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'What was knowledge for, I would ask myself': Science, technology and *pharmakon* in David Mitchell's *Cloud Atlas*

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Chapter summary

This chapter discusses science and technology in David Mitchell's *Cloud Atlas* (2004 [2008]) as a consistently double-edged phenomenon. Starting with an appraisal of the background of *techne*, I begin by drawing on recent work on technogenesis to highlight the centrality of technology to human history but also to Mitchell's text. From here, I turn to the technology of the book and the systems of remediation upon which *Cloud Atlas* draws. The chapter then works through a series of case studies, the most pronounced of which centres on the colonial technologies of medicine in the 'Pacific Diary of Adam Ewing', but which touches on every section of the novel. In conclusion, I point to the ways in which the technologies of *Cloud Atlas* can be read as reflexive statements on the novel's own cyclical temporal structures, situating its own novelistic form within a technogenetic feedback loop that is at once both remedy and poison (*pharmakon*).

Introduction

The word 'technology', as it occurs in contemporary English, is derived from the Latinized form of the Greek term τέχνη (*techne*) along with the suffix λόγια (*-logia*). While the latter part of the derivation pertains to communication and speech (and can be compared to the related form *logos*), τέχνη is concerned with art, skill and craft but also refers to methods and systems of action. Of course, in the twenty-first century, we are most accustomed to thinking of 'technology' as an electronic phenomenon. The 'latest tech' usually means consumer luxury gadgets, fuelled by that underlying animating force of electricity, the monetized output products of applied scientific research. Yet, this was not historically always the case. Prehistoric cave tools, the scroll and codex, weaving looms, pen and ink, wheelbarrows, bookshelves and plumbing are all, in their own way, technologies. They each are associated with methods and systems of doing things, with arts, crafts and making. It is only within a relatively recent time period that our notions of technology have shifted to a far narrower definition.

Indeed, technology has been key to human kind from its inception and has conditioned the development of our species within a feedback loop that N. Katherine Hayles terms 'technogenesis' (Hayles 2012). Thinkers such as Stanley Ambrose, for instance, have linked the development of 'Broca's area' in the frontal lobe of the human brain – which has a substantial function in language processing – to the motor control needed for our prehistoric use of compound-tool technologies (such as stone axes) (Ambrose 2001; Hayles 2012: 90–1). In this theory, learning to use tools might have led to the requisite neural abilities for language. Hayles also points out that, in more recent years, a woman who worked at the Bletchley Park cryptanalysis facility during the Second World War was so neurologically conditioned by her experiences of listening to encoded messages that 'she heard Morse code everywhere – in traffic noise, bird songs and other ambient sounds – with her mind automatically forming the words to which the sounds putatively corresponded' (Hayles 2012: 128). In such a system of technogenesis, neither are people conditioned purely by technology nor is technology fashioned independently by human actors – it is what might be termed a subject → technology → subject feedback loop.

The relationship between humankind and technology is, therefore, complex and reciprocal. People have always built technologies in order to accomplish necessary tasks and, *pace* Marx, to amplify their labour power (Marx 1992, chap. 7). At the same time, elements of our species' neurological, physiological and sociological aspects have all, in turn, been conditioned by the technologies that we build. Technology cannot be seen, then, as some externalized object of a one-way process of construction and mastery by people. Instead, technology is linked to specific epistemological paradigms (in our era: science) that allow their emergence and then

feed into and partially condition human identity. Technology is about knowledge and it is about the self as much as it is about art, craft and systems of doing.

As one would expect then, despite this longer history, electronic technologies both real and imagined play a major role in much contemporary fiction. Whether one considers Thomas Pynchon's recent meditations on the 'deep web' in *Bleeding Edge* (2013), Jennifer Egan's parody of Facebook in *Look at Me* (2001 [2011]), Don DeLillo's work on cryogenics in *Zero K* (2016), or Tom McCarthy's examination of early wireless telegraphy in *C* (2010), it is clear that there is fertile ground in fictionalizing contemporary and historical technologies. However, few novels in the past two decades have spanned such a broad historical period as David Mitchell's monumental *Cloud Atlas* (2004); an 'experimental epic' that maps the 'violent global history of change and crisis through the longue durée', in Wendy Knepper's words (Knepper 2016: 99). Indeed, as Patrick O'Donnell has noted, '*Cloud Atlas* moves across spatial and temporal domains stretching from the islands of the South Pacific in the mid-nineteenth century to … a distant future that foresees a return to a primitive, survivalist past in postapocalyptic Hawaii' (O'Donnell 2015: 69). Within the range of discrete time periods covered by Mitchell's work, each section of the novel presents the reader with an array of ways in which systems of knowledge and identity intersect through historically contingent sociotechnical assemblages.

