

Science Fictioning Architectural Pedagogy

Science fiction (SF) has often been used as a descriptor, sometimes dismissively, of much work in architecture and architectural pedagogy, often as a synonym for a project's novelty or for its aesthetic relationship to works of popular culture, rather than for its more nuanced investigation of futurity. Such banal aestheticization merely reproduces a normative, easily digestible imagination of the future - what futurist Scott Smith calls "flat-pack futures,"¹ rather than opening a discursive space about what we, collectively, might want the future to be like. The qualities which might make an architectural work most like SF are insufficiently established, and as such, the nature of *what architects might learn from SF and how such learning might happen* has been insufficiently explored. SF critics, on the other hand, describe SF as a mode of speculation rooted in interwoven technical, socio-political, and affective imaginings whose difference from empirical experience produces a dialectical relation between that future imagination and the readers' present — a revelation of the present through the projection of something that does not yet exist.

This paper describes two experiments in architectural curriculum designed to take advantage of SF storytelling to illuminate what and how prospective architects might learn from SF. The research engages with SF literature directly, and also draws on the field of SF studies to elaborate potential avenues for an SF pedagogy through a perpetual oscillation between projection and critique of students' imaginations for the future. Rather than providing a blueprint for any specific future, SF pedagogy aims at understanding the future as a contested space, a space open to continued definition by those who will live in it.

I did not invent the term 'science fictioning.' Simon O'Sullivan and David Burrows use "fictioning" to describe the "myth functions" emerging in contemporary art, describing "the writing, imagining, performing or other material instantiation of worlds or social bodies that mark out trajectories different to those engendered by the dominant organizations of life currently in existence".² They also use the term "science fictioning," although their use of the word seems to rely on a popular understanding of the genre - as the myth-function here are

¹ Scott Smith, "Beware of Flat-Pack Futures," Lecture, from Media Future Week, Almere, NL. 4. July, 2013. <https://vimeo.com/66314529>.

² David J Burrows and Simon O'Sullivan, *Fictioning: The Myth-Functions of Contemporary Art and Philosophy*, 2019.

strictly concerned with science, technology, and a kind of otherworldliness.³ The potential of this term is perhaps better captured by Jessie Beier. In her excellent essay blending SF storytelling with socio-political critique, she understands SF as it works to change the present through the expression of potentials from strange and unknown futures.⁴ These usages of “science fictioning” capture some of its capacity, particularly in the force of the participial ending. As a verb, we can characterize science fictioning in its action on an object - that is, attaching or imposing some attribute or quality of SF to another object. I would like to suggest this action as a type of design research. It is impossible to systematize either SF or architectural pedagogy, but “science fictioning” might suggest it is possible to design a confrontation between both interdisciplinary fields. The larger project attempts to unfold the particular valence of this confrontation, both in describing the way in which architectural production is already like SF, and in provoking this existing affinity.

Existing work in developing the particular correspondence between architecture and SF shows an appreciation of the speculative, futurological, and storytelling capacities of both fields,^{5,6} as well as the critical perspectives afforded by SF.⁷ I want to build upon this previous work and direct it towards the specific problem of architectural pedagogy, where the challenge presented to the educator is to develop capacities in synthesizing affective, social, environmental, and technical demands in a singular design process - a process never more necessary than in the imbroglio of our present dystopian moment. Contemporary pedagogy also finds itself in a transitional state from a tradition of master tutelage towards a model which aims to empower student subjectivities. In its articulation of futurity, science fictioning does not rely on any specific narrative so much as it encourages students to think the future as a space open to contestation, a space where their own aspirations are instrumental in shaping the collective aims and articulations of an unknown future.

Speculation is a broad cultural form expressed in a wide variety of media, and architecture has long supported speculative dimensions, and while novelty has become a poor substitute

³ Simon D. O’Sullivan, “From Science Fiction to Science Fictioning: SF’s Traction on the Real,” *Foundation: The International Review Of Science Fiction*, December 31, 2017, <http://research.gold.ac.uk/19772/>.

⁴ Jessie Beier, “Dispatch from the Future: Science Fictioning (in) the Anthropocene,” in *Interrogating the Anthropocene*, ed. Jan Jagodzinski (Cham, CH: Springer International Publishing, 2018), 359–400, https://doi.org/10.1007/978-3-319-78747-3_16.

