

## Introduction

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Focussing upon the interactions between science and literature/ film in the modern era, the articles presented in this volume engage with a diverse range of cultural contexts and artistic genres, including the Victorian periodical, the twentieth-century novel, postcolonial film and literature, and contemporary fiction informed by the natural sciences. Over the course of the late nineteenth, twentieth, and early twenty-first centuries, the terms ‘science’ and ‘literature’ have come to denote particular media, praxes and worldviews, as analysed in this issue of the *Working Papers in the Humanities*. Specific connotations of these terms and a potential conflict between them do seem to crystallise in this post-1850 period, however such a situation does not emerge *ex nihilo*. The question of the relationship between empiricism and nature on the one hand, and imagination, culture and language on the other is one that dates back to antiquity. Its evolution over the subsequent millennia is a complex and fascinating story and in this introduction we offer a brief historical overview that, it is hoped, will provide some important background to the pieces that follow. We then provide a short introduction to the diverse and enlightening articles by Caroline Verdier, William Tattersdill, Rachel Crossland and Sura Qadiri that make up the remainder of this collection.

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Science fiction is one of the central preoccupations of the present volume, and the question of where it begins is hotly contested amongst critics of the genre, with opinions ranging from those who see it as a product of nineteenth- or even twentieth-century culture, to those who view its emergence as co-terminous with the dawn of literature itself (perhaps with the *Epic of Gilgamesh*, c. 2000 BC). As Adam Roberts notes, taking a position on the issue of chronology means taking a stance on the very issue of what one considers science fiction to be (a thorny issue which William Tattersdill engages with later in this volume):

Stress the relative youth of the mode, and you are arguing that SF is a specific artistic response to a very particular set of historical and cultural phenomena: for instance, that SF could only have arisen in a culture experiencing the Industrial Revolution [...] Stress the antiquity of SF, and you are arguing instead that SF is a common factor across a wide range of different histories and cultures, that it speaks to something more durable, perhaps something fundamental in the human make-up, some human desire to imagine worlds other than the one we actually inhabit.<sup>1</sup>

Aside from *Gilgamesh*, in which the hero's fantastical encounters with the unknown Other might be read as a form of proto-science fiction, other contenders for the first science-fictional text include Homer's *Iliad* (c. 8<sup>th</sup> century B.C.), whose eighteenth book features the first known literary example of automata,<sup>2</sup> or the writings of the Syrian Lucian (2<sup>nd</sup> century B.C.), which include several substantial accounts of space travel.<sup>3</sup>

Alongside the question of how science, technology, and cosmic exploration find themselves represented in literature, however, we must look at the way in which ancient science was presented in poetic form. This is particularly striking in the case of the Pre-Socratics (6<sup>th</sup> century B.C.), many of whose cosmological conjectures, for example, were presented using the same dactylic hexameters that were Homer's chosen vehicle for his epic poetry.<sup>4</sup> The potential truth-status of poetry is implied through the use of such forms, but that status did not go uncontested for long. The tenth book of Plato's *Republic* (598d-608b)<sup>5</sup> famously discusses poetry as an imitation and corruption of the truth, concluding with Socrates' declaration that poets would be expelled from the ideal state (608b).<sup>6</sup> This is not to suggest, however, that Plato rejected poetry, rhetoric and imagination in favour of some kind of modern scientific empiricism. In fact, quite the reverse.

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<sup>1</sup> Adam Roberts, *Science Fiction* (London and New York: Routledge, 2000), pp. 47-48.

<sup>2</sup> Homer, *Iliad*, ed. and trans. by A.T. Murray, rev. by William F. Wyatt, Loeb Classical Library 170-171, 2<sup>nd</sup> edn, 2 vols (Cambridge, MA: Harvard University Press, 1999), vol. II, Book XVIII, lines 372-379.

<sup>3</sup> See Lucian, *A True Story*, in *Lucian in Eight Volumes*, ed. and trans. by A.M. Harmon, K. Kilburn and M.D. Macleod, Loeb Classical Library (Cambridge, MA: Harvard University Press, 1913-1967), I (1913, repr. 1961), pp. 248-357 (pp. 258-285); Lucian, *Icaromennipus, or The Sky Man*, in *Lucian in Eight Volumes*, II, 267-323. For Jacques Sadoul, *Icaromennipus* was the 'premier texte indiscutable' in the history of science fiction (Jacques Sadoul, *Histoire de la science-fiction moderne [1911-1975]*, 2 vols [Paris: Albin Michel, 1973], I, 13).

