

Title	Less than human : visions of future evolution in science fiction, 1985–2015
Sub Title	
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Publisher	慶應義塾大学日吉紀要刊行委員会
Publication year	2021
Jtitle	慶應義塾大学日吉紀要. 英語英米文学 (The Keio University Hiyoshi review of English studies). No.74 (2021. 3) ,p.43- 82
JaLC DOI	
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Notes	
Genre	Departmental Bulletin Paper
URL	<a href="https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN10030060-20210331-0043">https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN10030060-20210331-0043</a>

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# Less than Human: Visions of Future Evolution in Science Fiction, 1985–2015

Subodhana Wijeyeratne

**Abstract:** As a genre preoccupied with the possible, science fiction has long engaged with the consequences and impact of evolution. Yet whilst phrases such as ‘the next phase of human evolution’ abound in a great many works, ‘evolution’ is often in fact, code for *degeneration* and *devolution*. This tendency is particularly pronounced at the end of the 20th and early 21st centuries, when millennial tensions and increasing concerns about the nature of the human gave rise to a series of works which utilize evolution as a mechanism through which to examine a dystopian future for the species. For some writers and film-makers, the very mechanism of selection which made us human became the vehicle of the eventual reversion of our descendants to a state of less-than-humanness — a return to the human as *beast*. This paper will explore this trend by examining four works between the period 1985 and 2015 (Kurt Vonnegut’s 1985 *Galápagos*, Dougal Dixon’s 1990 *Man after Man*, Stephen Baxter’s 2002 *Evolution*, and the 2006 Mike Judge’s movie *Idiocracy*), each of which posit bleak futures for a species fated to return to the very state of nature it takes pride in setting itself apart from.

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‘As the 21st century began, human evolution was at a turning point.

Natural selection, the process by which the strongest, the smartest, the fastest, reproduced in greater numbers than the rest, a process which had once favored the noblest traits of man, now began to favor different traits. Most science fiction of the day predicted a future that was more civilized and more intelligent. But as time went on, things seemed to be heading in the opposite direction. A dumbing down. How did this happen? Evolution does not necessarily reward intelligence. With no natural predators to thin the herd, it began to simply reward those who reproduced the most, and left the intelligent to become an endangered species.'

— Opening monologue from *Idiocracy* (dir. Mike Judge, 20th Century Fox, 1996)

As a theory that lays claim to articulating a fundamental truth about human nature — that we are, ultimately, the result of a gradual and non-teleological process of adaptation to environmental stimuli — the implications of evolution for humanity's view of itself have, from the onset, been of great interest to a wide swathe of society. James Secord has described how, even prior to the work of Charles Darwin, Robert Chambers' *Vestiges of the Natural History of Creation* was a topic of much discussion among the reading classes in Britain, with 'copies being presented to leading gentlemen's clubs and to progressive-minded politicians and genteel men of science'<sup>1</sup>). In the aftermath of the publication of such seminal works as *The Origin of Species* and *The Descent of Man*, Darwinian evolutionism (and its social application by the likes of Herbert Spencer and Francis Galton) had a strong cultural influence, often being used as a means of exploring the human condition and critiquing the views humanity has of itself. Writers have drawn attention to the usage of the claims and implications of

Darwinian evolution in fiction ranging from the work of George Eliot<sup>2)</sup> to contemporary caricatures and commentaries on human civilization<sup>3)</sup>.

The cultural impact of evolutionism was immense. One effect was that ‘questions about the human condition and our future — questions that were once usually discussed in terms of spirituality — were increasingly perceived as part of biology’<sup>4)</sup>. In the generation following Darwin’s most famous publications, as Helen Parker and Kálmán Matolcsy have pointed out, ‘the concept of “progressive evolution”’, which had been ‘popularized by Herbert Spencer in England and John Fiske in the United States...[saw] man as the high point of the evolutionary process’, and ‘the first advocates of Darwinism regrettably misinterpreted many of Darwin’s original ideas and smuggled teleology back into evolutionary thought’<sup>5)</sup>. Thomas H. Huxley, for instance, proclaimed: “Man, the animal, in fact, has worked his way to the headship of the sentient world, and has become the superb animal”<sup>6)</sup>. Of particular interest here is the work of Bernard Lightman, whose *Victorian Popularisers of Science* has not only pointed out the role of non-specialist popularisers of scientific theory such as Alice Bodington and Agnes Clarke, but also pointed out that the dissemination of scientific knowledge cannot be limited to only the textual. As he puts it, visual culture and the display of nature in museums and exhibitions<sup>7)</sup> was an intrinsic part of the process, and continues to be so today<sup>8)</sup>.

Among the earliest producers of culture to engage extensively with these ideas were the pioneers of modern science fiction. Considerable attention has been paid to the work of H. G. Wells, whose *Time Machine* is often regarded as the classic work of evolutionary science fiction<sup>9)</sup>, and critiques social Darwinian notions of the ‘progress’ of man in the form of the sickly Eloi and their brutal predators, the Morlocks. Lesser known figures such as Olaf Stapledon<sup>10)</sup>, working in the generations immediately following

the publication of *The Origin of Species* and *The Descent of Man*, also constructed narratives based on notions of natural selection, the differentiation of kinds, and the gradualistic influence of deep time on both the human physique, and cognition.

Despite early, and ongoing, criticisms, and a fraught journey to the level of widespread acceptance Darwinian evolution has today<sup>11)</sup>, writers in the science fiction tradition have consistently had recourse to evolution as a narrative device throughout the 20th and 21st centuries. This paper will explore depictions of future human evolution in four works — Kurt Vonnegut's 1985 *Galápagos*, Dougal Dixon's 1990 *Man after Man*, Stephen Baxter's 2002 *Evolution*, and the 2006 Mike Judge movie *Idiocracy*. We will see that to many of these writers, human evolution represents a movement away from the characteristics many would identify as being distinctively part of what it means to be *Homo sapiens sapiens* — be it sophisticated cognitive capacity, or particular physical traits such as hairlessness or bipedalism. In doing so, these authors are continuing in the tradition of their 19th and early 20th century predecessors. In the same way that Soviet science fiction writers 'became the prophets of eugenics, assimilating ideas from across the spectrum of evolutionary biology and designing scenarios too innovative for contemporary science to implement'<sup>12)</sup>, contemporary writers and filmmakers give voice to concerns about environmental depredation, the mass extinction of species, the depletion of natural resources, and neuroses surrounding the growing ability of modern science to alter the human body itself, by imagining futures in which humanity, stripped of its technological superiority, high intelligence, and sophisticated organization, has been reduced to the status of just another animal.

### **Biological Themes in Science Fiction**

The term ‘science fiction’ first appeared in the classic pulp magazine *Amazing Stories* in around 1926<sup>13)</sup> — a generation *after* the publication of H.G. Wells’s *The Time Machine*. The moniker itself attracted strong value judgments, generally being associated with pulp speculative fiction with little literary value, overwhelming concerned with boyish outer space adventures, high technology, and bizarre aliens. Beginning in the late 1970s, however, both the written and cinematic work of creators in the genre began to attract increasing levels of critical interest. What was once regarded as something of a niche and possibly juvenile genre has not only become increasingly mainstream, but also influenced the work of writers who are generally regarded as being ‘literary’ — including Pulitzer Prize winners Junot Diaz and John Updike, as well as Booker Prize winner Margaret Atwood<sup>14)</sup>. Concurrently, films with premises that would traditionally have been regarded as science fiction, such as Ridley Scott’s *Blade Runner*, Steven Soderbergh’s *Contagion* and Lars von Trier’s *Melancholia*, have also garnered considerable critical attention.

