Ways of telling tomorrows: (science) fictions, social practices and the future(s) of infrastructure

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Introduction

> "You've got to create your own worlds. You've got to write yourself in." – Octavia Butler

The panel for which this paper is written asks how we might portray and evaluate "low-carbon futures". Seen through the lens of social practice theory, the phrase "low-carbon future" ('LCF' hereafter) implies a rearticulation of one or more domestic practices, resulting in a future performance of said practice(s) which has a lower carbon footprint. (Semantically speaking, it further implies the alternate possibility of "high-carbon futures", wherein the rearticulation or stasis of domestic practices results in a performance with an unchanged or larger carbon footprint.)

The practice theory lens further implies an understanding of practices as being essentially tripartite, a function of the *meanings* informing the practice, the *competencies* and abilities which the practice demands of its performer, and the *technologies and systems* enrolled in the performance (see e.g. Spurling et al 2013, Shove 2003). With regard to consumptive domestic behaviours in particular, the *assemblage* of technologies and systems utilised includes both the immediate interface technologies through which the performer initiates the practice, and the metasystemic tangle of infrastructures which enable the function of the aforementioned interface technology, which in turn mediates the relationship between performer and infrastructure. Or, more simply: it is understood that domestic practices enrol technological systems across a variety of scales, and that those practices shape (and are shaped by) the technologies and infrastructural systems that they enrol. It is my contention that these relationships and dynamics are those which any portrayal of an infrastructural future – whether high-carbon, low-carbon or no-carbon – must necessarily capture.

Given the challenge of evaluation is contingent on having a successfully portrayed future to evaluate,I will outline what I consider to be the essential requirements of a futures portrayal methodology, and then demonstrate that prose science fiction ('sf' hereafter) is capable of meeting them. I will warrant that claim further by reference to historical and contemporary approaches to the portrayal of futures which are, to a greater or lesser degree, dependent on the specialised narrative and metatextual toolkit developed within sf as a literary genre. Finally, I will turn to the more open

question of evaluating the futures thus portrayed – a question which turns on hermeneutics, narratology, subjectivity, and postmodernist critiques of power. Here I deliberately provide more questions than answers, in the hope that this concluding section of the paper might be developed in collaboration and discussion with its audience.

The portrayal of futures

The core challenge: sociotechnicality

Given the implicit assumptions outlined in my introduction above, I would argue that the core challenge in depicting any LCF lies in capturing the fundamentally sociotechnical nature of practices. Recall that a practice constitutes not only the *materiality* of technologies and physical action-in-the-world, but also the *sociality* of culturally-situated meanings and competencies. Given the innate bias of many portrayal methodologies toward either the material or the social (or, for that matter, toward the quantitative and the qualitative), such portrayals are 'incomplete' in terms of social practice theory: they simply don't (and in some cases, simply *can't*) present a full picture. If we wish to evaluate LCFs through the lens of practice theory, we must therefore find a portrayal methodology which is equally accommodating of the material and the social.

Secondary challenges: scale, temporality, subjectivity

The infrastructural underpinnings of contemporary consumptive practices add further supplementary requirements to the above specification.

Scalar agnosticism

The portrayal of infrastructural enrolment in practices necessitates the ability to move fluidly between different geographical scales, from the granular detail of a particular performance to the abstracted complexity of national or even global infrastructural networks. Or, more simply: a suitable portrayal methodology must be able to bring a power-shower into the same frame as a power-station. As with scale in the material, so with scale in the social: the suitable methodology must be able to reconcile individual action with collective social dynamics.

Temporality

The portrayal of futures in general requires a reconciliation of the events of the past with the trends of the present; the portrayal of infrastructural futures in particular hence requires a reconciliation of technological path-dependency and institutional obduracy with current paradigms of innovation, regulation and governance. In other words, the portrayal of infrastructural futures is necessarily reliant upon an understanding of infrastructural history, both general and context-specific, as well as an understanding of the hegemonic *status quo*.

Subjectivity

Infrastructural futures necessitate a universal subjectivity – a refusal of what Haraway (1988) calls the "god's-eye view". This subjectivity faces in two directions: toward the future(s) being portrayed, and toward the audience for the portrayal
        Firstly, the plurality of practices-as-performances and the spatial and temporal heterogeneity of the infrastructural metasystem are central to questions of practice rearticulation – which is to say that the practices we seek to portray and analyse, while generalisable (practice-as-entity) are specific to their context (practice-as-performance); perhaps even uniquely so. As such, a suitable methodology will be capable of giving voice to those who are usually excluded from discourses of infrastructural futurity: this means not only the "end user" as performer, but also the other subjects –

human, non-human and hybrid – enrolled into the assemblage.