<sup>4</sup> For a good introduction to the Pre-Socratics, see Edward Hussey, *The Presocratics* (London: Duckworth, 1972) (on the Presocratics' use of verse and prose see especially pp. 78-81).

<sup>5</sup> Plato, *Republic*, ed. and trans. by Paul Shorey, Loeb Classical Library, 2 vols (Cambridge, MA: Harvard University Press, 1930-1935, repr. 1963), II, 432-469.

<sup>6</sup> Plato, *Republic*, II, 464-465.

Firstly, Plato was not opposed to poetry *per se*, but rather to a certain kind of poetry, as embodied by Homer, which he saw as distorting reality. For Plato, the poet *might* attain truth if, as Gerald Else writes ‘he is willing to go to school with Plato and learn philosophy’: from Plato’s perspective, good poetry had the potential to facilitate a deep communication between souls.<sup>7</sup> Moreover, Plato’s philosophy was rarely *natural* philosophy and was profoundly characterised by its insistence upon inner reflection and upon sensible forms’ inability to disclose the universe’s full truths. The *Timaeus*, which marks Plato’s most significant entry into the natural philosophical realm, is the exception which proves this rule. For in the *Timaeus*, despite its apparently natural philosophical preoccupation with the creation and nature of the universe, the opposition between superficial appearances and a more profound world soul lies at the very heart of its cosmology.<sup>8</sup> It is intriguing to note that the *Timaeus* fuses the myth of Atlantis (related to the importance of writing history) with natural philosophy, thus emphasising the importance of the text, and of narrative, to the study of the universe. Thus, whilst Plato’s rejection of the poets is firm but not absolute, his understanding of nature is at once proto-scientific and philosophico-poetic.

Aristotle’s relative empiricism in natural philosophical matters and his rigid, formalist conception of poetry provide an obvious contrast to Plato’s emphasis upon the invisible world soul, and the communication of truth between souls which Plato thought an ideal poetry might achieve.<sup>9</sup> Yet it is not Aristotle, but Plato’s teacher and mouthpiece Socrates who comes in for what is perhaps one of the earliest literary attacks upon the proto-scientist’s reductive, rationalist agenda: Aristophanes’ *Clouds* (late 5<sup>th</sup> century B.C.) ridicules Socrates (one of the play’s chief protagonists), and portrays him as overly materialistic.<sup>10</sup> Socrates’ *Apology* (as reconstructed by Plato) indicates that his depiction in this play was one of the factors which shaped his public image in the period leading up to his execution.<sup>11</sup> Similar

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<sup>7</sup> Gerald F. Else, *Plato and Aristotle on Poetry*, ed. by Peter Burian (Chapel Hill and London: University of North Carolina Press, 1987), p. 46 and p. 196.

<sup>8</sup> For Plato’s most concise statement of this doctrine, see Plato, *Timaeus*, in Plato, *Timaeus, Critias, Cleitophon, Menexenus, Epistles*, ed. and trans. by R. G. Bury, Loeb Classical Library (Cambridge, MA: Harvard University Press, 1929, repr. 1966), pp. 1-253 (pp. 72-73 [36D-37A]).

<sup>9</sup> On these aspects of Aristotle, see Else, 67-203; also Raymond Barfield, *The Ancient Quarrel Between Philosophy and Poetry* (Cambridge: Cambridge University Press, 2011), pp. 32-51.

<sup>10</sup> Aristophanes, *Clouds*, in Aristophanes, *Clouds, Wasps, Peace*, ed. and trans. by Jeffrey Henderson, Loeb Classical Library 488 (Cambridge, MA: Harvard University Press, 1998), pp. 1-211.

<sup>11</sup> Plato, *The Apology*, in Plato, *Euthyphro, Apology, Crito, Phaedo, Phaedrus*, ed. and trans. by Harold North Fowler, Loeb Classical Library (Cambridge, MA: Harvard University Press, 1914, repr. 1966), pp. 68-145 (p. 73).

accusations of science's materialism and soulless demystification of the universe recur throughout the centuries.

