

What is special about the gene? A literary perspective

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Abstract

In answering the question 'what is special about the gene' from a literary perspective, the article suggests that if literary appreciation is often seen as a mark of human exceptionalism, knowledge of the gene may undermine this claim. Tracing some of the historical and philosophical complexities that circulate around the word 'gene', the article argues that in one sense 'the gene' plays the lead role in the latest 'story' about heredity to preoccupy novelists, scientists, and the literary and cultural historians who have researched their shared interests and mutual borrowings. Reading Ian McEwan's recent novel *Saturday* (2005) in terms of the traditions of scientific and literary discourse that it draws upon and weaves together, the article argues that the literary craft may yet pose a distinctive challenge for the understanding of the place of genetics and literature in contemporary culture.

Introduction

Literature, it may be argued, is the form of expression *par excellence* both for claiming and exploring human exceptionalism. Genetics, on the other hand, may turn out to be the science, *par excellence*, which debunks the claim to human exceptionalism. As Matt Ridley narrates in his book *Nature Via Nurture* (2003), in the late 1960s, the work of Vincent Sarich and Allan Wilson indicated that close to 99% of the DNA in the human being is identical to that of a chimpanzee. The work of Roy Britten in 2002 reduced the scale of the difference to around 5%. Even so, the fact that we are, genetically, 95% like a chimpanzee is of little comfort.² To think that Bishop Samuel Wilberforce taunted T.H. Huxley at the British Association for the advancement of Science, Oxford, in 1860 at the prospect of the latter's being a mere 50% of simian descent.³

How can literature 'speak to' genetics, and genetics to literature? Of course, this question has, in a sense, already been answered, having been posed again and again: 'expressiveness' has played no small part in the history of encounters between the evolutionary sciences and the seemingly 'softer' pursuits of philosophy and theology as modes of 'literary' discourse. This paper will survey some of the key ways in which the conversation has been, and is being, conducted (Section 1). It will explore the insistent philosophical and ideological complexities that condition 'literature' as an historically self-aware tradition of discourse in dialogue with disciplines and fields that constitute and demarcate objects of scientific knowledge. Of course, as the critical realist Roy Bhaskar would argue, genetics is part of the 'intransitive' ontological domain which exists independently of human activity. But in so far as knowledge of the gene is elaborated by scientific research, then, as critical realism also recognises, the gene is a multi-faceted object of knowledge, entering into the 'transitive' domain of human understanding that is both perspectival and saturated with multiple traditions of discourse and human activity.⁴ The dialogic work

performed by literature reminds us that the intellectual life of the gene – that is to say the gene as a conceptual object disseminated by intellectual activity – is grounded in discourses, fictions (in their broadest sense), and culture. The article will read Ian McEwan's *Saturday* (2005) – a 'literary' fiction – as a dialogic act which explores the gene at the interface between what Bhaskar refers to as transitive and the intransitive domains (Section 2). McEwan is a novelist who interrogates the relationship between genetics as an ontological necessity, and the traditional literary and philosophical frameworks that have sustained and validated accounts of human specificity and distinctiveness.

1. Literature and Science: historical and philosophical perspectives

What marginal effects do human genes play to make us human, rather than chimpanzee, and what is a gene anyway? Matt Ridley identifies seven meanings of the word gene, and seven different functions – few of which contribute decisively to human exceptionalism. First, a gene may be conceived as a Dawkinsian survival machine, using any genomic structure as a host for preserving itself on into the next generation; it is also a Mendelian archive, preserving an ancestral past in the living organism, based on a Watson-Crick recipe of DNA replicators. All of these theories and functions build on De Vries's early sense of heredity conducted by pangens (hereditary material reused in different developmental programmes). A clearer degree of human specificity is made possible by the Jacob-Monod theory of the gene as a developmental switch, a means of 'promoting' and 'enhancing' a particular characteristic in a given bodily design; this also links, perhaps, to the medical theory of the gene as a health-giver, ensuring a healthy outcome in the expected environment. Finally, the theory of the evolutionary psychologists Tooby and Cosmides embraces all of the above, and has come to see the gene as a device for extracting information from the environment. The gene is not, it seems, wholly deterministic. The decisively human part of us continues to be 'made' by our 'exchange' of information with the environment – what we have become used, perhaps, to describing as the work of 'culture'.⁵