⁵ Nic Clear, “Refreshingly Unconcerned with the Vulgar Exigencies of Veracity and Value Judgement: The Utopian Visions of Iain M. Banks’ *The Culture and Constant’s New Babylon*,” *Design Ecologies* 3, no. 1 (June 1, 2013): 34–63, https://doi.org/10.1386/des.3.1.34_1.

⁶ Thandiwe Loewenson, “Fiction as a Form of Combat: Field Manoeuvres in the Realm of the Weird and the Tender” (Lecture, Aarhus, Denmark, May 18, 2018). Lecture, Aarhus School of Architecture, Aarhus, Denmark, 18. May, 2018.

⁷ Amy Butt, “‘Endless Forms, Vistas and Hues’: Why Architects Should Read Science Fiction,” *Architectural Research Quarterly* 22, no. 2 (June 2018): 151–60, <https://doi.org/10.1017/S1359135518000374>.

for newness in much architectural production, at its best, the discipline has produced work to challenge not only the built environment, but also to assert the work as an artefact of a new or different world - Lebbeus Woods or Buckminster Fuller are exemplary in this regard. This process has a strong resonance with the process of SF worldbuilding - that authorial process which develops the context of a given story. A paradigmatic example is the ecology, geology, religion, and interstellar politics intrinsic to the narrative development of Frank Herbert's *Dune*.⁸ World-building or "worlding," however, has a larger resonance for Donna Haraway. She reminds us that the relationship between imagined futures and real world is performative, that the science fictional exercise of crafting worlds can equally describe our own "patterning of possible worlds" offering radical alternative modalities to reshape the existing world.⁹ As Haraway so succinctly writes, given their potential for shaping our imaginations what is possible, "it matters what stories we use to tell other stories with."¹⁰

While SF transports its readers to different temporal, scientific, social, or biological paradigms, the pleasure of SF is not only in its imagination of diverse possibilities - the difference from the reader's reality - but, to quote Carl Freedman, in "the difference such a difference makes."¹¹ Darko Suvin defines this difference as SF "cognitive estrangement" in his seminal text of SF criticism.¹² Referencing Bertold Brecht's "Verfremdungseffekt" in theatre, Suvin's estrangement describes the imaginative elements of the fiction which mark it as distinct from the experience of author or reader, but which dialectically produce a critical relationship to the present by imagining it otherwise.¹³ Such estrangement confers upon the reader's particular historical moment a kind of contingency and openness to intervention and utopian potentiality.¹⁴

Worldbuilding and estrangement may seem at odds with one another, one shapes the nuances of non-reality, while the other insists that such non-reality is really about the here and now. In fact, SF is constituted by this perpetual oscillation between projective and critical modes of operation. This simultaneity echoes one of the central concerns of SF criticism, in a distinction also introduced by Darko Suvin, as to whether SF is extrapolation or

⁸ Frank Herbert, *Dune* [1965] (New York: Ace, 1990).

⁹ Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham: Duke University Press Books, 2016), 31.

¹⁰ Haraway, *Staying with the Trouble*, 11.

¹¹ Carl Freedman, "Science Fiction and Critical Theory [1987]," in *Science Fiction Criticism: An Anthology of Essential Writings*, ed. Rob Latham, Reprint edition (London ; New York: Bloomsbury Academic, 2017), 232.

¹² Darko Suvin, *Metamorphoses of Science Fiction: On the Poetics and History of a Literary Genre* (New Haven, Mass.: Yale University Press, 1979).

¹³ Suvin, *Metamorphoses of Science Fiction*, 7.