It is in Roman times that we see the emergence of the classical divisions of knowledge that would become so influential in the medieval curricula of learning. Though no longer extant, Varro's *Disciplinarium* (1<sup>st</sup> century B.C.) divided knowledge into nine categories: Grammar, Rhetoric, Logic, Geometry, Arithmetic, Music, Astronomy, Medicine and Architecture.<sup>12</sup> It was under the influence of Varro that Martianus Capella would write his *De Nuptiis Philologiae et Mercurii* (c. 410-c. 429 A.D.), in which he dropped Medicine and Architecture from the curriculum on the basis of their mundane nature. Martianus's text contained two implicit groupings — Grammar, Rhetoric and Logic on the one hand, and Arithmetic, Geometry, Music and Astronomy on the other, which together comprised the seven liberal arts. This text was by the far the most important work on divisions of learning for the Middle Ages (Christianised by later writers, most notably Alcuin), and its importance endured undiminished until the final centuries of the medieval period. The division between the two groupings referred to above would become formalised following Boethius' dubbing of the second group as the *quadrivium* in the 6<sup>th</sup> century A.D.. Isidore of Seville's prolifically-distributed *Etymologiae* further reinforced the division in the 7<sup>th</sup> century, dividing its first three books into *Rhetorica*; *Grammatica et Dialectica*; and *Quattuor disciplinis mathematicis* respectively. Finally, Rhetoric, Grammar and Logic came to acquire their own group-label in the Carolingian era, in which they became known as the *trivium*. Whilst early medieval erudition typically emphasised the unity of all learning, the division between the *trivium* (based on the verbal disciplines) and the *quadrivium* (based on the numerical disciplines) can clearly be seen to foreshadow the division between literature and natural science that is typically considered to be the product of the modern era. Moreover, hints of the later tensions between these fields can certainly be detected in other early medieval writers, such as Johannes Scotus Eriugena (9<sup>th</sup> century A.D.). In the *Periphyseon*, Eriugena claims that the arts of grammar and rhetoric are not based on nature like the other arts, a point which he reiterates in his commentary on Priscian.<sup>13</sup>

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<sup>12</sup> On Varro and the other Latin classifiers discussed in this paragraph, see George Ovitt, *The Restoration of Perfection: Labor and Technology in Medieval Culture* (New Brunswick and London: Rutgers University Press, 1987), pp. 111-117.

<sup>13</sup> See Anneli Luhtala, 'On Early Medieval Divisions of Knowledge', in *Carolingian Scholarship and Martianus Cappella: Ninth-Century Commentary Traditions on 'De Nuptiis' in Context*, ed. by Mariken Teuwen and Sinead O'Sullivan (Turnhout: Brepols, 2011), pp. 75-98 (p.94).

The eleventh and twelfth centuries mark the most fundamental change in education's institutional structures since the end of the classical period. Learning gradually moved, via the transitional institution of the Cathedral School, out of the monastery and into more secular learning environments, ultimately culminating in the emergence of the first European universities at Paris and Oxford c. 1200. As well as these universities, schools dedicated to particular learned but vocationally-oriented practices also began to emerge (in particular Bologna for law, and Salerno and Montpellier for medicine). This renewed intellectual vigour was stimulated to a very great extent by new Latin translations of Greco-Arabic scientific texts moving north from Italy and Spain. The twelfth-century scientific renaissance was not, however, without its opponents. Gerbert of Cremona's travels to Spain to learn astronomy and mathematics resulted in proto-Faustian legends about his supposed engagement with diabolical magic<sup>14</sup> whilst John of Salisbury's championing of the importance of the *trivium*, and of logic in particular, did so at the expense of other fashionable disciplines, including medicine:

Alii autem suum in philosophia intuentes defectum, Salernum uel ad Montem Pessulanum profecti, facti sunt clientuli medicorum [...] Fallacibus enim referti experimentis in breui redeunt, sedulo exercentes quod didicerunt. Hipocratem ostentant aut Galienum, uerba proferunt inaudita, ad omnia suos loquuntur afforismos [...] <sup>15</sup>