If the gene has multiple functions, it is also hard to be definite about its borders and boundaries. As Richard Dawkins admits in his classic *The Selfish Gene* 'it is not easy, indeed it may not even be meaningful, to decide where one gene ends and another begins'.⁶ Dawkins makes this comment as he describes the process of looking through a microscope at the 46 (23 pairs) human chromosomes, with genes strung out along them 'in order'. Dawkins's observation continues to shape research, almost thirty years after its original publication. In a recent article about 'gene autonomy', Niall Dillon surveyed a history of the concept of the gene in making this opening point:

Rediscovered in 1900 from the research of Gregor Mendel (1822-1884), and named in 1909 by Wilhelm Johannsen (1857-1927), the gene became one of the most influential scientific concepts of the 20th century. Yet despite its iconic power, it remains a curiously nebulous entity that defies easy definition. From the start, there was a tension between the concept of the gene as a 'unit of inheritance' –

which was defined in purely operational terms as an autonomous unit that transmits specific traits through multiple generations – and the gene as a physical entity – whose position could be mapped in relation to other genes on the chromosome.⁷

Dillon's work contributes to the critical-realist aspirations of much scientific research: acknowledging genes as a necessary part of ontological reality, while recognising that knowledge of that reality is historically relative and subject to refinement and elaboration. I want to explore some of the tensions produced by this process of refinement and elaboration: the gene as either absolute determinant, or receptor; the gene as either autonomous unit of inheritance or real physical entity. Both point to a certain degree of play at work in the making of the concept of the gene. It is significant that Dillon should go back to the moment of 'naming' of the gene by Wilhelm Johannsen; and that he refers to the 'iconic' power of the concept of the gene. I'll explore this power in relation to what the philosopher Howard Caygill has referred to as 'the culture of the gene', a transitive culture of metaphysical fictions that needs to be distinguished from the expert, professional day-to-day field work that constitutes molecular biology and biochemistry as it seeks to research more deeply into the intransitive domain. I'll use this to show how another 'fiction' by Ian McEwan, his recent novel *Saturday*, intervenes into this 'culture of the gene'.⁸ It is an intervention that at once venerates the contexts of discovery of modern genetics, yet which also interrogates the force of various mobilisations of the 'literary' in that culture.

Turning to the 'literary', one can note that the power of textual analogy plays a strikingly important role in the conceptualisation of modern genetics. In *Darwin's Dangerous Idea* (1995) Daniel Dennett grasped the workings of the Mendelian archive, 'the Library of Mendel', by analogy with a textual and philological analogue that followed Borges's imaginary 'Library of Babel'. The literary and textual analogues structure the way in which Roy Britten arrived at his conclusion that humans differ from chimpanzees by virtue of 5% of their DNA. He draws on the language of codes and substitutions. As Ridley points out, Britten identifies the 'textual deletions and insertions' that increase the scale of the difference from 1 to 5%; prior to Britten's work, molecular biologists had only focused on 'substitutions – ie, letters in the text that are different between human and chimpanzee genes'.⁹ Dawkins's *Selfish Gene* also uses bibliographic metaphors to describe chromosomes, the copying mechanism of DNA, and Mendelian laws of inheritance. The language of code, and the acts of copying, deleting, insertion may be comfortably recognisable to literary scholars as the very objects and concerns of their own scholarly pursuits.

