severely negative unintended demographic effects it had had — only to be told by Liu that the policy had been "vital". The interview moves on:

> "When I brought up the mass internment of Muslim Uighurs—around a million are now in reeducation camps in the northwestern province of Xinjiang—he trotted out the familiar arguments of government-controlled media: "Would you rather that they be hacking away at bodies at train stations and schools in terrorist attacks? If anything, the government is helping their economy and trying to lift them out of poverty." The answer duplicated government propaganda so exactly that I couldn't help asking Liu if he ever thought he might have been brainwashed." (no page)

It is not my desire here to defend this answer by Liu Cixin, let alone the reprehensible mass internment of Uyghurs in China itself. But I find it interesting that Liu in the very same interview references the Polish SF author Stanisław Lem and the trouble with Lem had with his own government:

> In my days with Liu, he repeatedly played down any sense of state interference, but the issue emerged glancingly when we began discussing the great Polish sci-fi

> writer Stanisław Lem, whom Liu reveres. "What's remarkable is that he lived and wrote in Soviet Poland!" he said. "Yet he managed to be as beloved in the East as he was in the West." I asked how he thought Lem had managed it. "He had a wondrous imagination, truly one of a kind," Liu replied. Still, even Lem did not wholly escape his government's crackdown on free speech. When questioned about stories that seemed to allude to Stalinist conformism and paranoia, Lem said the same thing that Liu says about geopolitical interpretations of his trilogy—that he was not writing a veiled assessment of the present but merely making up stories. (no page)

Lem and Liu both simply disavow that there is any kind of hidden message to his fiction, any kind of "veiled assessment". But then Liu's trilogy, again and again, is precisely about keeping communication hidden. Can we not perhaps read the situation of the Wallfacer as that of Liu Cixin and SF authors more generally? In order for their work to succeed, it *must* to some degree be left unexplained. With regard to Liu Cixin's fiction, this seems obvious enough: even if there are any hidden criticisms of the Chinese government or the political situation in his texts, it is absolutely necessary for Liu to never admit to this.

* * *

What can we conclude from this? On a very rudimentary level, that we can freely ignore anything Liu Cixin says about his own fiction: even if he says that he is merely interested in apolitical contemplations of the scale of the cosmos, we may read his novels as being about climate change — and the Chinese state — all the same. Similarly, though Kim Stanley Robinson is ostensibly happy to explain the politics of his novels, and especially of *Ministry*, we should not be afraid to speculate on what these texts may say that Robinson himself does not spell out. In a way, then, this is simply to provide a very modest defense of the hermeneutics of suspicion. I say modest because, as I argued towards the end of chapter two and again in this conclusion, I do not think much of anything will "result" from even the most sophisticated critical readings of literature: this little activity of ours amounts to no more than a sort of cultural history, and hopefully to an at least somewhat fun game of interpretation. I personally prefer such modest aims over the desire to have our academic work on environmental culture be respected as an important kind of ecological work in its own right, which I think it is not. I recognize, of course, that being granted such "importance" is deemed helpful in the humanities' ever-continuing fight for recognition and, more importantly, funding. On the other hand,

current developments in e.g. American, British, and German academia[258] do not fill me with confidence that there is any correct way of saving the humanities from defunding by governments which are fundamentally not interested in funding us.

Though this dissertation in part wished to provide a systematic order of environmental science fiction, I have ignored the vast majority of climate SF of the last decade or two; it has been my feeling that most of these works, engaged in producing an "already-accomplished future" of ecological ruin or utopia, may be interesting to read but not particularly interesting to write about. To simply "read" (in the sense of an academic reading, which is in fact a kind of writing) environmental or climate SF for what they "say about the climate" is to obviate the need for readings at all: these texts for the most part are so perfectly transparent that they do not benefit from such an academic intervention. This is not to advocate purposeful obfuscation on the part of fiction writers so that academics may go back to finding "hidden" messages; it is merely to say that, if we are to read environmental fiction as literary scholars, we should keep in mind that most authors are already aware of the kinds of readings we will "perform" on them; that their work exists within a cultural-literary system that we ourselves are equally part of, and on the same level of observation. If I have succeeded at all in going beyond this order of observation, I hope to have done so by explicating things about, for example, *The Ministry for the Future*, that neither Kim Stanley Robinson as author nor the novel itself can "speak of" explicitly. If there is something interesting to the novel in part because it problematizes the gap between present and future rather than simply imagining an already changed future, both it and Liu Cixin's fiction are also interesting in part precisely because they seem aware of the importance of leaving certain things unsaid, of strategic silences.