Others, becoming cognizant of their inadequate grounding in philosophy, have departed to Salerno or Montpellier, where they have become medical students [...] Stocked with fallacious empirical rules they return after a brief interval to practice with sedulity what they have learned. Ostentatiously they quote Hippocrates and Galen, pronounce mysterious words, and have aphorisms ready to apply to all cases [...] <sup>16</sup>

The twelfth century also marks the emergence of literature in many of the vernaculars of Western Europe, in particular in Occitan, French and German. Some of these works clearly conceive of an ideal union between the quadrivial arts and the literary enterprise (c.f. Erec's

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<sup>14</sup> See Edward Peters, *The Magician, the Witch and the Law* (Philadelphia: University of Pennsylvania Press, 1978), p. 28.

<sup>15</sup> John of Salisbury, *Metalogicon*, ed. by J.B. Hall and K.S.B. Keats-Rohan, Corpus Christianorum (Continuatio Mediaevalis) 98 (Turnhout: Brepols, 1991), p. 18.

<sup>16</sup> Translation from: John of Salisbury, *The Metalogicon of John of Salisbury: A Twelfth-Century Defense of the Verbal and Logical Arts of the Trivium*, trans. by Daniel D. McGarry (Berkeley and Los Angeles: University of California Press, 1955), pp. 17-18.

donning of his coronation robe, adorned with representations of these disciplines in Chrétien de Troyes's *Erec et Enide*).<sup>17</sup> Others, however, portray an unequivocal hostility to the rise of medicine and astrology (Chrétien's *Cligès*, for example, depicts three physicians from Salerno brutally torturing the romance's heroine, whilst Bérout's *Tristan* presents the reader with a malicious astrologer-dwarf, Frocin, who schemes to bring about the downfall of Tristan and Iseut).<sup>18</sup>

The great literary monuments of the later Middle Ages also gave the natural sciences a mixed reception: Chaucer — who, we should remember, was himself the author of a *Treatise on the Astrolabe* — presents his astronomically-informed 'Doctour of Physik' in decisively equivocal terms. On the one hand, we are told that 'In al this world ne was ther noon hym lik, | To speke of phisik and surgerye, | For he was grounded in astronomye'.<sup>19</sup> On the other, he is avaricious and religiously suspect: 'His studie was but litel on the Bible', whilst 'he lovede gold in special'.<sup>20</sup> Meanwhile, the influence of science on Dante's writings was particularly strong.<sup>21</sup> Though the problem of incorporating specialist and technical concepts into poetry was already an important one for the Italian twelfth century, as Zygmunt Baránski argues, Dante's attempt to forge a natural philosophical poetry (in which scientific doctrines were fully incorporated into his literary enterprise) still remained relatively novel in the late thirteenth century.<sup>22</sup> However, as Baránski also notes, Dante was not chiefly interested in philosophy (natural or otherwise) for its own sake, but insofar as it illuminated the relationship between the mortal and divine spheres.<sup>23</sup> Indeed, Dante's treatment of his

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<sup>17</sup> Chrétien de Troyes, *Erec et Enide*, ed. and trans. by Jean-Marie Fritz, in Chrétien de Troyes, *Romans suivis des Chansons avec, en appendice, Philomena*, ed. by Michel Zink (Paris: Librairie Générale Française, 1994), pp. 55-283 (lines 6726-6785).

<sup>18</sup> Chrétien de Troyes, *Cligès*, ed. and trans. by Charles Méla and Olivier Collet, in Chrétien de Troyes, *Romans suivis des Chansons avec, en appendice, Philomena*, ed. by Michel Zink (Paris: Librairie Générale Française, 1994), pp. 285-494 (lines 5882-5934); Bérout, *Le Roman de Tristan*, ed. and trans. by Philippe Walter, in *Tristan et Iseut: les poèmes français, la saga norroise*, ed. by Daniel Lacroix and Philippe Walter, Livre de Poche 4521 (Paris: Librairie Générale Française, 1989), pp. 23-227 (lines 320-334, 635-843, 1306-1350).

<sup>19</sup> Geoffrey Chaucer, *Canterbury Tales*, ed. by A.C. Cawley, Everyman Library 74, 2<sup>nd</sup> edn (New York: Random House, 1992), p. 13 (General Prologue, lines 412-414).