Secondly, the suitable methodology must necessarily engage a wide audience – wide not only in the sense of transcending the disciplinary silos within the academy, or those between the academy and industry and the policy machine, but also in the sense of *despecialising the subject to the greatest extent possible*, thus opening up the infrastructural futures discourse to contribution and critique from the excluded actors mentioned above (and, ideally, doing away with the euphemistic policy shibboleth of "the stakeholder" altogether).

The case for science fiction

With the strong caveat that any successful strategy for the portrayal of infrastructural futures will likely draw on multiple methodologies and mediums, I would argue that science fiction meets the methodological specification outlined above.

At this point, it bears noting that the critical definition of "science fiction" is perpetually contested among both its fans and its scholars, as are the Venn-like relationships between science fiction and other generic constructs, such as fantastika (i.e. horror and fantasy literature; see Clute 2015) and [u/dys]topia (see Raven 2015). For the sake of brevity, I am here using "science fiction" to stand in for the collection of rhetorical and narratological strategies and tropes which have developed specifically for the purpose of using prose fiction to construct *narratives of futurity*; for a more detailed discussion of this metacategory, and of (some of) the specific tropes and strategies to which I refer herein, please see Raven & Elahi (2015) and Raven (2016). For our purposes here, it will hopefully suffice to say that science fiction's core advantage with regard to depicting sociotechnical futurity is that *the depiction of sociotechnical futurity is what science fiction evolved to do*[1].

Prose sf is in some respects advantaged over and above sf in other media (e.g. film, design) because it allows for the seamless and simultaneous portrayal of the material realities of the storyworld and the subjective interiorities of the actor(s) inhabiting that storyworld – or, more simply, written fiction can portray not only what someone does, but also why they're doing it, as well as (crucially for us) why they're doing it *in that particular way*.

Prose sf passes the core challenge, then; what of the secondary challenges? With regard to scalar agnosticism, sf has developed not only a set of techniques but entire aesthetics relating to the portrayal of sociotechnical scale, such as the "Big Dumb Object" trope (concerned with the explication and/or exploration of massive and mysterious technological artefacts); this engagement with scale is identified by Csicsery-Ronay (2008) as having its roots in the notion of the American technological sublime (see Nye 1994), which in turn was a phenomenon rooted in public perceptions and imaginaries around infrastructure).

Furthermore, by way of its intimate relationship to the utopian tradition (again, see Raven 2015), science fiction has a deeply established capacity for narrating social structures at various scales which is rarely observed in other genres, if ever; this concern with systemicity and futurity in parallel has resulted in the evolution of structures and techniques which are intended to encourage speculation and critical thinking in the reader. (To be clear, this is not to say that other genres *cannot* narrate sociotechnical systems at scale, but to observe that they *choose not to do so* – and that it is the choice to tackle such topics which is arguably the truest mark of 'science fiction', rather than any particular technique or trope; the techniques of science fiction are not guarded or arcane so much as they are overlooked and dismissed as somehow counter to 'literary' values.)

With regard to portraying temporality, this is arguably sf's *raison d'etre*! Nonetheless, it should be noted that the degree of historical accuracy and extrapolative rigour is highly variable across the genre, with some subgenres valuing it greatly (sometimes to the detriment of more

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1   However, this is also a disadvantage, in that sf has a lengthy tradition of technofetish and solutionist boosterism (see section 2.4.1 below), and those rhetorics are to a greater or lesser extent tangled up in the genre's aesthetics and poetics, which in turn have leaked into countless other ostensibly non-fictional genres (e.g. marketing, politics).

literary merits), while others prefer to play fast and loose in the name of a more exciting story (or in the name of their favoured epistemology, which amounts to the same thing); the point being that prose sf is demonstrably *capable* of rigour with regard to temporality, but it cannot thus be presumed to be *inherently* rigourous.

The same applies to the matter of subjectivity: it seems obvious that prose fiction in general is the medium most able to portray the subjectivity of interior experience, as implied in the core challenge above, though careful choices with regard to narrative strategies can make this far easier and more effective (see again Raven & Elahi 2016). But the question of subjectivity pertains to the audience of the story as well as its characters, and it is here that sf is again greatly advantaged, in that – while it has an internal generic discourse of its own – sf requires little or no specialist knowledge from its audience, beyond a basic level of literacy and a familiarity with the sociotechnical 'pop culture' of the milieu in which it was written.