But only *some* literary scholars would recognise themselves in such a set of analogies: for instance, bibliographers and historians of the book. That is why I've added the health warning to my discussion: *a* literary perspective, for literature is a complex field of critical possibilities and historical legacies. For instance, some literary scholars are theoreticians and deconstructionists; others are historicists. Indeed, it is unnecessary to drive a wedge between them, as many critics bring together a blend between the two, and their work is consequently nuanced and inflected. In any event, all literary criticism needs to be seen in the context of the histories and traditions of

discourse that continue to inform it. Indeed, my reading of McEwan's *Saturday* traces echoes of literary criticism's long historical reflection on the relation between the affective power of poetry and morality, woven into a key moment of narrative crisis sparked by genetic malfunction in one of the novel's characters. But the public, justificatory languages of genetic science need to be seen in the same context. Howard Caygill makes the same point about the varied traditions philosophical and scientific thought that inform what he calls the 'culture of the gene'. It is important to stress this variety, complexity and historicity; since the 'Sokal Affair' hoax of 1996, there has been a tendency for leading proponents of the public understanding of science – such as the gene theorist Richard Dawkins – to homogenise thinking from across the Humanities and Social Sciences negatively as the product of 'social constructivism' – the indefensibly reductive notion that science is just another form of textuality. It is tempting to see a kind of contest at work here between two equally indefensible reductionist drives – the postmodern textual and the neo-Darwinian genetic. My own project seeks to move beyond reductionism, both in humanistic and scientific critical pursuits.

This tendency to neo-Darwinian reductionism has perhaps pushed many scholars away from a Whiggish present in which the gene dominates, and towards the more varied scientific tapestry of the past. For literary scholars who have explored the literature and science relation, they have focused on it in historically contextual terms. Take my own period of specialisation, the nineteenth century, and its apparent display of 'a common culture'. While the so-called 'common culture' thesis of the social historian of science Robert M. Young can be taken too far, there is something about the intelligibility of nineteenth-century biology that continues to fascinate and in a curious way, perhaps reassure.¹⁰ The disciplines that lent to its formation, at least in its pre-1859 phase – geology, comparative anatomy, and classification – depended to a large degree on evidence that was available to public display in its primary forms. The molecular biology of genetics is a science that requires not only high degrees of specialisation, and intensive laboratory resources, but depends also on speculative model building that relates to the deeply 'unseen' and 'unseeable' (from Crick and Watson's early 1950s model helices of wood and metal, to computer generated models of molecular activity derived from x-ray crystallography).

Let's keep with an historical perspective. What interests literary scholars and cultural historians, and another reason why the *effects* of the concept of the gene may not be uniquely special to us, is often not so much the validity of the truth claims of the latest scientific theory of inheritance, which is genetics, but the structure and ideological leanings of theories of inheritance from the past. For these theories cast light on the authority of theories at work in the present, and the semantic possibilities and constraints that they offer. In fact, historically-orientated literary scholars are often interested in the languages of inheritance within a scheme of 'cultural heredity': that is to say where these languages come from, what work they perform, what they 'pass on', and whether indeed they are passed on at all. We should recall that Charles Darwin's own theory of heredity – 'pangenesis' – that postulated the idea of gemmules that represented every aspect of a body, including acquired characteristics, being transmitted to and out of the sexual organs – went precisely nowhere.¹¹ But 'pangenesis' is fascinating nonetheless for what it says about Darwin's interests in

pollen and buds as agents of heredity, and a nineteenth-century idea about the body as a kind of confederated colony of organs. In other words, entangled with the properly delimited scientific speculation about inheritance was a world of discourse about interdependence, and, by implication, politics and governance that resonated more widely in nineteenth-century culture.