<sup>20</sup> Chaucer, *Canterbury Tales*, p. 14 (General Prologue, lines 438 and 444).

<sup>21</sup> Giorgio Stabile, *Dante e la filosofia della natura: Percezioni, linguaggi, cosmologie* (Florence: Sismel, 2007) includes analysis of the role of many scientific fields (including optics, astronomy and cosmology) in Dante's work. For an introduction to more specific elements, see Romano Pasi's brief *Dante, i medici e la medicina* (Ravenna: Essegi, 1996) and (on astronomy/ cosmology) Alison Cornish, *Reading Dante's Stars* (London and New Haven: Yale University Press, 2000).

<sup>22</sup> Zygmunt G. Baránski, "Per similitudine di abito scientifico": Dante, Calvacanti and the Sources of Medieval 'Philosophical' Poetry', in *Science and Literature in Italian Culture from Dante to Calvino: A Festschrift for Patrick Boyde*, ed. by Pierpaolo Antonello and Simon A. Gilson (Oxford: MHRA and Maney, 2004), pp. 14-52 (pp. 17-18).

<sup>23</sup> Baránski, 32.

encyclopaedist-teacher, Brunetto Latini, is notoriously ambivalent: he places him in the Seventh Circle of the Inferno along with the sodomites, yet his treatment of him in other respects is relatively positive (Dante wishes that Brunetto was not 'de l'umana natura posto in bando' ['exiled [...] from human nature'] and recalls 'la cara e buona imagine paterna | di voi quando [...] m'insegnavate come l'uom s'eterna' ['the dear, kind, paternal image of you, when [...] you taught me how man makes himself immortal']).<sup>24</sup>

As is well known, the humanism of the fifteenth and early sixteenth centuries led to the Latin translation of a vast corpus of classical Greek texts which were previously unavailable to scholars in the West of Europe, including not only literary and philosophical works, but also those of a more mathematical or scientific nature.<sup>25</sup> The 1440 invention of the printing press was also a crucial moment in the dissemination of all forms of *scienza*. It was the printed word that would allow literature to find a worldwide audience, and provide for a corresponding increase in access to natural philosophy. This was by no means an immediate effect: it would be centuries until mass literacy was common in Europe. Nonetheless, the ability for knowledge to circulate outside privileged academic communities was the first step in making this knowledge accessible to the general public; a process that would continue with the first printed publications in the vernacular, including Descartes' *Discours de la méthode* (1637),<sup>26</sup> and culminate in the modern trend for popular science. The form and medium of these vehicles of dissemination were of greater importance than ever before, reminding us of the extent to which language is essential to scientific communication (for the practical discoveries of science can only exist to its audience, and particularly to the lay reader, through representation). Thus, argues Charlotte Sleight, metaphor is often at the heart of scientific communication, especially when it is aimed at those outside the scientific community. Richard Dawkins' *Selfish Gene*<sup>27</sup> is an example of the application of a recognisable human experience (selfishness) to scientific fact. Science has to persuade, and language is the art of persuasion: scientists must therefore be masters of language, just as much as their literary counterparts.<sup>28</sup>

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<sup>24</sup> Dante Alighieri, *Inferno*, <<http://www.danteonline.it/italiano/opere.asp?idope=1&idlang=OR>> [accessed 24 January 2013], Canto XV, lines 80-85. Our translation.

<sup>25</sup> On which see William Caferro, *Contesting the Renaissance* (Oxford and Malden, MA: Wiley-Blackwell, 2011), pp. 195-199.

<sup>26</sup> René Descartes, *Discours de la méthode* (Paris: Flammarion, 2000).

<sup>27</sup> Richard Dawkins, *The Selfish Gene* (Oxford: OUP, 1976).

<sup>28</sup> Charlotte Sleight, *Literature and Science* (London: Palgrave Macmillan, 2011), p.5.