258 I write this as 1) several departments at West Virginia University are dismantled entirely while academic freedom to teach and research is undermined by the right-wing government of Florida; 2) university workers organised by the University and College Union have been striking for a better part of the year at more than 140 universities in the UK, to little effect; and 3) a sustained attempt by large numbers of both precarious academics and tenured professors to influence the policies of the German ministry for education and research through the #ichbinhanna campaign has resulted in almost zero tangible improvements.

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8. Zusammenfassung / Abstract

Diese Dissertation untersucht (hauptsächlich Amerikanische) Texte der Science-Fiction Literatur (SF), die sich auf irgendeine Art und Weise mit dem Klimawandel und der Anthropozän „beschäftigen“. Eine solche Science-Fiction hat in den letzten zehn Jahren viel akademische Aufmerksamkeit im Feld der Science-Fiction Studien erlangt; Arbeiten aus diesem Bereich tendieren jedoch dazu, den politischen und literarischen Wert derartiger Texte als selbstverständlich zu erachten, da ihre (primär literatur- und kultur-wissenschaftlichen) Methoden darauf basieren, dass Literatur stets irgendeine Form von wertvollem „Wissen“ vermitteln oder zumindest implizit beinhalten. Ich argumentiere in meiner Arbeit, dass die heutige SF sich zumeist vollkommen der Tatsache bewusst ist, was akademische Leser:innen mit Literatur „tun“, und dass akademische „readings“ von SF-Texten Teil des gleichen literarischen Systems wie die Texte selbst sind; sowohl die Literatur als auch die akademischen Interpretationen dieser Literatur sind letztlich Beobachtungen zweiter Ordnung.

In dieser Dissertation werde ich daher besonders stark berücksichtigen, was Leser:innen und Autor:innen mit (ökologischer) SF-Literatur „tun“ möchten. Hierzu ziehe Ich einerseits Eigendefinitionen der Science-Fiction von Autor:innen und Herausgeber:innen des Genres heran; andererseits kontrastiere Ich die verschiedenen Methoden literarischer Analyse, die die Literaturwissenschaft und das Feld der Science-Fiction Studien nutzen. Mein Argument ist es dabei, dass eine genaue Analyse von umweltbezogener SF als ein kulturelles Objekt sich der Tatsache bewusst sein muss, dass diese SF sich eben wiederum im Vorfeld einer möglichen akademischen Aufmerksamkeit – und akademischer Lesestrategien – bewusst ist. Mein übriger Beitrag zur Theorie der umweltbezogenen SF wird es sein, für einen größeren Fokus auf die von SF-Texten implizierte zeitliche Lücke zwischen imaginierter Gegenwart und Zukunft einzutreten (Kapitel zwei).

Die Dissertation wird dann drei Momente in der Geschichte der umweltbezogenen SF-Literatur behandeln. Der erste Moment ist die Entstehung eben dieser umweltbezogenen Science Fiction in der zweiten Hälfte des 20ten Jahrhunderts, einhergehend mit der Entstehung der Umweltbewegung und der