In this chapter, I appraise a representative range of technologies that appear in and above Mitchell's genre-fusing work, in each case drawing out the epistemologies that facilitate their emergence but also the challenges for identity that they pose. Ultimately, I will argue that while Mitchell's novel cannot be said to be *about* technology, it *is* a text about people and societies over history (or time). Without an understanding of the technologies shaped by and that shape the societies and historical periods in Mitchell's work, however, it is not possible to grasp fully the complex interrelation of people and things that runs through *Cloud Atlas*'s vast time span, a relationship that is always double-edged. I will argue here, then, that the technologies in *Cloud Atlas* mirror the text's own conflicted temporality: at once representing progress and regression. Indeed, it is as though, for Mitchell, we erroneously seek to use technology to measure time, as though technological progression were a straight line. Yet, Mitchell is a long-standing fan of the British television show, *Doctor Who*, and so it might be more appropriate to say that although 'people assume that time is a strict progression of cause to effect', it is actually 'more like a big ball of wibbly-wobbly … timey-wimey … stuff' (MacDonald 2007), an interpretation with which *Cloud Atlas*'s depictions of technology seem to agree (Mitchell's love of *Doctor Who* was explored by, for example, Ishiguro and Mitchell 2016).

The technology of the book

The first and perhaps most important technology of *Cloud Atlas* for the reader is the medium within which the work is contained. For many, this is the codex; the paginated and printed editions of dead tree with which we are familiar. For others, it may be an e-reading device such as Amazon's Kindle. For still others, it may be read on a laptop or other device with a visual display unit (VDU). In the case of Mitchell's novel, the specific technology of reading within which the text is encountered holds significance for two reasons. First, the novel's radical form is presented extremely differently within each medium. Second, through a set of inadvertent errors in the publishing process, the text available in each of the editions and forms is substantially different.

To the first of these points, the specific medium within which Mitchell's novel is read matters because *Cloud Atlas*'s structure is unusual. Indeed, among Mitchell's oeuvre, *Cloud Atlas* is his 'most ambitious experiment in narrative form and the possibilities of storytelling', as Courtney Hopf puts it (Hopf 2011: 108). The novel is famous for its pyramid structure in which the narrative of each section breaks, sometimes mid-sentence, to begin the next chapter before resuming in the opposite order after the halfway point of the text. This 'intertextual microeconomy', as O'Donnell terms it, in which the sub-narratives interrupt each other, has broad implications for the novel's philosophy of interconnectedness (O'Donnell 2015: 72). However, this textual playfulness also has physical and technological implications for the reader.

To understand this, however, it is first necessary to journey briefly into the technological history of the 'book'. The codex (the printed book) evolved as the best compromise technology for reading that could provide both random and sequential access in a convenient and portable form. In other words, the codex works well for readers who wish simply to read in a linear fashion from start to end (sequential access), but also allows users to 'jump' (random access) to specific moments in the novel through that other most useful technology of reading: the bookmark. The scroll, one of the codex's predecessors, lacked the affordances of the codex with respect to portability and random access, although it was fairly competent at sequential access. Some of the codex's claimed successors, such as the Amazon Kindle, improve on the affordances of portability (allowing a reader to carry potentially hundreds of books) but once again compromise on random access (as anyone who has ever taught a seminar knows, it is ungainly and difficult to move to specific locations in a text on many digital readers).