Meanwhile, the sixteenth century marked the beginning of a separation between the divine, the cosmological and the human that, as Kathryn Banks has argued, may have been influenced not only by scientific developments, but also by imagistic poetry.<sup>29</sup> It is easy to see how this more fragmented conception of the universe might have contributed towards the process by which academic disciplines became increasingly separate. If microcosmos and macrocosmos no longer fully reflected one another, this opened the way for the conception of theology, natural science and rhetorical/ humanistic studies as isolable fields of enquiry. Indeed, it was in the seventeenth century that philosophy and natural science first began to be distinguished from one another. This was not an immediate clean break: scientists largely still held religious convictions, and thus the search for truth by observation was often still bound up in the search for Truth from the mystic realms.<sup>30</sup> Marlowe's *Dr Faustus*, written in 1604, portrayed a search for knowledge that traversed the earthly and heavenly kingdoms, its protagonist's thirst for scientific truth bound up with his foolhardy challenge to an all-powerful God.<sup>31</sup> Galileo's 1633 trial over his theory of heliocentrism is an indication of the threat science was perceived as posing to the religious establishment in the real world, and the on-going power of that establishment to impose limits on scientific enterprise.

The role of written texts remained important in this climate, as the supporters of the 'Ancients' venerated them both as safer sources of truth and knowledge and as literary models. From mid-century, however, there was a clear movement towards an appreciation of the merits of empirically-acquired knowledge, which culminated in France in the Quarrel of the Ancients and the Moderns.<sup>32</sup> In Britain, where the quarrel had been taken less seriously, 1660 nonetheless saw the founding of the Royal Society of London for the Improving of Natural Knowledge, created by Christopher Wren and his colleagues as 'a Colledge for the Promoting of Physico-Mathematicall Experimentall Learning'. Five years later, the first peer-reviewed scientific journal was published: the *Philosophical Transactions of the Royal Society*. Far from the foolhardy overreaching of a Faustian individual filled with hubris, scientific enquiry was transformed into an officially-sanctioned collective endeavour. No longer did authority rest with the named 'I'; instead it was the anonymous collectivity of the

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<sup>29</sup> Kathryn Banks, *Cosmos and Image in the Renaissance: French Love Lyric and Natural-Philosophical Poetry* (London: MHRA and Maney, 2008), pp.189-191.

<sup>30</sup> Stephen J. Gould, *The Hedgehog, the Fox, and the Magister's Pox* (Cambridge, MA: Harvard University Press, 2003), p. 29.

<sup>31</sup> Christopher Marlowe, *Dr Faustus*, ed. by Edwin Morgan (Edinburgh: Canongate, 1999).

<sup>32</sup> Joan DeJean, *Ancients against Moderns: Culture Wars and the Making of a Fin de Siecle* (Chicago: University Of Chicago Press, 1997).



scientific body that guaranteed the veracity of its claims. And this shift happened just as the opposite movement was beginning to take place in literature, with an increasing focus upon the glory of individual authorship (a trend that would eventually culminate in the Romantic cult of the author). As literature cemented its subjectivity, objectivity became the tool that science used to emphasise its authority.

The eighteenth century saw the explosion of the quest to know and to classify through experience (a hallmark of scientific activity which continues to this day, and which, later in this volume, Sura Qadiri analyses in Amin Maalouf's *Le Premier siècle après Béatrice*). The French *philosophes* rejected a reliance on wisdom contained in ancient texts in favour of their own direct knowledge of the world. In this enterprise, science and literature were still tightly bound up with one another, serving a single purpose as writers attempted to make sense of humanity's place in the world without having recourse to divine explanations. Voltaire the author and dramatist engaged with Newton's *Principia mathematica* in his *Lettres philosophiques*; Diderot moved between anatomy and philosophy in his examinations of materialist theories in *Le Rêve de d'Alembert*; Condillac addressed how the senses filtered human beings' experience of the world, whilst Swift, Montesquieu, Rousseau and others interrogated the origins and development of their own societies through anthropologically-oriented considerations of alternative worlds.<sup>33</sup> Many of these texts represented a different form of scientific enquiry, which tested hypotheses through their realisation in fictional environments. Rousseau's *Discours sur l'inégalité*, for example, is a thought experiment that harks back to a mythical state of natural man, not in order to fight for a return to this state (which in any case did not exist), but to allow for an anthropological investigation of modern society.