¹⁴ Fredric Jameson, "Progress versus Utopia, or, Can We Imagine the Future? [1982]," in *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions* (London: Verso, 2007), 281–95.

analogy, that is, whether its vocation is to imagine the future, or whether it forms a collective document of the preoccupations and anxieties of the present.¹⁵ Although Suvin finally favours analogy,¹⁶ later critics recognize the *oscillation* as the productive element, both of SF¹⁷ and of Utopian imaginations, where, for example, Ruth Levitas argues for a simultaneity of “archeological” and “architectural” modes of interpretation for literary Utopias, a concurrent examination and contextualization of a proposal even as it is brought into the world.¹⁸

The two experiments described here both introduce this oscillation between a critical engagement with the present and the projective imagination of future possibilities into architectural pedagogy. Both of these experiments work directly from SF literature - either short stories or excerpts from novels - and involve several iterations or ‘translations’ between various media. ‘Translation’ becomes one of the more useful analogies for the methods explored in the teaching experiments described here. In both experiments, students proceed through multiple stages, although rather than moving from one language to another, the translation is an act of re-imagination; students were asked to move from text to visual media and back over several phases, at each stage trying to faithfully represent the nuance of their interpretation in the new translation. Such an exercise in storytelling echoes a pedagogical process described by Stephanie Liddecoat as multimodal ficto-criticism.¹⁹

As a style of writing, ficto-criticism - a blending of fiction and criticism - navigates the heterogeneity and complexity of language and theory through narrative synthesis rather than within disciplinary protocols of academic writing.²⁰ Referring to Bakhtin’s discussion of literature’s dialogic character, Anna Gibbs writes that ficto-critical writing is inherently multivocal; its heterogeneous voices contain its own challenges, doubts, speculations, its own critique or antithesis. In writing and translating their text as ‘ficto-critical’ storytelling, students begin to articulate points of view that are radically different from their own experience, writing with a voice not their own from inside the first author’s text. From this non-authoritative starting point, students began their own domestication of the storytelling, a “translation” from the text of the story into a visual storytelling language. This shift in media

¹⁵ Suvin, *Metamorphoses of Science Fiction*, 27.

¹⁶ Darko Suvin, “Goodbye to Extrapolation,” *Science Fiction Studies* 22, no. 2 (1995): 301–3.

¹⁷ Istvan Csicsery-Ronay, Jr. “The Seven Beauties of Science Fiction.” *Science Fiction Studies* 23, no. 3 (November 1996). <https://www.depauw.edu/sfs/backissues/70/icr70art.htm>.

¹⁸ See: Ruth Levitas, *Utopia as Method: The Imaginary Reconstruction of Society* (Houndmills, Basingstoke, Hampshire ; New York: Palgrave Macmillan, 2013).

¹⁹ Stephanie Liddicoat, “Writing the Client: The Role of Fictocriticism and Prose Fiction in the Architectural Design Studio,” *Higher Education Research & Development* 38, no. 1 (January 2, 2019): 77–96, <https://doi.org/10.1080/07294360.2018.1539065>.

²⁰ Anna Gibbs, “Fictocriticism, Affect, Mimesis: Engendering Differences,” *Text* Vol. 9 No. 1, accessed August 20, 2019, <http://www.textjournal.com.au/april05/gibbs.htm>.

implicates the student in externalizing their own subjective experience of the text, but also charges them with being intentional with how the nuance of the text is effected by such translation. The multiple translation in each exercise are, in effect, “multi-modal” repetitions of the story becoming, following Liddicoat, heuristic evolutions of the narrative in order to activate the student’s subjective investment and understanding of the narrative and their client in progressive steps.²¹

“Playing Innocent” is a semester-long studio project which translated relational modes from short stories by J.G. Ballard into body-scale architectural devices.²² Students, working in groups of four, were presented with one of 9 short stories, each of which contained some relational mechanisms that they were to activate. These initial impossible provocations underwent several translations or ‘mutations’ into a final performative artefact in the public space of the school. The demand for a working material prototype necessitated progressive ‘translation’ all the way from conceptual ideation to very specific technological demands. The second project, a one week workshop titled “There and Back Again,” is an experiment in developing client, program, and a model of “future living” for a master’s studio project, directly appropriating the estranged worlding from works of SF.²³



Figure 1 - Affective exploration of the subjective experience of space and proximity as it is moderated differently though different senses - touch, sound, and sight, derived from a J.G. Ballard’s short story “The Enormous Space” [1989]. Students: Sophie Elizabeth Hutchinson, Oleksandra Ianchenko, Nanna Louise Holmberg Nielsen, David Bjelkarøy Westervik

²¹ Liddicoat, “Writing the Client”

²² This project is subsumed under the title “Playing Innocent: Action, Agency, and Architecture,” and is a semester-long project for a second- and third-year students in a Bachelor unit. The project was conceived and conducted by the author and Naina Gupta in the autumn semester of 2017 at the Aarhus School of Architecture.