Central to this process of gradual critical acceptance was an influx, from the early 1970s onwards, of writers preoccupied with exploring contemporary social issues through the medium of speculative fiction. This served to define the genre as one ‘within which concepts of the future are formulated and negotiated’, one in which, by ‘omitting a particular group from its representations, the days of that group [can be shown to be] numbered’<sup>15)</sup>. Writers working in this mode often relied on what Colin Manlove has dubbed the *novum* — ‘a new device, a mutation, or an altered social institution’ which ‘ripples through an entire imagined community to create a radically estranged vision of the world we live in’<sup>16)</sup>. As Huntingdon

puts it: ‘though SF often gives us a *sense* of facing the unknown, its true insights are generally into the known’<sup>17</sup>). The proliferation of voices primarily concerned with mapping contemporary social issues through visions of future worlds, or at very least settings radically different to our own on Earth, led to the acceptance of science fiction amongst scholarly critics ‘largely by being seen as a metaphor, myth, or projection of *our* world’<sup>18</sup>) (emphasis added). As Brian Attebury puts it, the genre is a ‘symbolic space where utopia, Armageddon, and other powerful scenarios compete’<sup>19</sup>). Examples of preoccupations that have been mapped onto contemporary science fiction include the influence of the AIDS epidemic on depictions of the human body in the late 1980s. This movement towards a more open preoccupation with contemporary social mores and injustices — gender norms and sexuality, in particular — formed an important part of the works of writers such as C.J. Cherryh, Marion Zimmer Bradley, and James Tiptree, Jr<sup>20</sup>). It is no coincidence that all three of the authors mentioned above were women; as Camille Bacon-Smith has observed, the 1970s and 1980s in science fiction was a period in which ‘groups such as women and gays, who had participated [in the genre] on sufferance, demanded equal voices’<sup>21</sup>). Scholars have similarly examined in depth the impact of Darwinian evolutionism on Soviet science fiction, drawing attention to the overlap between the ideological imperatives of the Marxist state, the utopianism of the USSR, and the popularity of high-technological narratives<sup>22</sup>). The millenarianism and Y2K neurosis of the late 1990s and 2000s inspired science fiction writers to refer back to the paranoid fantasies of pulp 1950s and 1960s work (as seen in films such as *Mars Attacks!*) Questions of the legitimacy of democracy and neocolonialism similarly influenced a resurgence in the sub-genre of the space opera in the late 1990s and early 2000s<sup>23</sup>). Most relevantly for this discussion, increasing concern



about ecological depredation has manifested in a ‘heightened awareness of the dynamic process of scientific discovery and the contingency of our frail and threatened world’<sup>24)</sup>, as is manifested through any number of dystopian visions to hit the bookshelves and screens in the past two decades<sup>25)</sup>. This tendency of science fiction to reflect the *zeitgeist* of the times means that, though extensive work has been done on the work of such writers as Brian Aldiss, H.G. Wells, and Olaf Stapledon, there is good reason to pay equal attention to the somewhat less well researched work of writers from the mid-1980s onwards.

The *science* aspect of science fiction was crucial to the works of all three authors mentioned above, and remains a major part of the genre. It is as a mode of presenting, analysing, and speculating on scientific developments that this paper will explore works within the genre. Isaac Asimov, author of the seminal *Foundation* series and a populariser of scientific knowledge (for example, through his column in the *Fantasy and Science Fiction Magazine*), once observed that science fiction was the ‘literary response to scientific change’<sup>26)</sup>. However, the sciences most closely associated with the genre tend to be fields such as physics, and the technology overwhelmingly non-organic; the Death Star from *Star Wars* is far more representative of the sort of visions that populate modern science fiction than the double helix in *Gattaca*. As Adam Roberts puts it, ‘Machines and technology are what we most associate with SF; just as we have now grown utterly accustomed to having a wide range of machines and technology surrounding us in our everyday lives....We might think of high-tech machines as necessary props of any SF tale’<sup>27)</sup>. Indeed it is interesting to note that even where ‘biotechnology’ does appear in much science fiction, its end results are strikingly similar to conventional mechanical science — ‘bioengineered’ spaceships, or human-analogues such as ‘clones’ or

‘cyborgs’. Works such as Kim Stanley Robinson’s *2312*, where human genetic modification has not only led to colonisation of much of the solar system, but to the emergence of radically different human types and their associated societies, remain relatively rare in contemporary science fiction<sup>28</sup>. Writers such as Katherine MacLean have spent decades producing ‘short stories, novellas, and novels centering on bioscience, psychology, and communication theory’ such as *Contagion* (released in 1950), but received little to no critical attention<sup>29</sup>. Where there has been critical engagement with such work, it has been with writing produced before the 1980s, concentrating on writers such as C .J. Cherryh — who ‘confront[ed] the ethical issues of human cloning decades before the bioethicists and theologians of 1997 face[d] the issue with a sheep called Dolly’. Nevertheless at least part of this attention has stemmed from the fact that Cherryh was very much part of the social turn of science fiction in this period, writing works preoccupied with female identity, race relations, and social estrangement.

Certainly depictions of evolution are not considered a major subset of science fiction in their own right, despite the fact that Brian Aldiss, one of the pioneers of biologically informed speculative fiction, identified ‘the struggle of species to evolve and survive’ as one of the four great themes of 20th century science fiction<sup>30</sup>. Indeed, upon closer inspection, the failure of evolutionary visions to be ranked among the great themes of science fiction is somewhat baffling, as ‘images of human evolution abound’ in the genre, from ‘H. G. Wells’s *The Time Machine* to Greg Bear’s Darwin novels’<sup>31</sup>), as well as in works such as Olaf Stapledon’s *Last and First Men*, Theodore Sturgeon’s *More than Human*, and Robert Silverberg’s *Son of Man*<sup>32</sup>). This may well be a result of the fact that the great sci-fi franchises of the late 20th century — *Star Wars*, *Star Trek*, and the operatic sci-fi fantasy of the

*Warhammer 40,000* universe — concentrate overwhelmingly on the technological, and only rarely, if ever, address issues of evolutionism and social differentiation. As mentioned previously, the scholarly work that has been done on biological and evolutionary themes in science fiction concentrates largely on the generation or two after Darwin, and quite rightly connects the work of authors such as Wells and Stapledon to contemporary concerns such as empire, the nature of humans as biological *and* moral creatures, and the impact of technology on human society. However, much of the extant analysis on science fiction from the 1970s onwards tends to be preoccupied with the genre as a lens through which contemporary social issues are worked out; very little work has been done on analysing the biological content of such work, and even less on evolution as a motif within science fiction. Given, however, that the evolutionary paradigm has continued to persist in the public imagination — not only through works such as Richard Dawkins' *The Selfish Gene*, but through controversies such as the ongoing creationism debate in the USA — there is much to be said for inspecting the work produced in the last 30 years or so in this vein to see how science fiction writers are utilising the idea of evolution, and what kinds of commentary they are producing through it. It is precisely this gap in the scholarship that the following analyses hope to fill.

Before proceeding, it is necessary here to define what 'evolution' means in contemporary science fiction. For the purposes of this paper, 'evolution' will be understood as the process of the differentiation of species into types, and eventually into new species, under the influence of natural processes such as natural selection — that is to say, classical Darwinian evolution. This is to avoid the value-laden misuse of the word 'evolution' in much contemporary sci-fi to mean 'improvement' or 'betterment'. Hence X-Men, where the mutants are regarded as 'the next step of human evolution', and

similar works as this which deviate from the definition of evolution I am using, will not be considered in this study. Nor will works such as Margaret Atwood's *Maddaddam* trilogy and Vincenzo Natali's *Splice*, and the *Planet of the Apes* films where 'evolution' is the result of human bioengineering<sup>33</sup>. Similarly, works where the human race is either transformed from primarily biological beings to technological or non-corporeal creatures (transhumanism), or replaced by non-biological successors, as in Arthur C. Clarke's *Childhood's End*, or the *Matrix* trilogy of films, will also not be considered. Furthermore, it should also be kept in mind that though there are visions of humanity's future that are far more optimistic than the writings analysed here, few of them tend to identify the process of Darwinian natural selection as the chief cause of utopia. Rather, it is human technological ability that tends to lead to the 'singularity' moment at the end of work such as Isaac Asimov's *The Last Question*<sup>34</sup>, the Ousters from Dan Simmons' critically acclaimed *Hyperion Cantos*<sup>35</sup>, or even the post-scarcity setting of the *Star Trek* franchise. Biological evolution, in contrast, remains a motif primarily understood in terms of competition, extinction, and qualitative physical and cognitive change, creating an imaginative space that is perhaps already inclined to producing visions of startling Otherness and pessimistic degeneration.

#### **Four Visions of a Degenerate Future**

Stephen Baxter's 2002 *Evolution*, Dougal Dixon's 1995 *Man after Man*, and Kurt Vonnegut's 1985 *Galápagos* primarily deal with evolution as a process of natural selection, or at the very least as an unguided, implicitly non-teleological process which results in a multitude of outcomes for the future of the human species, in keeping with Darwin's own vision of the process. The analytical mode here is what Helen Parker has described as the use of 'a

carefully selected body of representative works...which provide a cross-sectional view, so to speak, of the genre'<sup>36)</sup>. Furthermore, science fiction cinema has also consistently been at the edge of depicting biological fantasies; 1972's *The Creeping Flesh*, for example, tells the tale of the discovery of a 'missing link in human evolution' that is eventually discovered to carry evil in its 'purest' form, while 1986's *The Fly* depicts not only the physical transformation of a man whose DNA has become mixed with that of a fly, but also a 'gradual change...[in his] mental makeup'<sup>37)</sup>. Accordingly, we shall also explore the depiction of a future human society in Mike Judge's 2006 comedy *Idiocracy* — which, for all its raucousness, has a central narrative conceit straight out of the pages of 19th and early 20th century eugenicists such as Charles Davenport and Francis Galton.