To give another example: in the 1880s, the German biologist August Weismann formulated his theory of the ‘continuity of the germ plasm’. If Darwin’s theory of natural selection, and Darwin’s writings in general, could be assimilated to Lamarckian theories of the inheritance of acquired characteristics, Weismann’s theory was resolutely anti-Lamarckian. Heredity, for Weismann, was effected by material that was passed reproductively from one generational body to another, but which could not be improved by external influence. Weismann’s theory impacted on debates in Europe, in particular debates about degeneration. The English writer Benjamin Kidd in his influential degenerationist tract *Social Evolution* (1894) used the theory as a basis for concluding that the quality of populations would decline, generation upon generation if natural logics of inheritance were permitted to continue unchecked. Degenerationists such as Kidd argued that the least ‘fit’ populations, in class terms, were in numerical supremacy, and destined to pass on their ‘unfitness’ through the germ plasm; acquired characteristics could play no corrective role. For Kidd this necessitated positive action that would ensure and preserve the accumulation of ‘congenital variations above the average to the exclusion of those below’ – in other words, eugenics, which aimed to select certain pools of germ plasm out of the reproductive equation.¹² In one sense, we could dismiss Weismann’s theory as superannuated; for instance, in the ‘timeline’ published on the website of Genome Network News, information supported by the J. Craig Venter Institute, Weismann’s work is not cited, so it is not recognised as a milestone on the royal road to the discovery of DNA and the sequence of the human genome.¹³ But it is important to recall there are competing stories of intellectual inheritance: to go back to Dawkins again, in his conclusion to the first chapter of the *Selfish Gene*, he claims that ‘the central idea I shall make use of was foreshadowed by A. Weismann in pre-gene days at the turn of the century—his doctrine of the continuity of the germ plasm’.¹⁴

There’s a further point to make here about the relationship between eugenics and genetics, a topic that has been compellingly explored in a recent issue of the journal *new formations* (spring 2007). I’m not for a moment suggesting that Dawkins is a eugenicist – he is manifestly not – but as Hilary Rose argues, there is culturally a connection between genetics and eugenics, and to pretend otherwise is to seek to maintain ‘a soothing fiction’. But, she continues, ‘the whole power of soothing fictions lies in their hydra-like reproductive capacities. Cut off their heads and they simply proliferate’.¹⁵ Literary and cultural historians are precisely interested in the proliferating fictions associated with science; the reproduction, one might say, of stories about reproduction and inheritance.

Let’s go back to that formulation of Dawkins in an attempt to illustrate this point: He refers to ‘pre-gene days’: how did we get to the naming of genes? When Dawkins refers to ‘pre-gene days’, he is referring of course to the days prior to the successes of biochemical experimentation and microscopy that gradually identified the materials of

particulate inheritance that constitute modern genetics. But he is also referring to a movement in scientific nomenclature. The term 'gene' was coined by Johannsen in 1909 – a point that Niall Dillon reminds us of in his article about gene autonomy (*Nature* 2003) – during a hectic period when biologists such as De Vries were formulating theories of particulate inheritance while rediscovering the work of Gregor Mendel. Johannsen's work performed crucial work in naming the 'gene', but also those crucial terms in genetics, 'genotype' (the particular genomic plan of the organism), and the 'phenotype' (the particular and variable manifestation in a living individual); and these have important implications for a story told, or as he would put it, 'drafted' about the 'culture of the gene' by the philosopher Howard Caygill.

Caygill wrote his 'Drafts for a Metaphysics of the Gene' in 1996.¹⁶ While it may seem to offer a grand narrative about the popularisation of science, its 'draft' status could be said to interrogate, in a productively fragmentary fashion, two crucial philosophical traditions in answering the question 'what is special about the gene'. Those sources are Plato and Nietzsche, 'the first and last of the metaphysicians' for Caygill. In Caygill's reading of Nietzsche, 'science' fills the terrible gap left by 'the death of God' in the nineteenth century. Following Nietzsche, Caygill presents science as a Christian substitute, a new Platonism for the masses. Caygill's analysis examines the triumph of science in the nineteenth century as a new faith in, and popular culture of, science which reinvented a Platonic Christianity as a metaphysic of science. It was precisely this kind of framework of assumptions that enabled Johannsen to Platonise the late nineteenth-century findings of particulate inheritance into the 'ideas' of the 'gene', the 'genotype', and the 'phenotype' – a metaphysical legacy that molecular biologists continue to observe yet be troubled by, as a popular 'culture of genetics' demands greater and greater degrees of trust be placed in the metaphysic (your guilt or innocence in a murder case may be determined as true or not by the 'idea' of DNA). Yet it is trust that is bestowed with ambivalence. In twentieth-century genetics, it is the gene that figures as the unstable phenomenon, which at once seems to promise the abolition of nature and chance (the totally engineered subject), while being also the threat of the revenge of chance as it re-enters the order from which, ostensibly, it has been eliminated. In re-reading Plato and Nietzsche, Caygill's analysis points to another reason why the concept of the gene is not unique: for genetics is just the most recent manifestation of a metaphysical affirmation of science and medicine, ostensibly constituted upon positivist foundations.¹⁷