²³ This project was conducted by the author during the autumn 2019 semester in Studio 2B at the Aarhus School of Architecture, as a part of a brief defined by studio tutors Robert B. Trempe, Dagmar Reinhard, and Claudia Carbone. As a consequence, the author was involved in the workshop and in the final critique, although not the intermediate development of the project.

In “Playing Innocent,” the students explored ‘relational mechanisms’ that were either affective - describing a relation between a subject and their environment - or social - describing the relation between subjects. An example of an affective mechanism is drawn from the short story “The Enormous Space” [1989], which describes the character’s gradual withdrawal from social interaction as the literal expansion of space around him. The character’s agoraphobia becomes such that he retreats to the smallest closet in his house, eventually watching the grid of tiles expand around him into an infinite space. The group translated this story into an exploration of the subjective experience of space and proximity as it is moderated differently through different senses - touch, sound, and sight. Their final iteration was a space which was simultaneously social and isolating, with the visual field being shielded inside a womb-like fabric, while the plasticity and porosity of the material allowed the possibility of social experience through sound and touch to the adjacent cell [fig. 1]. The translation eventually was resolved to the level of technical issues demanded by the internal coherence of the structure’s story, such as the development and testing of fabric patterns and details.

While the first experiment worked to resituate an estranged position inside contemporary experience, the second asks students to interrogate their own narratives of futurity. Building upon elements of science fictional storytelling, the workshop also integrates multi-modal translation in a cyclical process between text and image. This workshop focused on SF texts as a document describing future living scenarios, but students’ analytical skills were deployed not by systemizing these futures, but by extending and building upon these stories. They were given the minimal directive from their studio instructors that they should design a future living scenario for a ‘caretaker’ for their site, the ruins of the Jarlshof Prehistoric and Viking Settlement, near the southern tip of Mainland in the Shetland Islands. The program developed during the workshop informed their design work for the rest of the semester, and this paper looks at the preliminary results, as well as the final submissions.

Students were individually given one of 9 short stories or extracts from a novel, each describing an individual or group of characters who form the basis for a new client and program for the studio’s site. While diverse, the texts describe a relatively solitary living scenario appropriate to the life of a caretaker, but with diverse environmental qualities, attitudes, responsibilities and relations to a larger community. While the co-implication of character and environment might be found in many types of literary fiction, works of SF explore concepts outside the lived experience of the reader, thus an estranged position from

which to stage an investigation in 'future living.' Rather than an unconscious acceptance of the status quo as inevitable or immutable, the framing of the project as 'future living' is an implicit critique of the normative model of housing programs which assume generic requirements for all potential inhabitants, and made it necessary for students to critique their own assumptions of what constitutes a home.

In working not only with literary fiction, but with SF specifically, students were doubly challenged, in engaging first with a subject distinct from their own experience - the character, and second, with an estranged context - future or some alternative present which introduces a different technical, social, or affective milieu. Although describing future modes of living is impossible by definition, the partial, non-authoritative point of view offered by the estranged character and context of the text opened up a range of possibilities to explore, and their own narratives began trace a path through this territory. In such a way the students can understand and situate the future living describe in the text in relation to their own experience of the world as well as looking for potential developments arising from outside dominant cultural expectations of futurity - enacting the dialectic enabled by Suvin's cognitive estrangement.