All four works take an extremely long-term view of human development; *Idiocracy* has the shortest time period (500 years), whilst *Evolution* has the longest (500 million years). This is in keeping with what Helen Parker dubs the 'cosmological' viewpoint, which utilises deep time and the inchoate developments of the natural world as part of a story-generating mechanism. Fundamentally, this view serves to strip humanity of its technological and intellectual sophistication, and return it, as it were, to nature. As Parker puts it, 'As the biological rather than the physical sciences provide a framework for speculation on the direction of future development, social and material changes function merely as a gauge of our progress as biological phenomena, as components of a universal life scheme....The biological perspective unites the concepts of change and adaptation with the larger principle of biological, or even more specifically, evolutionary, continuity'<sup>38)</sup>.

The oldest of the works discussed here is Kurt Vonnegut's *Galapagos*. Written in 1985, during the height of Reaganomics, the beginning of a thaw

in relations with the Soviet Union, and the full bloom of modern celebrity culture (Mick Jagger is amongst the ‘saved’ in the novel), the work is reflective of Vonnegut’s profound concern over the fact that humanity’s ‘big brains’ have caused us as a species to be, as he himself put it in an interview with the *Los Angeles Times*, ‘too busy’. It is interesting to note, for example, that Vonnegut’s dystopian vision includes an economic catastrophe, followed by a nuclear World War III, followed by a virus which destroys the eggs in women’s ovaries. All three of these run counter to the optimism generated by Reaganomics, ongoing negotiations between the USA and the USSR that resulted in the nuclear-reduction START I treaty, and the rise of commercial bioengineering. The theme of returning to an animal-like psychological simplicity is also, perhaps, reflective of dissatisfaction with the pervasive model of the ‘yuppie’ and ‘Reaganaut’ — aggressive, materialistic individuals determined to succeed and produce profit (as exemplified by Gordon Gekko in Oliver Stone’s iconic *Wall Street*). In contrast, ‘Our cousins, the seals and sea lions’ are ‘so content’<sup>39</sup>.

Dougal Dixon’s *Man after Man* was produced as part of a broader project created by the author, dubbed the *After* works, which is largely preoccupied with the imaginative potential of evolutionism as a mechanism for the creation of new animals. Dixon himself identifies the genesis of the project in his reading of *The Time Machine* as a child; the other *After* work, *After Man*, concentrates largely on potential routes animal evolution might take in the future, and features creatures such as the antelope-like ‘rabbuck’ and pack-hunting, predatory rats. At least part of Dixon’s vision in producing these works was to create ‘popular-level books that use fictitious examples of factual processes’, bridging the gap between the scientific and imaginative. It is interesting to note, however, that Dixon himself has a very low opinion of *Man after Man*, dubbing it a ‘disaster of a project’ for not

adhering to his original vision, in which humans escaping from contemporary ecological disaster travel to the future to re-establish human civilization, only to have that civilization end in a similar catastrophe too<sup>40</sup>). Though this circularity is not an explicit part of *Man after Man*, it provides an interesting lens through which to view the creatures Dixon creates in the book. Whatever the end result may be, there is a certain inevitability in the author's mind to the eventual degeneration of humanity, a degeneration catalysed by the increasingly pervasive sense that human activities and industry were destabilising the global ecosystem. Indeed *Man after Man* was produced around the same time that James Lovelock, creator of the Gaia Hypothesis and one of the earliest scientists to draw attention to the impact of human activity on the environment, received an OBE and greater media coverage for his ideas<sup>41</sup>). Similar concerns informed the writing of Stephen Baxter's *Evolution*.

The influence of Dixon's work on contemporary television and cinema (it provided the basis for the TV series *The Future is Wild* and *Primeval*)<sup>42</sup>) also serves to highlight the interplay between the textual and the visual in contemporary science fiction. Indeed, as a quintessentially modern genre, science fiction has, from the onset, been well represented in both cultural forms — the Lumiere Brothers' 1902 *Le Voyage dans le Lune* and George Orwell's (in)famous 1938 broadcast of *War of the Worlds* are symptomatic of this early and ongoing engagement with the mass media by the genre. Science fiction is one of the few genres that can lay claim to having televisual products as part of its canon of 'classic' works — for example, *Star Trek* and *Star Wars* were originally a TV series and film trilogy respectively. In so far as this is the case, it would be actively neglectful to fail to include a cinematic source in this discussion, and Mike Judge's *Idiocracy* provides the clearest example in the recent past of an evolutionary

(in this case, social Darwinistic) premise forming the basis of a mainstream film release. Cinema certainly does require a different mode of analysis than text, particularly in relation to its ability to utilise visual motifs and scene-setting to convey information about its story and characters; accordingly, this work will analyse not only dialogue, but also visual cues associated with particular characters, and indeed the future world in which the story is set. Mike Judge, the writer and director of the film, attributes the genesis of the film to an experience he had at Disneyland, where two women with children in baby strollers got into an altercation and threatened each other with violence. Judge is quick to draw parallels between this behaviour and what he sees as the pervasive ‘dumbing down’ in contemporary American culture; in a later interview, he comments that ‘a lot of the things in *Idiocracy*...are happening now’<sup>43</sup>). Central to the vision of the piece, thus, is a critique of contemporary mass media trends, which could result in a future in which ‘instead of everything being pristine and advanced’ life would be more ‘like the Jerry Springer show’<sup>44</sup>).

As we shall see, central to the visions presented in the four works discussed here is the idea of human *devolution* — the vision of a human future where our descendants, though in some way still recognisably human, have socially, morally, and cognitively altered to the point where they are profoundly different. This alteration involves not so much the transformation of these qualities but their *degradation*; these future humans are less socially sophisticated, less concerned with moral behaviour, and less intelligent than their ancestors. In many ways these visions are very similar to the ‘sunset of mankind’ tropes present in the work of many late 19th century and early 20th century writers who speculated on future evolution<sup>45</sup>). Indeed all of these visions are, in essence, a type of dystopian fantasy of a species that, luxuriating in its own ability to comprehend the grand processes of nature,



has forgotten that it is still subject to said laws<sup>46)</sup> — or, as David Ketterer puts it, ‘to upset man’s conception of his own situation and prompt him to relate his existence to a broader framework’<sup>47)</sup>.

### **Cognitive Decay**

The theme of the diminution of the cognitive capacity of *Homo sapiens* has been an important constituent of visions of future human evolution throughout the 20th century. Brian Aldiss’s novels *Hothouse* and *The Long Afternoon of Earth* both featured human descendants living in radically different future Earths who are ‘portrayed as being only just human; they have cunning enough to outwit many of their adversaries, but are largely devoid of purpose, and never speculate on or question their experiences, however bleak’<sup>48)</sup>. The ‘humans’ of 1961’s *Hothouse*, which follows the adventures of the monkey-like human descendant Gren, greet the death of their comrades with the repeated mantra ‘It is the way’, and summarily move on; furthermore, they have ‘no foresight of what may lie beyond; only this blind, largely biological urge’<sup>49)</sup>. Similarly A.A. Attanasio’s 1981 *Radix* deals with ‘Earth in the thirty-fourth century and describes a world largely populated by various forms of human or ape mutant, and by orts, mindless, biologically human artifacts’<sup>50)</sup>.

Cognitive decay is *the* central preoccupation of Mike Judge’s 2006 film *Idiocracy*, which features Owen Wilson as Jack Bauers, an ‘army librarian’ and ‘the most average person’ in the US Armed forces, and Maya Rudolph as his companion, the prostitute Rita. The two central characters are cryogenically frozen in an army experiment, and then forgotten for 500 years, until awoken due to the ‘Great Garbage Avalanche of 2505’. In keeping with Judge’s style of humour (his previous work includes the cult MTV cartoon *Beavis and Butthead*) much of the comedy in the film is

scatological and deeply politically incorrect. Lurking behind the frequent swearing and absurdity, however, is an aesthetic drawn straight from the pages of the shrillest of 19th and 20th century eugenicists, and strongly redolent of the contemporary idea that the ‘alcoholism, disease, crime, prostitution, urban overpopulation, lax moral values, drugs, war and ever more secularisation and political instability’ meant that ‘human evolution... was moving in the wrong direction’<sup>51</sup>).

‘Evolution’ is in fact the eighth word mentioned in the film, as shown in the monologue at the beginning of this essay, tying the process of natural selection to a progressive diminution of human cognitive capacity. It is interesting to note that the reference to a ‘lack of predators to thin the herd’ rewarding ‘those who reproduced the most’ is evocative of late 19th century concerns about Chinese migration into the United States, when commentators observed that ‘fittest’ did not necessarily mean ‘better’, but rather ‘only those who could subsist on less and reproduce more’. In this vision, the Chinese posed an existential threat to Anglo-Saxon populations as they had learned to ‘live in swarms’ and subsist on far less food and material comfort than their white neighbours. Accordingly, Chinese migration to California was severely restricted in 1882, amidst a series of escalating anti-Chinese pogroms<sup>52</sup>).