Which is to say that not only can sf portray all sorts of people and practices, but it can portray them in a manner which is as accessible to a literate citizen as to an academic, policy-maker or industrial leader. This potential for the "despecialisation" of technoscientific topics may be the greatest strength of sf with regard to the challenge of portrayal.

Past futures: precedents for portrayal

In outlining precedents for the use of (science) fiction in sociological work, I will pass over the (highly partial) foundation mythologies of futures studies, because not only is that story already well-established (for a classic of the genre, see Bell 1996), but also because it has traditionally ignored the more sociological examples in which I'm most interested. Furthermore, this outline must necessarily be brief and cursory due to the constraints of the conference paper format; where possible, I will provide citations for more detailed treatments.

The utopian tradition

A full archaeology of the utopian tradition is well beyond the scope of this paper. I will instead summarise briefly a three-fold modality of utopias as seen through the lens of science fiction criticism; a more thorough treatment can be found in Raven (2015).

Drawing on James (2003), the three utopian modes are the *classical*, the *technological* and the *critical*. The classical utopia is a depiction of a perfected social order, whose canonical form is arguably Thomas More's *Utopia* itself. The technological utopia, by contrast, depicts a world transformed through the application of technoscience rather than through political means; this mode will be familiar to readers of 'golden age' science fiction (whether Gernsbackian or Campbellian), and to anyone exposed to the solutionist discourses of Silicon Valley. Lastly, the critical utopian mode is reflexive, in that it *seeks to depict a utopian project undergoing its inevitable failure*; in doing so, it "undermines the notion of utopia as a deliverable project, but nonetheless clearly values the the form as an experimental space for exploring its own consequences and failure-states" (Raven 2015).

These modalities can be observed not only in the history of literature, but also in architecture, planning and urbanism. Critical design and "design fiction" practitioners in particular make use of the reflexive position inherent to the critical utopian mode, positioning those disciplines in opposition to the technological utopianism that permeates the glossy renderings of brochures for "smart cities" just as much as the slick advertisements of technology companies. With apologies for citing myself at length:

> "The critical utopia is not a strategy for a better world: it is a strategy for better strategies – and a necessary counter to the solutionist impulse that underlies all utopian thinking (including its own). The critical utopia further recognises that utopia is always-already subjective: that the good life, and hence the good society, is plural, contested, in perpetual

flux [… it is] through the portrayal, analysis and comparison of many different utopias that the true utility of the form emerges: it shifts the critical focus away from what a society *is*, and onto what a society *aspires to be*; it opens up safe spaces in which those great ideals – social, technological or otherwise – may be (con)tested.” (ibid)

Ruth Levitas has made similar (though far more elegantly formed) arguments for “utopia as sociological method”, albeit from the (more purely sociologically-grounded) perspective of utopian studies rather than science fiction studies; see Levitas (2013).

Social science fictions

The power and utility of rich prose for sociological work is already well enshrined in the anthropological and ethnographical traditions – for what else is “thick description” but a detailed narrative which is based on observation rather than extrapolation and/or speculation? It follows that, so long as the narrative is never mistaken for prophecy or prediction, “thick descriptions” of imaginary sociotechnical constitutions should be just as tractable to analysis as those of actually-existing (or actually-having-existed) sociotechnical constitutions.

There are at least two notable figures in the sociology of technology who have explicitly advocated the use of science fiction as a methodological tool in sociology. Here's just one among many from Bruno Latour[2]:

> “The genre *[of science, or of science writing – Latour doesn't really recognise the distinction]* is made of a corpus of literary devices(or linguistic keys and frames) which can be empirically studied. All these devices can also be deconstructed by a careful use of other genres. It is no coincidence that many of the most fruitful insights into the workings of science have been made by people whose style is completely at variance with the usual scientific mode [...] I recommend ... that the student of science do some literary research, so as to become familiar with the stylistic tricks employed by scientists. By drawing on these two sources (fiction and science) the social scientist will soon realize that there is in fact only one large literary genre: that of science fiction (the best part of which is *not* written by science fiction writers).” – Latour 1981, p211; emphases mine

Donna Haraway, whose cyborg metaphor (1991) is arguably the best known operationalisation of science fiction in social science, has long argued for the value of sf as a writing practice for feminist theory. The following quote has proven very popular among feminist critics of sf:

> “Science fiction is generically concerned with the interpenetration of boundaries between problematic selves and unexpected others, and with the exploration of possible worlds in a context structured by transnational technoscience.” – Donna Haraway, as quoted in Hollinger 2003

The genre Haraway describes above sounds ideal for the portraying of low-carbon futures!