In a novel such as *Cloud Atlas* where the textual and narrative layout is part of the work – as it is in other texts, such as Mark Z. Danielewski's *House of Leaves* (2000) or his *Only Revolutions* (2006 [2007]) – the specific technological presentation of the 'book' changes the readerly experience. Since the text relies on the reader holding the first half of Ewing's narrative

in his or her working memory for almost the entire length of the book, it is likely that most readers will wish to flick back and forth through the novel in order to refresh their memories. In an electronic edition, this is substantially harder, a phenomenon also present in other works that require deliberate transversal to endnotes, such as David Foster Wallace's *Infinite Jest* (1996). Likewise, the absence of specific spatial orientations in an electronic reader changes the experience of *Cloud Atlas* (i.e. in a print version there is a known, tactile and perceivable 'location' sensation in the book that is not captured by percentage metrics in electronic editions). Readers working within the codex may experience the sensation of falling as they move down into the latter part of the novel and cascade back towards the first text. Such elements of embodied reader experience, though, are not present in other virtualized reading technologies, such as the Kindle or VDU (see Nielsen Norman Group 2006; Mangen 2008).

On the second of my points, as I have written elsewhere, the technological specificity of the edition of *Cloud Atlas* matters intensely because there are huge textual differences between published versions of the novel. Due to a combination of social and technological editorial processes, two different co-genetic versions of the novel's text have entered public circulation. The specific technological book medium chosen by the reader is important, then, because it will determine which version of *Cloud Atlas* he or she will encounter (Eve 2016). At its most abstracted levels, therefore, *Cloud Atlas* is a novel that depends upon readerly choices of the technologies of the book but is one that also conditions the reader through this technology. Indeed, so integral is this presentation of book technology that the fundamental identity of the text is changed depending on the reader's selection of edition. The novel demonstrates the technogenetic feedback loop of identity as much as any technology it depicts. Importantly, though, *Cloud Atlas* is also known for the way in which each of its narratives is passed down the narrative chain. In other words, almost every sub-narrative in *Cloud Atlas* is represented as a technological object of reading in the next narrative (for more on this, see, again, Hopf 2011). Indeed, three of the narratives within *Cloud Atlas* are presented as texts while three others are respectively encapsulated as a film, seen in a holographic device, and related through the oral storytelling tradition.

Each of these storytelling, or booklike, objects is, to some extent, a metatextual signifier. The presence of objects that tell stories within novels cannot but draw attention to the artifice of the work itself. More than this, though, in the heterogeneous forms that these technologies take (they are, after all, not all printed books), Mitchell paradoxically draws attention both to the *specificity* and *material uniqueness* of the medium in which his reader may be encountering *Cloud Atlas* but also to the *interchangeability* and *comparability* of diverse narrative mediums. In the first instance, by their *difference from* yet *repetition of* the specific form of the book encountered by the reader, the particularity of the edition of *Cloud Atlas* is foregrounded.

The fact that each of these objects retells part of the narrative enables the reader to perceive similitude between the novel and the sub-objects that it presents. That these objects are not the same in form as the 'book' held by the reader, though, encourages a focus on materiality and uniqueness. The book the reader is holding is different to the films, orisons and even books within the text. On the other hand, all of the objects perform *the same function* as the novel itself; they each tell part of *Cloud Atlas*'s story for the next temporal setting. In this way, despite the differences of technology in the presentation of narrative, each can be recognized as a microcosmic functional substitute for the novel itself.

Technologies of knowledge and identity

Books, though, are not the only technology in *Cloud Atlas*. In order to draw a broader survey of technologies from Mitchell's novel, I intend to move progressively through the sections of *Cloud Atlas*. To begin, then, I want to turn initially to 'The Pacific Diary of Adam Ewing', Mitchell's first environment and the one upon which I will draw most extensively. This portion of the novel is set in the nineteenth century, predominantly around the Chatham Islands but also aboard a ship called the *Prophetess*. The main sources for this section of Mitchell's novel are well documented and implicitly include A. Shand's 1892 work in *The Journal of the Polynesian Society* on the Moriori genocide, but also Jared Diamond's *Germs, Guns and Steel*, which Mitchell cites as the origin of *Cloud Atlas* (Shand 1892; Diamond 2005: 53–7; Mitchell 2005), although Wendy Knepper also suggests a useful range of broader sources for this section (Knepper 2016: 104–5).