The central characters in *Idiocracy* awake in the year 2505 to a chaotic world full of precisely the sort of ‘degenerates’ Spencer, Galton, and their associates feared would take over the world. Indeed, this ‘swamping’ of the intelligent population by the less intelligent is graphically illustrated through the stories of Trevor (‘IQ 138’) and Carol (‘IQ 141’) who overthink the implications of having children and, eventually, fail to have any at all. Both are presented as stereotypically middle class, well dressed, articulate, white-collar workers. Their experience is contrasted with Clevon (‘IQ 84’) who

lives in squalor with his wife and several children. Clevon's wife Trish's first line in the film is 'Shit, I'm pregnant again!'; we then discover that Clevon has also had children through his lovers Brittany and Mackenzie. The consequences of the reproductive habits — or lack thereof — of these two couples is visually demonstrated through recourse to a series of family trees. While Trevor and Carol's remains just the two of them (and eventually, after Trevor's death, just Carol), Clevon's rapidly balloons into tens of offspring and eventually hundreds of descendants. The parallel — almost certainly unintentional — between these family trees and those used by eugenicists such as Charles Davenport to describe the inheritance of 'undesirable' characteristics such as 'neuropathy' and epilepsy is striking (fig 1). The end result of this process of out-reproduction is that when Jack Bauers ('IQ 100') and Rita (IQ unknown) awake from their cryogenic slumber, the former is the 'smartest man on the planet', and is able to convince his hapless sidekick that 30 billion minus 20 billion is, in fact, 80 billion. Similarly, Rita is able to secure an endless stream of money from a would-be punter simply by telling him that he should pay her upfront for services she will render him at some unspecified point in the future; said punter's response to the offer is 'Sure, baby. I can wait so good.' It is interesting to note here that no particular reason is given for the moral degeneracy of the bulk of the population — it appears to be simply assumed by the writers that the less intelligent also have a proclivity towards sexual licentiousness and violence, a point of view in keeping with Malthus, Spencer, and Galton.

The species-wide loss of higher intellectual faculties is similarly a central part of Stephen Baxter's *Evolution*, which follows the story of the human species from its distant proto-primate ancestor *Purgatorius* through to Ultimate, a symbiotic creature living some 500 million years in the future. The tone of the book is almost documentary in its directness, and characters

## THE INHERITANCE OF FAMILY TRAITS 75

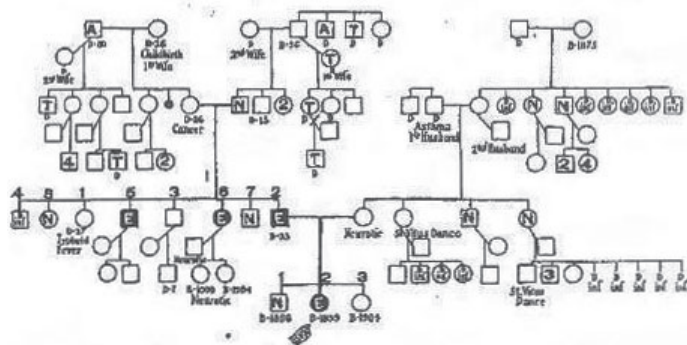


FIG. 41.—The central mating in this chart is that of an epileptic man, of a highly neuropathic strain, and a neurotic woman, whose sister and nephew have had chorea or St. Vitus' dance. The product is 1 normal child, 1 epileptic, and 1 as yet only 7 years old. Abbreviations as in Figs. 38, 39.

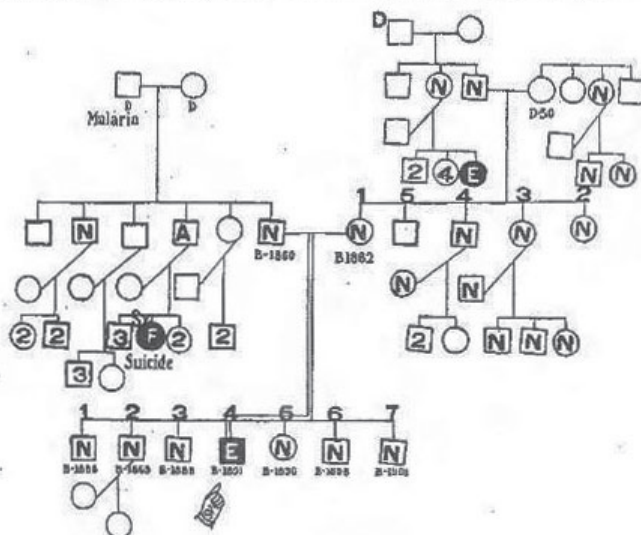


FIG. 42.—The central mating is that of 2 normal parents, both of whom belong to stock that shows evidence of being neuropathic. Doubtless some of the germ cells of both parents are defective in mental strength. Along with 6 normal children appears 1 epileptic. Abbreviations as in Figs. 38, 39. Figs. 37-43, are contributed by Dr. DAVID F. WEEKS.

often engage in lengthy speculations on evolution that serve to heighten Baxter's point. One character — who, similar to the protagonists of *Idiocracy* has been awoken from cryogenic sleep at some unknown point in the future — sees the less intelligent remnants of humanity and observes that 'Being smart didn't exactly do us a lot of good, did it?... Makes you think, looking at them, how brief it all was. There was a moment when there were minds there to understand, to change things, to build. Now it's gone, evaporated, and we're back to *this*: living as animals, just another beast in the ecology. Just raw, unmediated existence'<sup>54</sup>). In the section *Kingdom of the Rats*, Baxter attributes this loss of cognitive ability to evolutionary pressure, in particular competition with rodents — 'crowded out by increasingly ferocious and confident rodents, the posthumans had given up the strategy — superior intelligence — that had brought them such success, and disaster'<sup>55</sup>). Indeed in the same section we are given a close-up view of the kind of creature that humanity eventually evolves into, an individual called Remembrance, and one of Baxter's main themes in characterising her is emphasizing the difference between *Homo sapiens*' brain and hers. Having lost a child, Remembrance 'never discussed' her grief 'with anyone. In fact, no one discussed anything anymore. The days of endless talking were long gone, the larynxes and cognitive capacities of the loquacious folk put aside, irrelevant to life in the trees.'<sup>56</sup>) Remembrance's own mind is 'kaleidoscopic' and 'unstructured'; later, after having survived a series of attempted predations, Baxter comments that:

'A human's shock would have been deeper. Who was to blame for this series of calamities?...Why had this happened? *Why me?* But Remembrance asked herself no such questions. For Remembrance, life was not something to be controlled. Life was episodic, random,

purposeless.

That was how things were now, for people....You barely understood much of what happened to you. All you thought about was *now*; drawing another breath, finding another meal, evading the next random killer'<sup>57)</sup>

Dougal Dixon's 1990 *Man after Man* also places the vision of a decline in human sentience at the centre of his work. A geologist by training, the author and guest introducer Brian Aldiss is keen to place his work within the tradition of Darwinian thought. Aldiss characterises *Man after Man* as 'future fiction' and as 'Darwin, Lyell, and Wells rolled into one'<sup>58)</sup>. The introduction itself presents a brief overview of the evolutionary process, with emphasis on mechanisms such as natural selection, and a short survey of human evolution up to the Holocene<sup>59)</sup>. The vision of the work is hence clear: the creatures presented over the following pages are part of the same trajectory of development that led from *Australopithecus* to *Homo habilis*, *Homo erectus*, and *Homo sapiens*. Dixon even presents us with an example of natural selection working on creatures who are recognisable modern humans through the story of 'Kyshu Kristaan the Squatty', a man living '200 years hence' in the ruins of a city, in 'a society on the edge of chaos'. We are told that his 'brother died because he did not have such good eyesight....He had not seen the man who lay in wait for him in the darkness as he returned home with his food. Kyshu Kristaan hopes his own children will inherit his sharp eyesight; Sem Kristaan died before he could father any children and so his weak eyesight died with him'<sup>60)</sup>

The idea of cognitive decay is mentioned as early as the introduction, when Brian Aldiss comments that 'Dixon does not tell us of the things his caravanserai of creatures believes and thinks; it is enough we know what

they eat'<sup>61</sup>). Within the exception of a single strand of humanity that colonised an alien planet, none of the species he describes later in the book are more intelligent than contemporary humans. This degeneration is reflected in their primitive technology, their animalistic behaviour (hardly any have a sense of morality, or even clear self-consciousness), and social structures that are either herd-like or, at their most extreme, eusocial<sup>62</sup>).