Examples of sf in action as a methodological tool do exist, albeit put to slightly different purposes; Latour's *Aramis* (1996) and Haraway's *ModestWitness@SecondMillennium* (1997) are interesting examples. More recently, in the bluntly titled *The Collapse of Western Civilisation*, Oreskes & Conway (2014) narrate the titular climate-change-induced collapse from the perspective of a surviving post-Chinese civilisation, hundreds of years hence; there is an immense power in their portraying climate change not as an imminent threat but a long-past *fait accompli*, but the

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2   It probably bears noting here that some science fiction scholars have used Latour's work on enrolment to argue the exact opposite of the above, namely that science fiction does not actually exist as a genre, only as “an irresolvable series of discursive and material claims made for the [its] existence and nature” (Bould & Vint 2008).

impact is lessened by their choosing a corporate and academic narrator for the piece, in essence throwing aside many of the potential advantages of empathy and accessibility discussed above. By way of a more policy-facing example, Sonja van der Arend's *An Otter in Brussels* (2014) uses a fictional narrative to explore questions of water quality in contemporary urban (re)development.

The evaluation of futures

In this paper I have argued for the suitability of prose science fiction for the task of portraying low-carbon futures, and indeed infrastructural futures in general, and examined a few precedents for such a deployment. In review, and in hope of completing this final section of the paper in collaboration with its audience, I offer the following summary of pros and cons:

In favour:

- **Cheap** (especially by contrast with more technical media, e.g. video)
- **Flexible** (handles the mundane and the mind-blowing with equal facility)
- **Collaborative** (while the writing process itself tends to be best achieved by someone sitting alone with a keyboard, the worldbuilding, characters and plot can – and should! – be co-produced with a variety of stakeholders)
- **Accessible** (low barriers to entry, both as contributor or audience)
- **Comes with a ready-made critical toolkit** (the science fiction studies literature is very deep, and already well-connected to sociological themes)
- **Offers potential of using pre-existing science fictions as "found futures" for critique** (given how many technoscientific themes sf writers have tackled already, a rich seam of research materials lies waiting to be exploited)

Against:

- **'Fuzzy', qualitative outputs** (social science fictions are highly unlikely to win over the quants and wonks without supplementary materials)
- **Delivery challenges** (almost anyone can write a story, but writing an engaging story that still carries all the crucial data is a challenge that really requires an experienced specialist; however, science fiction writers are perennially underemployed, so recruiting them shouldn't be a problem)
- **Who speaks?** (just because fictions *can* be collaborative, accessible and inclusive, doesn't mean they necessarily *will* be)
- **The utopia-as-blueprint fallacy** (the risk of portraying a potential or possible future which is then misparsed as predicted or promised future; this is a path-dependency problem generated by the lingering influence of the technological utopian mode in popular culture, especially science fiction cinema and tech advertising, and in the discourse of corporate foresight consultancy)

Given my background as a writer, scholar and critic of science fiction, it surely behoves me to restate my obvious bias! Nonetheless: I believe the potential of sf for portraying and infrastructural futures far outweighs its downsides, so long as the method is appropriately constrained and directed within the framework of a larger sociological enquiry. What form the work might take is an open question, although Schroeder (a practicing futurist as well as a published science fiction author of note) has attempted to formalise the process of converting scenario data into fictional narratives (2011); meanwhile, new co-production and action research paradigms offer established and/or experimental frameworks for the collaborative building of story.

The question of evaluating the resulting narratives likewise remains open: on what criteria

should they be assessed, by whom, and to what end? It is my suspicion that the answer will always be contingent on the specific *telos* and aims of the project in which it takes place – and that's perhaps exactly as it should be. In my own work, I'm drawn very much to the critical utopian mode; normative evaluation ("picking a preferred future") smacks too much of the sophistry of organisational foresight, for a start, and the greatest value of fiction lies surely in its being a soapbox where ideas might be tested to destruction without consequence (see again Raven 2015). But I am aware that co-production paradigms and the growing field of action research have a lot to say on this front, as do many others... and so I will end by quoting Aneurin Bevin (via the Manic Street Preachers), and say:

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This is my truth; now tell me yours.

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