The dominant driver of narrative action in this portion of the text is the slow poisoning of Ewing by the sinister Dr Henry Goose. Indeed, it emerges that Goose is a robber, intent on killing Ewing in order to retrieve the 'entire estate' that he believes to be in Ewing's trunk (523). Goose almost achieves this feat by convincing the narrator that an internal worm is causing Ewing's illness. The deceit works by Goose disguising his poison as medicine, substituting in narrative the toxin for the cure, while thereby also drawing a metaphorical parallel between the supposed parasite within Ewing's body and the parasite that is Goose within Ewing's confidence. Ewing so heartily swallows the lie – even if readers can perceive the threat and dramatic irony – that he proclaims that 'Henry's powders are indeed a wondrous medicament' (37).

The technology of medicine, then, is the dominant strain that I identify in this first section of *Cloud Atlas*. This technology is here depicted, though, as metaphorically determined by and developed within two epistemic constructs: that of empire and that of *pharmakon*. On the first of these points, as Pratik Chakrabarti has convincingly demonstrated, 'the history of modern medicine cannot be narrated without the history of imperialism'

(Chakrabarti 2014: ix). While each permutation of empire brought with it different intersections with the development of medicine – be it the 'civilizing mission', the 'age of empire', or the 'scramble for Africa' (Chakrabarti 2014: x) – the most relevant paradigm for the Ewing section of *Cloud Atlas* is the collision of tropical colonialism with parasitology. Indeed, the contemporary discipline of 'tropical medicine', although problematic for its collapse of many heterogeneous geographies and climates into the single term 'tropical', has its genealogical roots in healthcare provision for European colonial troops and expatriate civilians (Chakrabarti 2014: 141). From there, as Michael Worboys has noted, tropical medicine became the 'main scientific expression of Western medical and health policy for the Third World' in the twentieth century (1976: 75). In particular, the epistemology of 'germ theory' around this time underwent revision as military physicians attempted to grapple with malaria. Of note, Charles Louis Alphonse Laveran's discovery of the protozoan cause of malaria in 1880, coupled with Patrick Manson's 1877 work on filarial worms, paved the way for parasitology and vector studies to combine, thus creating the discipline of tropical medicine, all within a colonial context (Manson 1878; Chakrabarti 2014: 141–63).

The requisite colonial context for an exploration of the technologies of tropical medicine, then, is given on just the first few pages of Mitchell's novel. The reader is presented with a so-called 'Indian hamlet' in the text's very first sentence, re-enforced a page or so later with mention of an 'Indian war-canoe' and the attendant colonial racism of reference to a 'sullen miss' who has a 'tinge of black blood' with a suspicion that 'her mother is not far removed from the jungle breed' (3, 5). The initial scene of the text then quickly moves to a 'public flogging' of particular violence in which a 'tattooed' throng of 'slaves' and a tribal 'chieftain' watch a 'Goliath' of a 'whip-master' work upon a 'beaten savage'. The scene is clearly supposed ironically to invoke the imperial logic of a 'civilizing' morality when the 'only two Whites present … swooned under each fall of the lash' even while raising the spectre of colonial trade and slavery when Ewing thinks that the 'pelt' of the whip-master would 'fetch a fine price' (6). From the very beginning, then, *Cloud Atlas* signals an imperial ontology and epistemology for 'The Pacific Diary of Adam Ewing', and the novel's language is highly racially charged.

It is, though, against this racist and colonizing epistemology that the core plot point for Ewing's narrative can emerge. Dr Goose's claimed knowledge of parasitical worms and their treatment – although slightly misaligned with the timescale of the actual development of parasitology – is vital for the imagined savage world of darkness, of 'blood-frenzy' (15) threat and of sights 'at once indelible, fearsome & sublime' (20) that Ewing constructs. Indeed, Ewing builds a picture throughout the narrative of the regions he is visiting as a sort of 'white man's grave' (Chakrabarti 2014: 144, 159) in which the supposed innate danger of the landscape and its climate (reflected through the blackness of its inhabitants and reported by Goose as a 'fever

of the clime' (37)) poses a unique threat to the 'civilized' figure and the only solution is to find a 'specialist in tropical parasites' (22).