In Kurt Vonnegut's 1985 *Galápagos*, high cognitive capacity is not only done away with by evolution, but actively regarded as the root cause of most of humanity's troubles. The book is primarily concerned with the survival of a group of tourists and natives on the Galápagos Islands in the aftermath of a global economic catastrophe that leads to the extinction of humans everywhere else. Again, the theme of Darwinian evolution and natural selection is a strong part of the work's aesthetic, not in the least in the appearance of Darwin himself, 'underspoken and gentlemanly, impersonal and asexual and blankly observant in his writings', the hero of Guayaquil because of the tourist boom his work fosters there. The narrator, the immortal spirit of Vietnam War veteran Leon Trotsky Trout, later comments that he will begin to put asterisks in front of the names of people who will die shortly in the narrative — or, as he puts it, 'face the ultimate Darwinian tests of strength and wiliness'<sup>63</sup>).

Near the very beginning of the work — narrated from the perspective of the year 1,001,986 — we are told that 'Human beings had much bigger brains back then than they do today, so they could be beguiled by mysteries'<sup>64</sup>). Over the course of the story there are repeated references to humans being compelled to create explanations for phenomena to 'satisfy their big brains' and to the era of 'big brains and fancy thinking'. Human frailties and mistakes are attributed to this overcapacity of thought; as Trout puts it, 'What source was there back then, save for our overelaborate

nervous circuitry, for the evils we were seeing or hearing about simply everywhere? My answer: There was no other source. This was a very innocent planet, except for those big brains'<sup>65</sup>. 'Big brains' are blamed for suicide, PTSD, 'cruelty for the sake of cruelty', homicidal schizophrenia, and the habit of one character to hire 'strangers to tie him up and strangle him just a little bit'<sup>66</sup>. Trout later rants:

'Even at this late date, I am still full of rage at a natural order that would have permitted the evolution of something as distracting and irrelevant and disruptive as those great big brains of a million years ago'<sup>67</sup>.

An interesting accompaniment to this narrative of cognitive degeneration is the associated decline in human technological and moral standards. Evolution and technological prowess are linked and have been part of science fictional portrayals of evolution since Wells's *Time Machine*, whilst Brian Attebury has discussed the characterisation of native Australians as 'holdovers like the marsupials, from some earlier stage of evolutionary history' at least partly on the basis of their 'primitive' technology'<sup>68</sup>. Hence technological decay is closely associated with a decline in human power, over both nature and their own destinies.

In *Idiocracy*, human technology is essentially non-functional. Cleaning robots repeatedly zoom into walls while assuring customers that their floor is 'now clean', while a tattooing machine decides on the basis of Jack Bauers's responses that his name is 'Not Sure'. Later, automated machine guns at a prison attempt to shoot Jack as he escapes from jail, only to end up shooting each other. Cosco, the largest and most impressive building in the USA, is in an advanced state of dilapidation; the entrance sign is spelled 'Entrins' and in the background we see the effects of a plane crashing



through the roof, with neither the plane being removed, nor the roof patched up. Perhaps most tellingly, the entire USA is suffering from a major shortage of food due to the watering of crops with ‘Brawndo, the Thirst Mutilator’, on the mistaken assumption that ‘It has what plants want — electrolytes’. Despite being set 500 years in the future, people still rely on 21st century airplanes, cars, and subways for transport, still use mobile phones and televisions, and pay with cash.

If technology has come to a standstill in *Idiocracy*, then in *Evolution* it has regressed back to the earliest tools used by hominids. When we first encounter Weena (an intentional reference here to *The Time Machine*), a human descendant, and her companions, we see that ‘They were naked, but they were slim and upright, and they carried something in their hands, probably their usual crude stone hammers and knives’<sup>69</sup>. 30 million years in the future, Remembrance sleeps in a ‘pulled-together mass of twigs and leaves and slim branches’<sup>70</sup>, much like the nest of a modern chimpanzee. Her home colony, in which the young and elderly dwell:

‘....was a ball some ten meters across. Its thick wall was made of twigs and dead leaves, crudely crammed together. The leaves had been softened by chewing before being pressed into gaps in the structure. The whole thing was neatly lodged in the crooks of the robust branches of the tree, in which it had been constructed over generations. And it was lived in: A thin stream of shit and piss slid down the tree’s great trunk, sewage trickling out of the openings that pocked the colony’s base.

This ball of spittle and twigs was the most advanced construction any posthumans were now capable of. But it was the result of instinct not mind, as empty of conscious planning as a bower bird’s nest or a

termite mound....Even now predators on these postpeople could be deterred by the remnants of building, by glittering stones and shining glass, haunted by deep-buried instincts developed in the time of the most dangerous killers who ever walked the Earth. So Remembrance's folk aped the structures of their ancestors, not even capable of imaging what they were imitating.<sup>'71)</sup>

Many of the descendants of *Homo sapiens* in *Man after Man* similarly display extremely low levels of technological sophistication when compared to their ancestors. Humans even forget as basic a technology as creating fire. One human descendant, trapped on a 'drifting island' of 'little more than a few trees and some trapped soil', for example, knows that she and her companions 'will die of cold and exposure before they starve to death' — unless, that is, 'they can remember something their ancestors used to do under these circumstances....something to do with rubbing sticks'<sup>'72)</sup>. Similarly, it is strongly suggested in *Galápagos* that the surviving humans very quickly lose the ability to make flames — as Trout comments, 'There was no fire on Santa Rosalia'<sup>'73)</sup>. In the absence of sophisticated social structures and writing, the construction of simple boats by the 'Boat People' of 500,000 years hence is the result of chance, and eventually forgotten again. 'One million years hence', the amphibious 'Aquatics' are shown being hunted by land-dwelling descendants of humanity with simple clubs and axes<sup>'74)</sup>. A million years later, the most complex dwelling produced by humans is the 'Hive', a lop-sided, organic structure more akin to a termite mound than any contemporary architecture. More often than this, however, the various descendant species of humanity are depicted as having no technology whatsoever, having to rely on bodily modifications (such as the distended finger of the 'Antmen' or the razor-sharp calluses on the hands of

the ‘Plains Dwellers’) to accomplish tasks such as securing food<sup>75</sup>).

### **Physical differentiation**

Physical differentiation from contemporary *Homo sapiens* is another powerful theme running through the works described here, most evidently in *Evolution* and *Man after Man*. As Mark Glassy has pointed out, one of ‘Life’s most distinctive components is its ability to reproduce itself...exactly. Man begets man and dog begets dog. In even simpler terms, like begets like. This is referred to as heredity’<sup>76</sup>). With its wide imaginative remit, science fiction has often worked to subvert this idea — at least part of the horror of the *Alien* films, for example, lies in its violation of the conventions of human reproduction by not confining the ability to incubate the ‘chest-burster’ aliens to females, and by the usage of the human body to produce a fundamentally different creature<sup>77</sup>). L. Timmel Duchamp has also drawn attention to the function of physical difference in emphasizing the notion of ‘hybridity’, an aesthetic wherein the human and nonhuman are combined and juxtaposed with the effect of forcing the reader (or viewer) to re-appraise what ‘human’ actually means. In the same way that *Australopithecus* draws home the simian roots of humanity by being distinctly ape-like, but also very human in its bipedalism and general body-shape, the ‘chimeras’ of science fiction take aspects of human physicality and distort them in a way that can often be profoundly disturbing. Outside of the sub-genre of evolutionary science fiction, perhaps the most striking recent example of this is the character Dren in 2009’s *Splice*, who is a human-animal hybrid who grows first into a sexually desirable young female, albeit a very unusual looking one, and then transforms into a winged male form for the denouement.

Physical difference between contemporary humans and their future

descendants is a large part of Stephen Baxter's *Evolution*, but with a twist — Baxter goes out of his way to imbue his characters with human characteristics, not least with his recurrent usage of familiar human familial terms such as 'mother', 'grandmother', 'baby', 'man', 'woman', and 'friend' when describing their social relationships. Furthermore, much of *Evolution* is told through the eyes of one or another of these descendants, most notably the characters Remembrance and Ultimate. The first appearance of non-*Homo sapiens* characters occurs in the section 'A Long Shadow', set at some unspecified time in the future — long enough for humans to have undergone some dramatic physical changes. What is particularly disturbing about the first physical encounter between the character Robert Wayne Snow ('Snowy', a British soldier who, similar to Jack Bauers in *Idiocracy*, was frozen in a cryogenic chamber<sup>78)</sup>) is the strong erotic overtones that Baxter includes in his description:

'She was naked, and though her pale skin showed through, she was covered by a loose fur of straggling orange-brown hairs. The hair on her head was darker, a tangle of filthy curls that looked as if they had never been cut. She was not tall, but she had breasts, sagging little sacks with hard nipples protruding from the hair, and beneath the triangle at her crotch there was a smear of what might be menstrual blood. And she had *stretch marks*.

Not only that, she stank like a monkey cage.