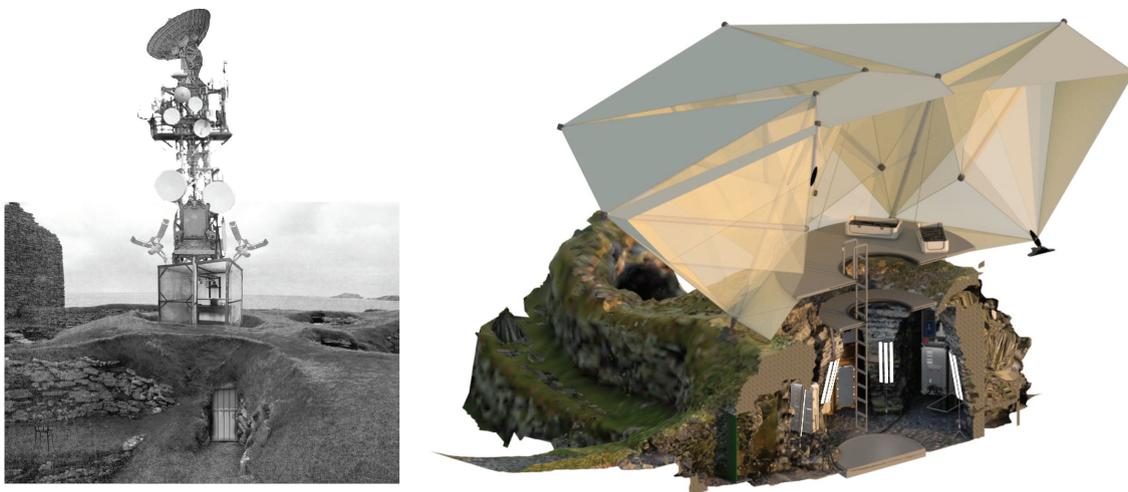


Figure 2 - Intermediate and final results: Julius Deane's "Safe House," by Jesper Asferg Scheel

These texts presented estranged contexts which presented characters' lifestyles in relation to pressures our facing our own future - climate change, economic change, food insecurity, data privacy, and migration. Skinner and the Girl, from William Gibson's "Skinner's Room,"²⁴ are living atop the ruins of San Francisco's Bay Bridge after it has been damaged by an

²⁴ William Gibson, "Skinner's Room," *Omni*, November 1991. Gibs

earthquake and occupied by that city's dispossessed, while the same author's Julius Deane is a paranoid and debauched criminal [fig. 2].²⁵ Economic disparity has hollowed out Toronto in Nalo Hopkinson's *Brown Girl in the Ring*,²⁶ where the matriarch Mami Gros Jeanne has settled in a park where she grows and prepares folk medicines for her community. As well as external pressures, the texts also introduced provocations from the characters' unique qualities. While both are scientists, Sax from Kim Stanley Robinson's *The Martians* is a unique and moving meditation on aging and memory [fig. 3],²⁷ while the same author's Frank Vanderwal is going through a midlife crisis and experimenting with pseudo-“paleolithic” living in a near-contemporary Washington, DC [fig. 4].²⁸ Nnedi Okorafor's “Mother of Invention” contemplates and conflates sheltering and motherhood,²⁹ while Pangborn, from J.G. Ballard's “Motel Architecture” describes the strange psychological condition emerging from the mind-body dissociation resulting from our immersion in communication technology.³⁰



Figure 3 - Inspired by Kim Stanley Robinson's *The Martians* [1999], the ‘thickness’ of Sax’s social relations in the layered structural organization, by Hafdis Bragadottir



Figure 4 - Inspired by Kim Stanley Robinson's *50 Degrees Below* [2007], Frank Vanderwal's experiments in ‘paleolithic’ living variously interpreted by Kristoffer Holmgaard Gade (left) and Mathias Klith Harðarson (right)

²⁵ William Gibson, *Neuromancer* (New York: Ace, 1984).

²⁶ Nalo Hopkinson, *Brown Girl in the Ring* (New York: Warner Books, 1998).

²⁷ Kim Stanley Robinson, *The Martians* (New York; London: Spectra, 2000).

²⁸ Kim Stanley Robinson, *Fifty Degrees Below*. (New York: Spectra, 2007).

²⁹ Nnedi Okorafor, “Mother of Invention,” in *A Year without a Winter*, ed. Dehlia Hannah (New York: Columbia Books on Architecture and the City, 2018), 213–31.

³⁰ J. G. Ballard “Motel Architecture” [1978] in *The Complete Stories of J. G. Ballard* (New York: W. W. Norton & Company, 2009).