Caygill also reminds us that it was not only the artists who were expelled from the city in the *Republic* – it was the physicians too, for supplementing nature with their particular brand of *techne* (much in the way that imitative artists did). The physicians were to be re-admitted in the guise of philosophical legislators. Of course, it may be objected by practising scientists that Caygill's narrative is too grand by half, and that he is indulging in 'social constructivism'. But he is careful to distinguish between the nuanced and workaday practices and findings of science, and what he describes as 'the culture of genetics'. Thus, 'Neither the fear of the abolition of chance in a technical order of necessity, nor the fear of the revenge of chance against the same order have any real basis in the science, but have assumed considerable weight in the culture of genetics'. It seems to me that

Caygill implicitly draws a distinction between, to use Hans Reichenbach's terms (subsequently adapted by Christopher Norris), context of discovery, and context of justification, and Bhaskar's distinction between intransitive and transitive domains.¹⁸ While fictions of the iconic status of the gene figure in powerful, but carefully circumscribed, ways, 'literary' fictions participate in the culture of genetics in challengingly complex ways. I want to suggest, in conclusion, that *Saturday* by Ian McEwan – an imitative artist who is also deeply attracted by the *techne* of science and medicine – explores the 'culture of genetics' by engaging with the relationship between these 'transitive and intransitive' domains. In a sense, literary narrative can place itself at the exploratory interface between these domains, and their competing claims. For McEwan's fictive exploration of the relation between literature and genetics eschews any grand statements about human exceptionalism; in fact, his fiction works to suggest something vaguely disturbing about the human 'gift' for apprehending literature as a mode of affective power, especially in the context of one of the meanings of the word gene: a switch or cultural receptor for mediating information between organism and environment. If the philosophy of critical realism has to be clear and rigorous about the relative stratifications that separate the real, the actual and the empirical, then literature can still be viewed as that privileged space where the 'blurring' of relations between the transitive and intransitive, literature and science, can be exploited as different traditions of discourse clash and meld.

2. Traditions of Discourse in Ian McEwan's *Saturday*: fiction, genetics and poetry

Saturday is an urban fiction, a kind of homage to the Modernist literature of the city represented most obviously by Woolf's *Mrs Dalloway*.¹⁹ It is also possible to see *Saturday* as a fiction that asks questions about who will legitimately legislate for the city. Of course, in one sense, McEwan's evolutionism finds Platonic questions about the governance of the ideal city-state no longer answerable. The governance of the appointed legislators is in one sense farcically detached and ineffective: the central character, a neurosurgeon Henry Perowne, meets Tony Blair at an official engagement, and a distracted Blair mistakes Perowne's identity; interestingly, he mistakes him for an artist (Blair is made to comment that a painting mistakenly attributed to Perowne adorns a wall in Downing Street). *Saturday* stages a confrontation between the two expelled figures from the republic: the artist and the physician.