But that face was no ape's. Her nose was small put protruding. Her mouth was small, her chin V-shaped with a distinct notch. Over blue eyes, her brow was smooth. Was it a little lower than his?

....And suddenly Snowy had an erection like an iron rod....

Now she looked like a chimp in her gestures, her mindless misery,

even though her body had felt like a woman's under his.<sup>79)</sup>

The effect is profoundly disturbing; on one hand, the animalistic nature of the 'girl' (later dubbed 'Weena', though she has no name of her own) is heightened to reference the more simian aspects of her appearance; yet at the same time Snowy's arousal, and his subsequent conclusion that 'This was a *person*, no matter what she looked like'<sup>80)</sup>, communicates a contradictory humanness.

Baxter uses similar techniques with the character Remembrance — 'At fifteen years of age she was in the prime of her life. Stretch marks on her belly and her small dugs showed that she had already given birth. Her eyes, crusted with sleep, were large, black, watchful; the mark of a slow readaptation to nocturnal living. Behind them a shallow brow led to a small, neat brainpan, its modest outline obscured by a thatch of curly dark hair'. So far, so simian; but then Baxter emphasises that she has 'a very human face, with a straight nose, small mouth, and chin'<sup>81)</sup>. This juxtaposition of human and non — less than — human characteristics is perhaps at its most shocking when Baxter introduces descendants of *Homo sapiens* who have adapted to radically different lives than Remembrance and her ancestors. In the same chapter we are presented with a herd of creatures being tended to by 'mouse-raptors', descendants of contemporary rodents who have followed a similar evolutionary path to the genus *Homo* and are becoming increasingly intelligent and organised. Their chattels:

'....are ugly, elephantine. But they had not descended from goat or pig. They had forward-looking eyes under heavy brow ridges, huge dark eyes that peered at the world, baffled and fearful. They walked on all fours, but they supported themselves on the folded knuckles of their

hands, a posture that had once been called knuckle-walking.

Like Remembrance, their ancestors had once been human<sup>82</sup>).

Remembrance then encounters the ‘mole-people’, humans who have taken to living underground and adopted a eusocial structure not dissimilar to that of contemporary mole rats<sup>83</sup>):

‘They had loose, fleshy skin that hung in folds around their necks and bodies. They were hairless; their heads were bald, their pink scalps wrinkled, they lacked eyelashes and eyebrows. Their ears were small, vestigial; their noses had pulled forward into snouts. They even had whiskers. And they had no eyes: There were only layers of skin covering the sockets where their eyes had been.

They had the arms and legs and torsos and heads of people. But they were all small<sup>84</sup>).

Dougal Dixon’s *Man after Man* adopts a very different approach to its zoology of the future. First, it features a series of full-page illustrations which to a very large extent are the centerpiece of the work; many of these images emphasise the extreme divergences between the physical form of contemporary *Homo sapiens* and their speculative descendants. Second, Dixon’s tone throughout the work is more akin to that of a narrator in a nature documentary than Baxter’s attempts at seeing the world through the eyes of his subjects. Instead, the lives and difficulties of the creatures who populate the pages of *Man after Man* are described with the detachment of the naturalist — redolent of Darwin’s own sense of distance from his subject in his discussion of human development in *The Descent of Man*.

One interesting commonality between Dixon’s work and that of writers

working in the 19th and early 20th century is the usage of furriness to denote a closing of the distance between modern *Homo sapiens* and the animal world. As Janet Browne has described, hairiness was symbolic of the animalism and bestial nature of creatures such as gorillas in writing contemporaneous with Darwin<sup>85</sup>). In *Man after Man*, several of humanity's descendant species are hairy, including the 'Boat People' of '500,000 years hence' (who bear a striking similarity to australopithecines)<sup>86</sup>), the 'Fish Eaters' of '3 million years hence'<sup>87</sup>), the 'Tree-Dwellers', who closely resemble sloths<sup>88</sup>), and the fanged 'Spiketooth', a carnivorous creature with thick, pale fur<sup>89</sup>). Dixon's imagination, however, does not stop at merely adding fur to the human body, and it would be impossible to describe in total and in detail the variety of human body shapes he includes in his work. Instead, we shall concentrate on two of the most visually striking — the ocean-dwelling, and eventually amphibious, 'Aquatics', and the 'Hivers' of '2 million years hence'.

The Aquatics are described as having descended from originally genetically modified ancestors designed with the aid of human biotechnology for life in the sea; the collapse of human civilization, however, has left them subject to the forces of natural selection. Eventually, these creatures come to have hairless, blubbery bodies, of similar colour and shape to *sirenia* — indeed their fluked tails, evolved from human legs, look very similar to those of manatees. At the same time, however, the Aquatics have recognizably human arms, ending in hands with five fingers and opposable thumbs. Perhaps the most disturbing aspect of these descendants of *Homo sapiens* are their faces. Despite their noses, which have been reduced to little more than vertical holes, the Aquatics have large, staring eyes, recognizably human teeth, and wide mouths that give them a permanent expression of horror and incomprehension. Though Dixon could well argue that there is

nothing as sophisticated as human self-awareness in these creatures, it is hard not to see in those faces the vestiges of human consciousness<sup>90</sup>.

Similarly, the ‘Hivers’ provide a jarring vision of the human and nonhuman combined. Again, their faces are the most recognisably human parts of their bodies, with large simian noses, forward-facing eyes, and even bristly moustaches. They are bipedal, though their legs are backward-jointed, more akin to plains-dwelling ungulates than to contemporary humans. Their colouring — grey-black — large, pointed ears, and mane of thick black hair are also strikingly non-human. Perhaps most shocking, however, are the ‘seekers’ they carry in their arms — tiny, atrophied human beings, blind, with stunted limbs and short hair, resembling nothing so much as a half-developed fetus. We are told that these seekers have entered into a symbiotic relationship with the Hivers, who now ‘feed, protect, and carry’ them in return for their ‘guidance’<sup>91</sup>.

Kurt Vonnegut’s *Galápagos* takes yet another approach; unlike Dixon or Baxter, he does not provide direct descriptions of the descendants of his cast of characters. Instead, there are strong but indirect suggestions that they have taken to the seas and embraced an aquatic mode of existence. The sole exception here — interestingly — is the description of humans as becoming increasingly hairy. This gradual increase in hirsuteness begins with the daughter of one character, Hisako, being born covered in thick fur; though initially shocked by this, the characters eventually come to envy the protection offered by the child’s hair against the relentless heat of the equatorial sun<sup>92</sup>. The narrator, Leon Trout, gives hints early on as to the profound difference between ‘humans of a million years ago’ and those in his present, which he explicitly links to evolution: ‘Dogs back then were far superior to people when it came to distinguishing between different odors. Thanks to Darwin’s Law of Natural Selection...they have [now] surpassed



dogs in one respect: they can smell things underwater<sup>93)</sup>.

Further hints about the physical form of these future humans is provided later: ‘And if I were criticising human bodies as they were a million years ago...as though they were machines intended to put on the market, I would have two main points to make...The brain is much too big to be practical.... [and] Something is always going wrong with our teeth.’<sup>94)</sup> Again, the Law of Natural Selection (always written with capitals) is identified as not having solved the problem with teeth, but rather obviated it by having ‘simply cut the average human lifespan down to about thirty years’<sup>95)</sup>. Trout then comments that ‘there is a big-brain idea I haven’t heard much about lately: slavery. How could you ever hold someone in bondage with nothing but flippers and your mouth?’<sup>96)</sup>. This aquatic theme is further emphasised when Trout comments that humans, having initially had to rely on the stomach contents of iguanas for essential nutrition, ‘can now...digest seaweed for themselves’<sup>97)</sup>, and through the later observation that ‘It was the best fisherfolk who survived in the greatest numbers....Those with hands and feet most like flippers were the best swimmers. Prognathous jaws were better at catching and holding fish than hands could ever be. And any fisherperson, spending more and more time underwater, could surely catch more fish if he or she were more streamlined more bulletlike — had a smaller skull.’<sup>98)</sup>

## **Conclusion**

All four of the works considered here have somewhat pessimistic views of the human future. These visions, predicated on physical change and psychological Othering, are largely based on an understanding of evolution as a non-teleological process which can just as soon lead humanity away from its current technological sophistication to a future of brute existence in a state of nature. Natural selection and other Darwinian processes are

understood primarily as a set of laws and processes that bridge the gap between the human and the beast, positing that this dichotomy is, in fact, artificial, and its eventual collapse inevitable. The four authors discussed here have not only been inspired by contemporary concerns about the impact of human behaviour on the global ecosystem, but also by a strong sense of the folly of human hubris. In the vacant-eyed, constantly-hunted descendants of humanity, in all their beast-like obliviousness and distinctively human wretchedness, they have sketched a vision of a future not so much as comeuppance for human pride, but rather as completely unconcerned with the supposed glories of human accomplishment.