Yet, the falseness of this epistemology and its technological remedy (the poison/medicine) is revealed through a parallel to the stowaway episode of Ewing's tale. For, shortly into his voyage, Ewing discovers an 'uninvited cabin-mate' in his room; the very man, Autua, who was whipped in the opening scene (33). The metaphorical parallels with the 'worm inside' are clear here: the supposedly 'civilized' man has an element of the environment leeching off his body (the 'worm') and now feels he has an 'Indian' (for all non-whites are 'Indians' to him) parasitizing his living quarters. The 'cure' to the stowaway situation proposed (although not eventually administered) by the captain of the ship, however, provides the link to the second surrounding context for medicine in this part of *Cloud Atlas*: *pharmakon*. The captain proposes to shoot Autua while he is climbing the mizzen (35). The callousness of this planned murder, as a supposed 'remedy' to the situation, thereby re-highlights colonialism's toxicity by analogy. For the solutions empire gives in its spatial and cultural appropriations turn out in this novel to be as poisonous as Goose's medical approaches. The colonial 'medicines' – with their white 'cures' of cultural domination, metaphorically embodied in Goose's tropical remedies – are genocidal, toxic technologies.

Such a reading sits tightly with the second element on which I wish to draw: Jacques Derrida's (in)famous work on the φάρμακον (*pharmakon*) in his essay 'Plato's Pharmacy'. In this tract, Derrida focuses his attention on the fact that the Ancient Greek term *pharmakon* – used by Plato in his Φαῖδρος (*Phaedrus* [*Dialogue*]) – is a 'medicine … which acts as both remedy and poison' (Derrida 2004: 75). Indeed, Derrida writes that he hopes 'to display … the regular, ordered polysemy that has, through skewing, indetermination, or overdetermination, but without mistranslation, permitted the rendering of the same word by "remedy", "recipe", "poison", "drug", "philter" etc.' (Derrida 2004: 77). Although, then, Mitchell makes light fun of the era of Derridean stylistics with his passing reference to 'MAs in Postmodernism and Chaos Theory' (152), the overlaps between his novel and Derrida's focus on the ambiguity in the language of medicine, drugs and pharmakon cannot so easily be dismissed. Yet, there is more to this than the simple specificity of medicine. For Derrida, the pharmakon is reflected in the acts of translation and interpretation – violent destructions that must reduce the text 'to one of its simple elements' – but also in 'the eidos, truth, law, the episteme, dialectics, philosophy', all of which are 'other names for the pharmakon' (Derrida 2004: 101, 127). In Derrida's elaborate reading, 'what is at stake in this overturning [the involution of the pharmakon's bounded polysemy that creates a constant "non-identity-with-itself"] is no less than science and death' (Derrida 2004: 121).

Indeed, in *Cloud Atlas*'s first section, the scientific technology of medicine acts as a doubly functional element: at once curing and killing, engendered by a colonial epistemology, and producing a technogenetic ironic imperial

identity. To understand this final link in the chain – that the technology produces an ironic imperial identity – requires a brief examination of Mitchell's stylistics. For much like Derrida's characterization of the pharmakon, the performance of Mitchell's hyperbolic enactment of colonial-style discourse contains its own knowing winks at its opposite, even when 'the charade was having its desired effect', as the text puts it (497). This is because this section of *Cloud Atlas*'s style is juxtaposed with six other distinct linguistic registers, each of which acts as a temporal locative marker for the reader. Consider, for example, the courtroom scene in Ewing's narrative contains lines of dialogue that include faux nineteenth-century redactions: 'Unhand me you sons of w—s!' (513).