Henry Perowne tends not to intellectualise his working life: a neurosurgeon whose specialisms are at once the molecular biologist's knowledge of the micro-composites of life, and the engineer's understanding of the body as a complex mechanism. McEwan nonetheless shows him striving to develop an understanding of the affective dimensions of the culture that he inhabits, and a history of the expertise that he contributes to it, through a kind of education orchestrated by his daughter, Daisy. Daisy has read English at Oxford, and is a young published poet: she is determined to educate her father in the literary canon (Flaubert, Tolstoy, Conrad), but also the greats of scientific writing. A recollected image of this reading frames the reader's first encounter with the education of Henry Perowne. As Perowne re-awakes on Saturday

morning following his disrupted sleep in the early hours, a phrase passes through his mind: 'There is grandeur in this view of life'. Of course, as he himself comes gradually to realise, this is from Darwin, the closing paragraph of the *Origin of Species*, unconsciously recalled second hand from the biography that Daisy has 'set' him to study (Daisy conducts her relationship with her father rather in the manner of a tutorial), and read sleepily in the bath the night before. The section of the biography he reads is about 'the dash to complete the *Origin*', and a 'summary of the concluding pages [of the *Origin*], amended in later editions' (p.55). It leads to Perowne's reflection on the creation story told by evolution, how out of war, death and destruction, life forms, morality is shaped, and even cities have evolved. Contexts of discovery and contexts of scientific justification seem to mingle together in the verbalised consciousness of Perowne.

The evolution of the city, and the illustrious traditions of scientific enquiry that have forged the present, flash through Perowne's mind again as he becomes stuck in a traffic jam in London: McEwan sets *Saturday* on the day in February 2003 when up to a million people took to the streets of London to demonstrate against the impending invasion of Iraq. Perowne tries to take in the scene as it might have been seen by those 'curious men of the English Enlightenment' who gave birth to his world view, and the science that has shaped modern culture. But his attempt to do so is haunted, or in his case thwarted, by literary possibilities that Daisy understands only too well:

He tries to see it, or feel it, in historical terms, this moment in the last decades of the petroleum age, when a nineteenth-century device is brought to final perfection in the early years of the twenty first; when the unprecedented wealth of masses at serious play in the unforgiving modern city makes for a sight that no previous age could have imagined. Ordinary people! Rivers of light! He wants to make himself see it as Newton might, or his contemporaries, Boyle, Hooke, Wren, Willis – those clever, curious men of the English Enlightenment who for a few years held in their minds nearly all the world's science. Surely, they would be awed ... But he can't quite trick himself into it. He can't feel his way past the iron weight of the actual to see beyond the boredom of a traffic tailback ... He doesn't have the lyric gift to see beyond it – he's a realist, and can never escape (p.168).

McEwan brings literature and science into cultural contest: *Saturday* is a day in the life of a professional man on his day off, a fiction that owes much to Woolf's *Mrs Dalloway*: 'this moment' is an intertextual echo, but so too are Perowne's attempts at Modernist epiphanies, 'Ordinary people! Rivers of light!' But it's a stand off, the realist surgeon cannot enter into the way of seeing mastered by his lyrical daughter. While *Saturday* is a novel in which texts that construct and enrich our literacy actually play a significant role, it still poses the question: if we come to know the justification of the neurosurgeon's *techne* (we hear of Perowne's skills in the operating theatre, his expertise in molecular biology and bodily engineering), what does literature do, how does it speak within a culture saturated by genetic science? The question begins to be answered as Perowne steers his car away from the jam, and, accidentally, into the path of another car, dislodging its wing-mirror. The minor collision brings Perowne into

the lower social orbit of Baxter and two other petty criminals who use the occasion as an attempt to extort money, and threaten Perowne with a beating when he resists. However, Perowne notes ‘muscular restlessness’ in Baxter’s face and, the biochemist and engineer in him immediately reaches this diagnosis:

Chromosome four. The misfortune lies within a single gene, in an excessive repeat of a single sequence – CAG. Here’s biological determinism in its purest form. More than forty repeats of that one little codon and you’re doomed. Your future is fixed and easily foretold ... nightmarish hallucinations and a meaningless end. This is how the brilliant machinery of being is undone by the tiniest of faulty cogs. (p.94)