Umweltwissenschaften als solche. Ein besonderer Fokus wird dabei auf den literarischen Zukunftsvisionen einer angeblich bevorstehenden Überbevölkerung liegen, die vor allem in den frühen 1970ern von Autor:innen und Herausgeber:innen als politisches Werkzeug benutzt wurden (Kapitel drei). Daraufhin werde ich das bekannte Werk (von 1982 bis 2014) des Cyberpunk-Autors William Gibson im Kontext der Ökologie lesen, wobei es mein Argument ist, dass die Welten von Gibson nicht nur an Ökologie, Natur, und Klimawandel desinteressiert sind, sondern diese aktiv ablehnen: da Gibson's Werk aus der Perspektive geschrieben ist, dass die Geschichte selbst geendet hätte („End of History"), sind Umweltkatastrophen als geschichtliche Ereignisse für das Cyberpunkgenre von Gibson schlicht unvorstellbar (Kapitel vier). Der dritte Moment schließlich ist die Gegenwart: Kim Stanely Robinson's *Ministry for the Future* (2020) wird als ein Beispiel umweltbezogener SF gelesen, die sich explizit mit der zeitlichen Lücke zwischen Gegenwart und Zukunft auseinandersetzt – und mit der Frage, wie eine umweltbezogene Literatur politischen Wandel in unserer nicht-fiktionalen Realität bewirken soll (Kapitel fünf). Im Schlussteil analysiere Ich die prominente Position von Rachel Carson's Sachbuch *Silent Spring* (1962) in der akademischen Geschichte einer umweltbezogenen SF allgemein und in zwei kürzlichen Werken der Umweltliteratur im Besonderen (Kapitel sechs).

* * *

This dissertation studies (largely American) Science Fiction (SF) texts that are in some way "about" climate change or the anthropocene. While environmentally-themed SF has received a significant amount of scholarly attention in the past decade, such academic Science Fiction studies tend to take for granted the political and literary value of writing this kind of SF, trained in scholarly reading practices that conceive of literary texts as imparting valuable knowledge. I propose that contemporary SF is largely written with an acute awareness of what academic readers "do" with such literature, and that academic readings of SF are in fact part of the same literary system as the studied SF itself, sharing the status of being "second-order observations".

In this dissertation I will therefore closely consider what readers and writers of (environmental) SF hope to "do with" texts, studying both how the genre-

community has defined itself and how two schools of literary analysis – the "suspicious" approach exemplified by Fredric Jameson, and the "post-critical" approach exemplified by Rita Felski – have conceived of the usefulness of literature;

it will be my argument that a full analysis of environmental SF as a cultural object must be aware of the fact that such SF is, in turn, already aware of how academics read it. My other contribution to the theory of environmental SF literature will be to argue that more attention must be paid to the implied temporal gap between present and future in such fiction (chapter two).

With this in mind, I will then read three moments in environmental SF. I will begin with the emergence of an environmental SF in the second half of the twentieth century, concurrent with the emergence of the environmental sciences and environmental non-fiction; particular attention will be given to science-fictional fantasies of overpopulation around the 1970s, which were used for political purposes by various writers and editors (chapter three). I will also re-read the rather canonical work of cyberpunk author William Gibson (written between 1981 and 2014), arguing that his fiction is not only disinterested in ecology, nature, and climate change, but in fact actively antiecological; written from the perspective of an "end of history", catastrophic environmental

degradation as a historical event becomes unimaginable for the cyberpunk of Gibson (chapter four). Thirdly, I will consider Kim Stanley Robinson's recent *Ministry for the Future* (2020) as an example of an ecological SF that is written explicitly concerned both with the temporal gap between present and future, and with the question of how ecological fiction is supposed to effect political change in our non-fictional world (chapter five). In my concluding remarks, I will consider the prominent position of Rachel Carson's environmental non-fiction text *Silent Spring* (1962) both in academic history of environmental SF and in two further recent works of environmental writing (chapter six).

Erklärung zur Dissertation

mit dem Titel: *From Nuclear War and Overpopulation to Climate Change and Alien Invasions: How Environmental Science Fiction Has Changed Between 1945 and 2020, and How It Is Being Read Academically*

1. Hiermit versichere ich,

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Berlin, 31. Oktober 2023 Fabius Mayland