There is a long literary history behind this tradition of redaction, particularly when it comes to names and expletives (Barth 1988: 73). As Lisa Gitelman notes, however, these blanks were only ever nominal since everybody knew what they masked: 'they are not really blank but only virtually so'; they are 'sites of transaction between a knowing author and a knowing reader' (Gitelman 2014: 27). In such cases, the reader is supposed to be able to infer what lies beneath. Yet, from just this single instance, we can see how Mitchell's language registers (themselves a type of τέχνη) function and, yet again, they have a metaphorical parallel to the mediating technology in this chapter. For, in examples such as this redaction, the 'sites of transaction between a knowing author and a knowing reader' are not merely concerned with decoding the text underneath the blank, but rather in correctly placing Mitchell's characters within a nineteenth-century imperial identity context. Readers can see the irony of these overblown speech patterns – as constructed by a contemporary novelist in order to critique empire – even while the speech patterns can be used by a reader to determine accurately the identity of Mitchell's characters. In this way, the treacherous double-facing technology of medicine can move from a mimetic depiction conditioned by the spatial epistemology of empire to one that acts even as a metaphor for Mitchell's stylistic play, all stemming from a linguistic root and intra-diegetic depiction of the *pharmakon* as a remedy and as a cure. It is also fair to say that Mitchell's styling is key to this metaphorical link between empire, medicine and *pharmakon*.

'How bad would an accident be?'

The doubled nature of technology as *pharmakon* is continued in the second of Mitchell's narratives, 'Letters from Zedelghem'. In this section, communication technologies, in all their forms, serve as the central mechanism for a technology that both heals and poisons: that is grounded in particular epistemological roots and that engenders subjectivity through a technogenetic feedback loop. Indeed, the very title of the chapter – invoking the history of the epistolary novel – refers to the inter-European postal

service in the 1930s but, specifically, to the uniquely delayed temporality of this technology (on which, see Bray 2003).

The first crucial point to note about the technology of the postal service is that it is contrasted with the telegraph within Mitchell's novel. At one point, Augustowski sends an 'enigmatic telegram after the performance in Cracow', which reads: 'FIRST TODTENVOGEL MYSTIFIED STOP SECOND PERFORMANCE FISTICUFFS STOP THIRD ADORED STOP FOURTH TALK OF TOWN STOP' (71). What is important about the telegraph here is that it provides rapid communication in ways that were not previously possible; the telegraph comes first and the 'newspaper clippings followed' (71). In fact, the telegraph begins an age in which the two combined components of the word 'newspaper' – referring to that which is new but also that which is printed on paper – come to be oxymoronic as paper becomes too slow to contain 'the new'. In addition, it is also only too easy to draw parallels between the speed of the telegraph and the speed of the contemporary internet (see Hayles 2012: 125; Carey 1989). This contrast between the technologies of electric transmission and physical postage are all the more accentuated in *Cloud Atlas* when Frobisher at first complains of their rare speed, calling Rufus Sixsmith an '*ass*' for sending him a telegram because 'telegrams attract attention' (52), even while later in the novel he threatens that 'if you think I'll wait around for your letters to appear, I'm afraid you are much mistaken' (471).

The epistemology that roots the communication technologies in this section, then, is one of speed scarcity in a world on the cusp of a new era. Even as Frobisher acknowledges his desire for speed and accelerationism, he is unable to accept speed of communication as a mass commodity and, in one crucial way, denounces it. In fact, in one of the most temporally disorientating scenes in the text, Frobisher explicitly relies on the delayed timing/slowness of postal technologies to communicate his love and death for Sixsmith from beyond the grave. When Frobisher writes that he 'shot [him]self through the roof of [his] mouth at 5 a.m. this morning', the time is out of joint (487). Indeed, the character knows that 'time cannot permeate this sabbatical' in more ways than his belief in reincarnation (490). For not only must Frobisher have written this letter in the past tense, using the past participle before the action, but he is also aware that Sixsmith will receive the letter a fair while after his death, thus then restoring linear time, at least in part. Frobisher thereby uses the split epistemologies of slowness and accelerationism, mediated by the technologies of postal letters and the contrasting telegraph, to craft a technogenetic self-identity that can defy the linear flow of time. The technology is a form of *pharmakon* in that while Frobisher's final letter is a love letter to cure the soul – 'we both know in our hearts who is the true love of my life [Sixsmith]' – it is also a heartbreaking and poisonous suicide note (489).

As 'Letters from Zedelghem' cedes to 'Half Lives: The First Luisa Rey Mystery', however, Mitchell's technological focus point shifts once more.