As mentioned previously, it is in this ability to take the concerns of the now and create of them compelling visions that the great strength of science fiction lies. It is interesting to note that for all the increasing cultural credibility of the genre, no science fiction film has yet won the Academy Award for best picture; nor has a work in the genre been awarded the Pulitzer or Booker prizes, despite authors who have produced work that can be called ‘science fiction’ having won it for other work. The controversy over the inclusion of graphic novels such as Alan Moore’s extraordinary *Watchmen* in the Booker prize shortlist — and the eventual decision to exclude the entire form from the competition — is also reflective of an ongoing conservatism in the literary establishment around works dubbed ‘speculative’. In exploring the intellectual depth and richness of some science fiction, it is hoped that this paper will contribute in some small way to the final destruction of the sci-fi ghetto, and push for a greater understanding of the genre for what it is — the most democratic of all modern fictional modes, which seeks not to limit the imagination of its readers and writers, but rather to set it free, and see what that tells us about ourselves.

## Notes

- 1) Secord, J. *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of Vestiges of the Natural History of Creation*. (University of Chicago Press, 2000).
- 2) Beer, G. *Darwin's Plots: the Evolutionary Narrative in Darwin, George Eliot, and Nineteenth Century Fiction*. (Cambridge University Press, 2009).
- 3) Browne, J. 'Constructing Darwinism in Literary Culture' in A-J. Zwierlein (ed.) *Unmapped Countries: Biological Visions in Nineteenth Century Literature and Culture*. (Anthem Books, 2005), pp. 58–62; Browne, J. 'Darwin in Caricature: A Study in the Popularisation and Dissemination of Evolution' in *Proceedings of the American Philosophical Society*, vol. 145 #4, 2001, pp. 496–509.
- 4) Browne 2005, p. 56.
- 5) Parker, H. *Biological Themes in Modern Science Fiction*. (UMI Research Press, 1984), p. 11.
- 6) Matolcsy, K. 'Time and Evolutionary Dignity in George Gaylord Simpson's "The Dechronization of Sam Magruder"' *Hungarian Journal of English and American Studies*, vol. 14 #2, 2008. p. 365.
- 7) Lightman, B. *Victorian Popularisers of Science: Designing Nature for New Audiences* (University of Chicago Press, 2007), p.xi.
- 8) *Ibid.*
- 9) See Philmus, R. "'The Time Machine": Or, The Fourth Dimension as Prophecy' in *PMLA*, vol. 84 #3, May 1969, pp. 530–35; Hollinger, V. 'Deconstructing the Time Machine' in *Sciences Fiction Studies*, vol. 14 #2, 1987, pp. 201–21; Hammond, J.R. *H.G. Wells's Time Machine: A Reference Guide* (Praeger, 2006); Beaumont, M. 'Red Sphinx: Mechanics of the Uncanny in *The Time Machine*' in *Science Fiction Studies*, vol. 33, 2006, pp. 230–50.
- 10) Luckhurst 2005, p. 37; Beer 2009.
- 11) Richmond, M. 'Reexamining Evolution in the Light of Mendel, Mutation, and Meiosis' in *ISIS*, vol. 97 #3, 2006, p. 448.
- 12) Maguire, M. 'Post-Lamarckian Prodigies: Evolutionary Biology in Soviet Science

- Fiction' in *New Zealand Slavonic Journal*, 2009, vol. 43, p. 24.
- 13) Johnston, K. *Science Fiction Film: A Critical Introduction* (Berg, 2011), p. 2.
  - 14) See Diaz, J. *This is How You Lose Her*. (Riverhead, 2012); Updike, J. *Towards the End of Time* (Random House, 1998); Atwood, M. *The Handmaid's Tale*. (Random House, 1998); *Oryx and Crake* (Random House, 2005); *The Year of the Flood* (Random House, 2009); *Maddaddam* (Random House, 2013).
  - 15) Attebury, B. 'Aboriginality in Science Fiction'. *Science Fiction Studies*, vol. 32 no. 3, 2005, p. 385.
  - 16) Manlove, C. *Science Fiction: Ten Explorations*. (Hong Kong: Macmillan, 1986), pp. 3–5.
  - 17) Huntingdon, J. 'Science Fiction and the Future' in *Science Fiction: A Collection of Critical Essays*, edited by M. Rose (Englewood Cliffs, 1976) p. 157.
  - 18) *Ibid*, p. 1; see also Parker 1984, p. 1.
  - 19) Attebury 2005, p. 385.
  - 20) James Tiptree Jr was the pen-name of author Alice Sheldon, whose life story – featuring time in the CIA and ending in a suicide pact with her husband of 42 years – would be excellent material for a novel in its own right. See also C.J. Cherryh, *Downbelow Station* (Daw [1981] 2001); Marion Zimmer Bradley's *Darkover* series.
  - 21) Bacon-Smith, C. *Science Fiction Culture*. (Philadelphia: University of Pennsylvania Press, 2000), p. 2.
  - 22) Maguire 2009.
  - 23) Luckhurst, R. *Science Fiction*. (MPG Books, 2005), pp. 219, 224–27.
  - 24) Manlove 1986, p. 1.
  - 25) See McCarthy, C. *The Road* (Vintage, 2006).
  - 26) Parker 1984, p. 8.
  - 27) Roberts, A. *Science Fiction: The New Critical Idiom*. (Routledge, 2000), p. 147.
  - 28) Robinson, K. *2312* (Orbit, 2012).
  - 29) Donawerth, J. 'Katherine MacLean's Short Science Fiction and Cytology,' *Parabolas of Science Fiction*, edited by B. Attebury (Wesleyan UP, 2013) p. 53.
  - 30) Aldiss, B. *Science Fiction as Science Fiction*. 1978 (Bran's Head Books, 1978) p. 23.

- 31) Bollinger, L. 'Symbiogenesis, Selfhood, and Science Fiction'. *Science Fiction Studies* vol 37, 2010, p. 34; Eisenstein, A. "'The Time Machine" and the End of Man'. *Science Fiction Studies* vol. 3 no. 2, 1976.
- 32) Parker 1984, pp. 18–34.
- 33) Some of the creatures depicted in Dougal Dixon's *Man after Man* were bioengineered, but this work will concentrate on the later forms in the work which are largely the result of natural selection and not bioengineering.
- 34) Asimov, I. 'The Last Question'. 1956.
- 35) Simmons, D. *Hyperion* (Doubleday, 1989); *The Fall of Hyperion* (Doubleday, 1990).
- 36) Parker 1984, p. 3.
- 37) Glassy, M. C. *The Biology of Science Fiction Cinema*. 2001 (McFarland & Co.), pp. 64–65.
- 38) Parker 1984, p. 9.
- 39) Mehren, E. 'Galapagos': Vonnegut Explores Big-Brain Theory. *The Los Angeles Times*. 23<sup>rd</sup> October 1985.
- 40) Naish, D. 'Of *After Man*, *The New Dinosaurs*, and *Greenworld*: an interview with Dougal Dixon'. *Scientific American*, 4<sup>th</sup> April 2014.
- 41) Atikenhead, D. 'James Lovelock: "Enjoy life while you can: in 20 years global warming will hit the fan."' *The Guardian*. 29<sup>th</sup> February 2002.
- 42) Watson, P. 'Animator Mike Judge: Idiocracy is Happening Now'. *Infowars.com*. 23<sup>rd</sup> May 2013.
- 43) *Ibid.*
- 44) *Ibid.*
- 45) Luckhurst 2005, p. 37.
- 46) Powell, R. 'The Future of Human Evolution'. *British Journal of the Philosophy of Science*, vol. 63, 2012, 145–75.
- 47) Ketterer, D. 'The Apocalyptic Imagination, Science Fiction, and American Literature.' *Science Fiction: A Collection of Critical Essays*, edited by M. Rose, (Englewood Cliffs, 1976) p. 147.
- 48) Manlove 1986, p. 58.
- 49) *Ibid.*, p. 58.