This last story was the only one to be included in both experiments, and the results illustrate the diversity of responses. In the story, Pangborn lives intentionally confined to a wheelchair, naked and bathed in artificial light, while endlessly analysing television, especially the shower scene from Alfred Hitchcock's "Psycho" [1960]. Pangborn's total immersion in the space of the screen begins to be disturbed by the regular visits of a cleaning woman. During the course of the story, Pangborn begins to feel the presence of an intruder in his space, evinced by physical traces such as body odour, or footprints on the clean floor. This presence so disturbs the character that he kills the cleaning woman before killing the intruder - his own body. Students in the first project focused on the fragmentation of body, viewed through the screen. What the story describes as the mediated disintegration of the individual is translated by the students into an architectural device which initiated spatial and social connections through the apparatuses of the frame and mirror, but where subtle modulations of angle and pitch fragmented the reflection of the individual, and layered other reflections onto the space [fig. 5]. The disintegration of the body leaves room to invite otherness into the space of the body-image.



Figure 5 - Affective architectural element exploring the disintegration of the body image through optical devices of reflection and framing. Students: Mathilde Møll Helms, Niclas Heydorn, Anne Sofie Ravnsbæk Geertsen, Lesia Balan

In the second workshop, the same story activated a discussion with the tutor which situated Ballard's story in a critical relation to architectural proposals exploring the same theme. These include Mike Webb's "Cushicle" and "Suitaloon" [1967] - a living infrastructure to supply the body with all its needs including media diet, as well as Diller + Scofidio's "Para-site" [1989] and "Slow House" [1991], both of which explored the dissociation of physical and informational experience. Even now, information technology significantly dominates our attention - perhaps to the detriment of our physical bodies. Nevertheless, the object with such a discussion is not to propose a moralizing counter Ballard's story, but

instead to see the currency of such a lifestyle, and to look for potentials inside of it. For one student, this discussion resulted in a program for a caretaker which imagines that much of that job might be better accomplished using digital tools. Her proposal for a caretaker's house provokes the physical body, while supporting the digital infrastructure necessary to monitor the site's ruins. The student then developed the possibility that the physical and digital spaces might be co-implicated, with each disrupting and augmenting the experience of the other [fig. 6].

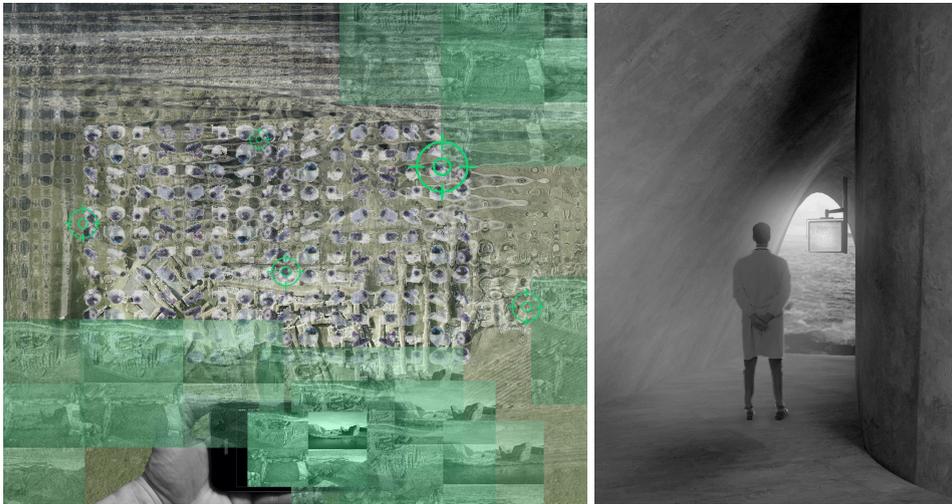


Figure 6 - Speculation on overlapping physical and digital experiences, inspired by J.G. Ballard's character Pangborn from "Motel Architecture" and image of subsequent design proposal, by Vildana Duzel

What these initial experiments in architectural pedagogy show is an emerging affinity between the aims of architectural pedagogy and SF literature and criticism. In the face of an unknown future, we cannot hope to maintain the status quo. Presenting the cultural meditations of futurity found in SF to architectural students articulates the future as a site of active intervention and contestation, of a shared imagination and desire, in which students have the pleasure and responsibility of articulating.