Perowne offers his expert diagnosis, and it turns the situation, exploiting, not the metaphysical, but indeed *the magical* thinking that hovers below the metaphysical justification of the patient-doctor relationship, and which continues to haunt the legitimating strategies of modern science: ‘They are together ... in a world not of the medical, but of the magical. When you are diseased, it is unwise to abuse the shaman’ (p.95). But it is borrowed time, and the episode ends in Baxter’s humiliation as he loses command of his henchmen, and the moment for violence. Perowne drives off, to a squash match, but will be made to pay. He does so later in the day as the family dinner with Perowne’s father in law, the poet John Grammaticus, Daisy and his son, is shattered when Rosalind Perowne returns from work with Baxter, his henchmen, and a knife threatening her. It is in this context that McEwan finally ‘answers’ the question of what literature does. If Perowne’s ‘magical’ knowledge of ‘biological determinism’ shapes the first reversal of Baxter’s behaviour, then it is a literary recital that shapes the second. Daisy refuses the invaders’ sexual taunts to read one of her ‘dirty’ poems from the set of proofs (entitled *My Saucy Bark*) that sit upon the table; she follows instead Grammaticus’s cue and recites Matthew Arnold’s ‘Dover Beach’, passing it off as her own.

What McEwan produces here is a curious kind of parody of literature’s civilising mission, so frequently rehearsed in the nineteenth century and since. It seems to me no coincidence that this moment turns on the understanding of an Arnold poem, Arnold being also the author of that great Victorian statement about the civilising mission of literature, *Culture and Anarchy* (1869). The twitching, ‘simian’-like Baxter, wracked by mood swings triggered by faulty genes, becomes a kind of cruelly ironic Arnoldian best self, transformed by a literary conversion. All thoughts of rape dissipate as he says “‘You wrote that... it’s beautiful. You know that, don’t you. It’s beautiful. And you wrote it’”. (p.222). The episode is especially rich because of the way in which McEwan translates a lyrical moment into the stuff of storytelling. In narrating the episode, he does not ‘tell’ that the poem being recited is ‘Dover Beach’. The reader oversees fragmented images grasped during the recital from Perowne’s perspective; Perowne does not know and cannot identify the poem as Arnold’s, a further parody, perhaps, of I.A. Richards’s ‘experiments’ with Cambridge undergraduates in the 1920s, exposing them to unidentified poems which they were asked to close-read. Perowne finds many associations, many ‘subject positions’ from his life and his sense of Daisy’s life, in the discourse that is recited. McEwan seems to

be suggesting that the civilising process that the poem effects upon Baxter is only one kind of affective response, and ironically it works most powerfully on the most genetically faulty and deranged person present. If the Library of Mendel has inscribed an irrevocable genetic script for Baxter – ‘*It is written*’ (p.210) – the Library of Babel is characterised by indeterminacy. Literature multiplies the positions available for judgement and response.

This is hardly a surprising or indeed unsettling conclusion to reach. But McEwan’s fiction does, I would argue, generate more subtle challenges to received meanings. Indeed, it could be argued that Baxter’s faulty gene becomes both a ‘switch’, and receptor, for the appreciation of poetry, or literature as culture’s flagship. Something that ‘begins’ in genetics, or the intransitive domain of ontological necessity, contributes powerfully to the transitive domain of literary and cultural activity. But it also does so contingently, relatively: that Baxter and Perowne ‘hear’ such different versions of the poem suggests that there is no universal genetic ‘programme’ underwriting literary apprehension as some reductive modes of neo-Darwinian have been inclined to argue.²⁰ We return then to those varied ‘meanings’ of the gene that Matt Ridley has codified in *Nature Via Nurture*. McEwan’s fiction playfully mobilises their varied meanings: the gene as ancestral archive which condemns Baxter to a terrible fate, but also the gene as switch and receptor which precisely generates culture in its profoundly intransitive modes. McEwan’s fiction, in presenting these different meanings, draws upon historically constituted traditions of discourse. Baxter is made from the naturalist tradition of European fiction, a character *determined* by heredity, a descendant of the fiction of Gissing and Zola. But he is also touched by those influential discourses of culture and aesthetics that have presented themselves as the antithesis of scientific determinism. In one sense this demonstrates a key claim of this article: that, from a literary perspective, there is nothing particularly special about the gene because it constitutes the most recent episode in a long and inconclusive story about the nature of heredity, the stories that we have inherited about the relations between naturalistic and social inheritance. At the same time, there is of course something wonderfully inventive and distinctive about the particular workings of McEwan’s fictive exploration of genetics: it does not provide us with unshakeable ground from which to judge the respective claims of the transitive and intransitive domains, in fact it blurs the boundaries between the two. Consequently we have to make meanings out of the contingencies explored by narrative practice. Perhaps this is the point: while Caygill has identified a metaphysical ‘culture of the gene’ which does indeed exert a powerful and at times ideologically constraining effect in the popular understanding of science, literature as an effect, as a practice exercised by a masterful practitioner such as McEwan, leads us to awkward and conflicting meanings, to be sure: but critical openings, and the antithesis of reductionism.