The clear locus of narrative action in this chapter is the technology of nuclear power, encapsulated in Mitchell's 'Swanneke Island' fission plant, owned by the malignant 'Seaboard Corporation'. As Luisa Rey, the plucky yet reluctant journalist/detective crossover figure, uncovers ever-deepening layers of conspiracy surrounding the plant's safety, the *pharmakon*-like element of this technology is brought to the fore. This is because the background epistemological context against which nuclear power must be situated is that of global warming. Nuclear power was born as a saviour of the planet, a treasured child of the 'Environmental Protection Agency' to which *Cloud Atlas* makes reference, even if Greenpeace – the model for Mitchell's 'GreenFront' – has always been opposed (127, 131). Indeed, when it became a political and economic 'impossibility' to reduce energy consumption, nuclear energy once promised a clean and limitless source. Of course, this idea was demolished by Chernobyl and Three Mile Island, the historical scenarios that *Cloud Atlas* clearly summons when it mentions a 'hydrogen build-up, an explosion, packed hospitals, the first deaths by radiation poisoning. The official inquiry' (130). Once again, Mitchell's text presents a version of technology that is doubled against itself.

Perhaps the purest representation of this *pharmakon* phenomenon, however, is found in the *least* technologically orientated of Mitchell's narratives: 'The Ghastly Ordeal of Timothy Cavendish'. For, in this chapter, it is the quintessential symbol of modernity – the train – that bears Cavendish away and into the hands of the Foucaldian juridico-medical apparatus. In fact, the journey that Cavendish takes, primarily by train, occupies a remarkably lengthy portion of this text, at fifteen or so pages (160–75). However, this is appropriate, for, as Jani Scandura and Michael Thurston have noted, the train is 'the primary metaphor of modernity and its metonym' (2000: 25); it is the central figuration of technological modernity and entire nations' geopolitical arrangements were shaped by the assemblage of railways (Dinnerstein 2008: 207–8). Indeed, the railway is also a signifier of globalization in *Cloud Atlas* as, according to Cavendish, 'rolling stock in this country is built in Hamburg or somewhere, and when the German engineers test British-bound trains, they use imported lengths of our buggered, privatised tracks because the decently maintained European rails won't provide accurate testing conditions' (171). For the bigoted Timothy – 'I'm not a racialist, but' (172) – Cavendish, the railway harks back to an era of Empire and, with his nation's fading status in the world, through the train, he feels compelled to ask the clichéd question, 'Who really won the ruddy war?' (171).

Yet, once more, technological progression here proves itself to be a fickle friend. Despite its many trials, the breakneck pace of escape from his violent creditors, facilitated by the train, appears to Cavendish as a supernatural or theological miracle, delivering him to 'an angel incarnate' (175). However, within a few short pages he has signed a document that 'authorizes [… the staff of Aurora House] to apply compliancy' and to subject him to physical

violence in the name of medical treatment (176–7). The historical and technological narrative is clear here: fleeing on the symbol of technological modernity, the train, does not save Cavendish. Instead, it delivers him into the hands of a Foucauldian institution of power, a medical institution legitimated by the juridical mechanisms of the state, represented in the self-binding contract of the signature and overseen through an objectifying gaze (Foucault 2009). For his eventual rescue, he will require a different form of technological transport: the motor car. Where this technology, with its gas-guzzling tendencies, might eventually lead is not implied to be a bright future in *Cloud Atlas*.

As *Cloud Atlas* moves beyond history and the present into the future world of Sonmi~451, the novel reaches its most technologically advanced (although not temporally progressed) stage. In both editions of the novel, the narrative here concerns the condemned clone prisoner Sonmi~451, who belongs to a race of synthetic beings called 'fabricants', whose brief lifespans are ended when they are killed in order to be fed back to other fabricants in the form of 'soap'. In fact, this chapter would not even be possible without the synthetic cloning technology that is used to create and sustain the fabricant race, even if Mitchell clearly intends his clones to be as human-like as possible. In this light, that Mitchell's text begins here to most positively signal its ambivalence towards technological progress – at the moment when we are first encountering a future world – is not surprising. What is perhaps curious is that this distrust of future positivism is indicated by a focus on the recording of history, for Sonmi remarks, in response to the archivist's provocation, that 'no other version of the truth has ever mattered' (187. In the electronic edition this is slightly different: 'TRUTH IS SINGULAR. ITS "VERSIONS" ARE MISTRUTHS.').