- 50) *Ibid.*, p. 182.
- 51) Browne 2005, pp. 56, 63.
- 52) Connelly, M. *Fatal Misconception: The Struggle to Control World Population* (London: Belknap Press, 2008), pp. 33–42.
- 53) Davenport, C. *The Study of Human Inheritance*. (Cold Spring Harbor, 1911).
- 54) Baxter, S. *Evolution*. (London: Orion Printing, 2002) p. 505.
- 55) *Ibid.*, p. 526.
- 56) *Ibid.*, p. 513.
- 57) *Ibid.*, p. 519.
- 58) Dixon, D. *Man after Man*. (St. Martin's Press, 1990), p. 10.
- 59) *Ibid.*, pp. 11–21.
- 60) *Ibid.*, p. 31.
- 61) *Ibid.*, p. 10.
- 62) *Ibid.*, pp. 54, 79–83, 88, 96.
- 63) Vonnegut, K. *Galápagos*. (Dell Publishing, [1986] 1999), p. 20.
- 64) *Ibid.*, p. 3.
- 65) *Ibid.*, pp. 4–5, 9.
- 66) *Ibid.*, pp. 27, 29, 83, 149, 165.
- 67) *Ibid.*, p. 174.
- 68) Attebury 2005, pp. 387, 391.
- 69) Baxter 2002, p. 502.
- 70) *Ibid.*, p. 510.
- 71) *Ibid.*, p. 512.
- 72) Dixon 1990, p. 78.
- 73) Vonnegut [1985] 1999, p. 271.
- 74) Dixon 1990, p. 90.
- 75) *Ibid.*, p. 108.
- 76) Glassy 2000, p. 249.
- 77) *Ibid.*, pp. 250–53.
- 78) Baxter 2002, p. 493.
- 79) *Ibid.*, p. 498.
- 80) *Ibid.*, p. 499.

- 81) Baxter 2002, pp. 510, 521.
- 82) *Ibid.*, p. 535.
- 83) *Ibid.*, p. 532.
- 84) *Ibid.*, p. 533.
- 85) Browne 2009, p. 57.
- 86) Dixon 1990, p. 84.
- 87) *Ibid.* pp. 102–03.
- 88) *Ibid.*, pp. 104–05.
- 89) *Ibid.*, p. 112.
- 90) *Ibid.*, p. 77.
- 91) *Ibid.*, p. 95.
- 92) Vonnegut [1985] 1999, p. 193.
- 93) *Ibid.*, p. 79.
- 94) *Ibid.*, p. 81.
- 95) *Ibid.*
- 96) *Ibid.*, p. 176.
- 97) *Ibid.*, p. 261.
- 98) *Ibid.*, p. 291.

### **Bibliography**

- Aldiss, Brian. *Science Fiction as Science Fiction*. Bran's Head Books, 1978.
- Asimov, Isaac. 'The Last Question.' [http://www.multivax.com/last\\_question.html](http://www.multivax.com/last_question.html). Accessed 5 May 2014.
- Atikenhead, Decca. 'James Lovelock: "Enjoy life while you can: in 20 years global warming will hit the fan."' *The Guardian*, 29 Feb. 2002.
- Attebury, Brian. 'Aboriginality in Science Fiction.' *Science Fiction Studies*, vol. 32, no. 3, 2005, pp. 385–404.
- . 'Science Fictional Parabolas: Jazz, Geometry, and Generation Starships.' *Parabolas of Science Fiction*, edited by B. Attebury, Wesleyan UP, 2013, pp. 3–23.
- Atwood, Margaret. *The Handmaid's Tale*. Random House, 1998.
- . *Oryx and Crake*. Random House, 2005.

- . *The Year of the Flood*. Random House, 2009.
- . *Maddaddam*. Random House, 2013.
- Bacon-Smith, Camille. *Science Fiction Culture*. U of Pennsylvania P, 2000.
- Baxter, Stephen. *Evolution*. Orion Publishing, 2002.
- Beaumont, Matthew. 'Red Sphinx: Mechanics of the Uncanny in *The Time Machine*.' *Science Fiction Studies*, vol. 33, 2006, pp. 230–50.
- Beer, Gillian. *Darwin's Plots: the Evolutionary Narrative in Darwin, George Eliot, and Nineteenth-Century Fiction*. Cambridge UP, 2009.
- Bixler, Andrea. 'Teaching Evolution with the Aid of Science Fiction.' *The American Biology Teacher*, vol. 69, no. 6, 2007, pp. 337–40.
- Bollinger, Laurel. 'Symbiogenesis, Selfhood, and Science Fiction.' *Science Fiction Studies*, vol. 37, 2010, pp. 34–53.
- Browne, Janet. 'Constructing Darwinism in Literary Culture.' *Unmapped Countries: Biological Visions in Nineteenth-Century Literature and Culture*, edited by A-J Zwierlein, Anthem Books, 2005, pp. 56–69.
- . 'Darwin in Caricature: A Study in the Popularisation and Dissemination of Evolution.' *Proceedings of the American Philosophical Society*, vol. 145, no. 4, 2001, pp. 496–509.
- Cherryh, C.J., *Downbelow Station*. 1981. Daw, 2001.
- Connelly, Matthew. *Fatal Misconception: The Struggle to Control World Population*. Belknap Press, 2008, pp. 33–42.
- Davenport, Charles. *Heredity in Relation to Eugenics*. Holt & Company, 1911, pp. 74–75.
- Davenport, Charles. *The Study of Human Inheritance*. Cold Spring Harbor, 1911.
- Diaz, Junot. *This is How You Lose Her*. Riverhead, 2012.
- Dixon, Dougal. *Man after Man*. St. Martin's Press, 1990.
- Donawerth, Jane. 'Katherine MacLean's Short Science Fiction and Cytology.' *Parabolas of Science Fiction*, edited by B. Attebury, Wesleyan UP, 2013, pp. 53–69.
- Duchamp, L.Timmel. 'Mad Scientists, Chimps, and Mice with Human Brains: Collapsing Boundaries in Science Fiction.' *Parabolas of Science Fiction*, edited by B. Attebury, Wesleyan UP, 2013, pp. 125–42.
- Eisenstein, Alex. "'The Time Machine' and the End of Man.' *Science Fiction Studies*, vol. 3, no. 2, 1976, pp. 161–65.



- Glassy, Mark. C. *The Biology of Science Fiction Cinema*. McFarland & Co., 2001.
- Hammond, John. R. *H.G. Wells's Time Machine: A Reference Guide*. Praeger, 2006.
- Hollinger, Veronica. 'Deconstructing the Time Machine.' *Science Fiction Studies*, vol. 14, no. 2, 1987, pp. 201–21.
- Huntingdon, John. 'Science Fiction and the Future.' *Science Fiction: A Collection of Critical Essays*, edited by Mark Rose, Englewood Cliffs, 1976, pp. 156–72.
- Idiocracy*. Dir. Mike Judge. 20th Century Fox, 2006. Online.
- Johnston, Keith. M. *Science Fiction Film: A Critical Introduction*. Berg, 2011.
- Ketterer, David. 'The Apocalyptic Imagination, Science Fiction, and American Literature.' *Science Fiction: A Collection of Critical Essays*, edited by M. Rose, Englewood Cliffs, 1976.
- Luckhurst, Roger. *Science Fiction*. MPG Books, 2005.
- Maguire, Muireann. 'Post-Lamarckian Prodigies: Evolutionary Biology in Soviet Science Fiction.' *New Zealand Slavonic Journal*, vol. 43, pp. 23–53, 2009.
- Manlove, Colin. *Science Fiction: Ten Explorations*. Macmillan, 1986.
- Matolcsy, Kalman. 'Time and Evolutionary Dignity in George Gaylord Simpson's "The Dechronization of Sam Magruder."' *Hungarian Journal of English and American Studies*, vol. 14, no. 2, 2008, pp. 357–71.
- McCarthy, Cormac. *The Road*. Vintage, 2006.
- Mehren, Elizabeth. "'Galapagos': Vonnegut Explores Big-Brain Theory.' *The Los Angeles Times*, 23 Oct. 1985.
- Naish, Darren. 'Of *After Man*, *The New Dinosaurs*, and *Greenworld*: an interview with Dougal Dixon.' *Scientific American*, 4 Apr. 2014.
- Parker, Helen. N. *Biological Themes in Modern Science Fiction*. UMI Research Press, 1984.
- Philmus, Robert. "'The Time Machine": Or, The Fourth Dimension as Prophecy.' *PMLA*, vol. 84, no. 3, May 1969, pp. 530–35.
- Powell, Russell. 'The Future of Human Evolution.' *British Journal of the Philosophy of Science*, vol. 63, 2012, pp. 145–75.
- Richmond, Marsha. 'Reexamining Evolution in the Light of Mendel, Mutation, and Meiosis.' *ISIS*, vol. 97, no. 3, 2006, pp. 447–84.
- Roberts, Adam. *Science Fiction: The New Critical Idiom*. Routledge, 2000.

Robinson, Kim. *2312*. Orbit, 2012.

Simmons, Dan. *Hyperion*. Doubleday, 1989.

—. *The Fall of Hyperion*. Doubleday, 1990.

Updike, John. *Towards the End of Time*. Random House, 1998.

Vonnegut, Kurt. *Galápagos*. Dell Publishing, 1999.

Watson, P. 'Animator Mike Judge: Idiocracy is Happening Now.' *Infowars.com*, 23 May 2013. <http://www.infowars.com/animator-mike-judge-idiocracy-is-happening-now/>. Accessed 5 May 2014.