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² M. Ridley. 2003. *Nature Via Nurture: Genes, Experience and What Makes Us Human*. London. Fourth Estate. 24-5. I am grateful to the two referees whose comments helped me to re-shape aspects of this argument.

³ For an account see A. Desmond. 1998. *Huxley: From Devil's Disciple to Evolution's High Priest*. Harmondsworth. Penguin. 278-9.

⁴ For a recent account of the importance of Bhaskar's work, and the present state of the critical realist tradition, see, K. Dean, J. Dean & A. Norrie, eds. *new formations: critical realism today* 2005; 56.

⁵ Ridley, op. cit. note 2, chapter 9, esp. p.247.

⁶ R. Dawkins. 1989. *The Selfish Gene*. 2nd edition. Oxford. Oxford University Press. p.22

⁷ N. Dillon. Positions Please: On Gene Autonomy. *Nature*. 2003; 425: 457.

⁸ Some of the material I use in my reading of *Saturday* will also appear in a much fuller consideration of McEwan as a novelist who explores scientific ideas, and contemporary scientific culture. See D. Amigoni. 'The Luxury of Storytelling: science, literature and cultural contest in Ian McEwan's narrative practice'. S. Ruston (ed.) *Literature and Science: Essays for the English Association* 2008. Forthcoming.

⁹ Ridley, op cit. note 2, p.24.

¹⁰ See for instance R.M. Young. 1985. *Darwin's Metaphor. Nature's Place in Victorian Culture*. Cambridge. Cambridge University Press.

¹¹ A. Desmond & J. Moore. 1990. *Darwin*. Harmondsworth. Penguin, pp.531-2.

¹² B. Kidd. 1894. *Social Evolution* London. Macmillan, pp.36-7, 192.

¹³ <http://www.genomenetwork.org/resources/timeline/> (consulted 14.12.07)

¹⁴ Dawkins, op. cit. note 6, p.11.

¹⁵ H. Rose. Eugenics and Genetics: the conjoint twins? *new formations: eugenics old and new* 2007; 60: 13-26, p.15

¹⁶ H. Caygill. 1996. Drafts For a Metaphysics of the Gene. *Tekhnema: A Touch of Memory*. 3. <http://tekhnama.free.fr/3Caygill.htm> (consulted 18.06.07)

¹⁷ I recognise that positivism is a complex term, and that it is often loosely used by literary and cultural historians. In my account here I implicitly draw on Auguste Comte's nineteenth-century teleological conception of positivism as an integrated approach to both scientific knowledge and social organisation which had moved beyond 'metaphysics' as an evolutionary stage in human development.

¹⁸ C. Norris. 1997. *New Idols of the Cave: on the limits of anti-realism*. Manchester. Manchester University Press, p.5.

¹⁹ I. McEwan. 2005. *Saturday*. London. Jonathan Cape. All further page references to this work will be given in parentheses in the main text.

²⁰ See for instance D.P. Barash & N.R. Barash. 2005. *Madame Bovary's Ovaries*. New York. Delacorte Press.