Bibliography

- Ballard, J. G. *The Complete Stories of J. G. Ballard*. New York: W. W. Norton & Company, 2009.
- Beier, Jessie. "Dispatch from the Future: Science Fictioning (in) the Anthropocene." In *Interrogating the Anthropocene*, edited by Jan Jagodzinski, 359–400. Cham, CH: Springer International Publishing, 2018. https://doi.org/10.1007/978-3-319-78747-3_16.
- Burrows, David J, and Simon O'Sullivan. *Fictioning: The Myth-Functions of Contemporary Art and Philosophy* Edinburgh: Edinburgh UP, 2019.
- Butt, Amy. "Endless Forms, Vistas and Hues': Why Architects Should Read Science Fiction." *Architectural Research Quarterly* 22, no. 2 (June 2018): 151–60. <https://doi.org/10.1017/S1359135518000374>.
- Clear, Nic. "Refreshingly Unconcerned with the Vulgar Exigencies of Veracity and Value Judgement: The Utopian Visions of Iain M. Banks' The Culture and Constant's New Babylon." *Design Ecologies* 3, no. 1 (June 1, 2013): 34–63. https://doi.org/10.1386/des.3.1.34_1.
- Csicsery-Ronay, Jr., Istvan. "The Seven Beauties of Science Fiction." *Science Fiction Studies* 23, no. 3 (November 1996). <https://www.depauw.edu/sfs/backissues/70/icr70art.htm>.
- Freedman, Carl. "Science Fiction and Critical Theory [1987]." In *Science Fiction Criticism: An Anthology of Essential Writings*, edited by Rob Latham, Reprint edition., 225–45. London ; New York: Bloomsbury Academic, 2017.
- Gibbs, Anna. "Fictocriticism, Affect, Mimesis: Engendering Differences." Text Vol. 9 No. 1. Accessed August 20, 2019. <http://www.textjournal.com.au/april05/gibbs.htm>.
- Gibson, William. *Neuromancer*. New York: Ace, 1984.
- . "Skinner's Room." *Omniflex*, November 1991.
- Haraway, Donna J. *Staying with the Trouble: Making Kin in the Chthulucene*. Durham: Duke University Press Books, 2016.
- Herbert, Frank. *Dune*. New York: Ace, 1990.
- Hopkinson, Nalo. *Brown Girl in the Ring*. New York: Warner Books, 1998.
- Jameson, Fredric. "Progress versus Utopia, or, Can We Imagine the Future? [1982]." In *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions*, 281–95. London: Verso, 2007.
- Levitas, Ruth. *Utopia as Method: The Imaginary Reconstruction of Society*. Houndmills, Basingstoke, Hampshire ; New York: Palgrave Macmillan, 2013.
- Liddicoat, Stephanie. "Writing the Client: The Role of Fictocriticism and Prose Fiction in the Architectural Design Studio." *Higher Education Research & Development* 38, no. 1 (January 2, 2019): 77–96. <https://doi.org/10.1080/07294360.2018.1539065>.
- Loewenson, Thandiwe. "Fiction as a Form of Combat: Field Manoeuvres in the Realm of the Weird and the Tender." Lecture, Aarhus, Denmark, May 18, 2018.
- Okorafor, Nnedi. "Mother of Invention." In *A Year without a Winter*, edited by Dehlia Hannah, 213–31. New York: Columbia Books on Architecture and the City, 2018.
- O'Sullivan, Simon D. "From Science Fiction to Science Fictioning: SF's Traction on the Real." *Foundation: The International Review Of Science Fiction*, December 31, 2017. <http://research.gold.ac.uk/19772/>.
- Robinson, Kim Stanley. *Fifty Degrees Below*. New York: Spectra, 2007.
- . *The Martians*. New York; London: Spectra, 2000.
- Smith, Scott. "Beware of Flat-Pack Futures." presented at the Media Future Week, Almere, Netherlands, July 4, 2013. <https://vimeo.com/66314529>.
- Suvin, Darko. *Metamorphoses of Science Fiction : On the Poetics and History of a Literary Genre*. New Haven, Mass.: Yale University Press, 1979.
- . "Goodbye to Extrapolation." *Science Fiction Studies* 22, no. 2 (1995): 301–3.