Although this affirmation is designed to *counter* a pluralization of historical narratives and assert the singularity of occurrence, it has the effect of suggesting that the archivist's record for the state will be perspectivized and partial, used for political purposes. In having this section open with such a remark – sceptically drawing attention to the fact that history is not an accumulation of facts but a non-linear proliferation of narratives – within a world that is supposedly technologically advanced, Mitchell draws attention to the non-linear moral progress of technology. For even as technology seems to become more powerful (perhaps like time in the text, which does nonetheless move forwards into the future), the commensurate ethical development is not linear, but regressive.

This is finally shown in an even more powerful way in Mitchell's last narrative sequence, 'Sloosha's Crossin' an' Ev'rythin' After'. Linguistically and thematically predicated on Russell Hoban's *Riddley Walker* (1980), the setting for this section is a world far in the future but one that has undergone some kind of (nuclear) catastrophe that has caused a technological regression to the Iron Ages (Eve 2014). The central question that this section seems to ask is, 'So is it better to be savage'n to be civ'lized?' (318. In the electronic

edition the capitalization is different again: 'So is it better to be savage'n to be Civ'lized?'). Yet, the way that these terms are measured is diffuse, at once to do with the rule of 'laws' but also concerned with time. Indeed, the reader is told that the primary difference, at least in Meronym's explanation, is that 'the savage sat'fies his needs now' while 'the Civ'lized … sees further' and plans for the uncertainty of the future. Most importantly, though, it is clear from Mitchell's description that these categories break down when 'progress' is measured by technological change. For the 'old'uns', those before the worldwide catastrophe, had great technology ('the Smart') but they also had viciousness and cruelty ('the savegery o' jackals') and it is this that 'tripped the Fall' (318–19. The electronic edition features different capitalization and punctuation in these quotations). Once again, technology is *pharmakon*, it can be poison or remedy depending on its use, across time, informing and conditioning but never totally determining identity.

Conclusion

In this chapter, I have appraised a range of technologies that appear in David Mitchell's novel *Cloud Atlas* in the service of a dual-pronged argument. The first part of this argument is that technology is always part of a technogenetic feedback loop in which character- and textual-identity is, in part but not totally, determined by human–machine/technique interactions. I do not here go as far as Hélène Machinal in suggesting a 'subjection of the human through technology' but instead point to frameworks of technogenesis that imply a subject → technology → subject feedback loop (Machinal 2011: 128). The second part is that technological progress is Janus-faced with a temporality that points in both directions, framed here by Derrida's reading of the *pharmakon* – technology as both cure and disease, remedy and poison. As I have also pointed out, these perspectives on technology can even be read into the overarching structure of the text's editions and the variance between them – the 'technology' of the book.

   I have not, of course, exhausted the possibility for technological readings of Mitchell's novel and there is undoubtedly a great deal more to say. Indeed, I have focused primarily here on the postcolonial implications of technology rather than its embroilment with the economic incursions of neo-liberal globalization among a range of societies presented in Mitchell's novel. Yet, ultimately, what I have hoped to excavate is a framework for answering the question posed by Sonmi~451: 'What was all this knowledge for, I would ask myself, if I could not use it to better my xistence?' (233. In the electronic edition this reads: 'What was knowledge for, I would ask myself, if I could not use it to better my xistence?'). Knowledge and its translation into technology in *Cloud Atlas* brings no guarantee of bettering one's existence. Through a self-aware study of technology and technogenetic identity, though, *Cloud Atlas* hints that it may be possible to know oneself

a little better and to avoid the trap of positivist thinking that might see technological progress and knowledge as a pure and sealed benchmark of the self. For, as the text tells us, 'knowledge without xperience is food without sustenance' (233. In the electronic edition this reads: 'I said something about reading not being knowledge, about knowledge without xperience being food without sustenance').

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