The greatest publication of this period, which best typifies the on-going symbiosis of science and literature, is the *Encyclopédie*, published between 1751 and 1771 by Diderot, D'Alembert and dozens of contributors. The tree of knowledge, given at the start of the first volume, divides all entries into Memory / History, Reason / Philosophy and Imagination / Poetry. That all of these elements are included in this *Dictionnaire raisonné* in itself

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<sup>33</sup> Voltaire, *Lettres philosophiques* [1734], ed. by Gustave Lanson (Paris, Marcel Didier, 1964); Denis Diderot, *Le Rêve de d'Alembert* [authored 1769, published 1830] (Paris: Flammarion, 2002); Étienne Bonnot de Condillac, *Traité de sensations* [1754] (Paris: Fayard, 1984); Jonathan Swift, *Gulliver's Travels* [1726] (London: OUP, 1951); Montesquieu *Lettres persanes* [1721] (Geneva: Droz, 1954); Jean-Jacques Rousseau, *Discours sur l'inégalité* [1754] (Paris: Garnier-Flammarion, 1992).

demonstrates how its creators saw them as occupying equally important places in the encyclopaedic enterprise, whilst the system of references (*renvoies*) linking the articles is evidence of their interconnectedness. The article *Lettres* exposes the extent to which science and literature, though now recognised as separate entities in the public consciousness, are still very much necessary to one another. ‘Les principes des sciences seraient trop rebutants, si les lettres ne leur prêtaient des charmes [‘scientific principles would seem too unpleasant without letters to lend them their charm’], but at the same time science is necessary to literature to provide content and to bring it to life, for otherwise: ‘[les Lettres] ne feraient que bégayer dans une nation où les connaissances sublimes n’auraient aucun accès’ [‘[literature] would merely stutter uselessly in a nation to which sublime knowledge would have no access’].<sup>34</sup>

Over the course of the nineteenth century, eclectic journal culture followed in the footsteps of the encyclopaedists by ensuring the coexistence of different types of knowledge within the same pages, which were destined for mass public consumption. The publications that William Tattersdill analyses in his article in this volume appeared in one such periodical (*The Idler*). However, as well as this intermingling of popular science and literature, the nineteenth century also bore witness to the increasing professionalisation of science. In 1833, Coleridge prompted the Cambridge fellow William Whewell to coin the term ‘scientist’ as equivalent to the ‘artist’, denoting someone who took science seriously. It was perhaps this clearer division that provoked the first modern public debate related to the place of science and literature in academic institutions; a debate that returned to the very questions Martianus Capella had grappled with in the 5<sup>th</sup> century AD. In 1880, the same year that Mary Shelley published *Frankenstein*, Thomas Huxley spoke about the need to differentiate between scientific and literary curricula. He fought to demonstrate the important role a scientific education could play, as opposed to a syllabus based largely on literature, and particularly the literature of Greek and Roman antiquity.<sup>35</sup> In opposition, Matthew Arnold argued that Huxley’s definition of literature extended only to *belles lettres*, when in fact:

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<sup>34</sup> Jaucourt, Art. ‘Lettres’ in Diderot, d’Alembert et. al., *Dictionnaire raisonné des arts et des sciences* (Geneva, Paris, Neufchâtel: Chez Briasson, 1754-72) vol. IX, pp.405-33. Our translation.

<sup>35</sup> Thomas Huxley, ‘Science and Culture’, in *The Major Prose of Thomas Henry Huxley*, ed. by Alan P. Barr (Athens: University of Georgia Press, 1997), pp. 224-8.

Literature is a large word; it may mean everything written with letters or printed in a book. Euclid's *Elements* and Newton's *Principia* are thus literature. All knowledge that reaches us through books is literature.<sup>36</sup>

Huxley's viewpoint makes a striking contrast to the twenty-first-century debate, in which it is literature, and not science, that suffers from a lack of interest, and must be bolstered.

The clash between Arnold and Huxley would not be the last time that tensions between science and literature took centre-stage in Britain's intellectual life. Their confrontation was the precursor to the more famous debate between C.P. Snow and F.R. Leavis in the 1950s and 60s, in which Snow made his pronouncement about the existence of 'Two Cultures'.<sup>37</sup> Nonetheless, these controversies did not prevent the continued production of texts that trod the fine line between the two disciplines: the trained biologist H.G. Wells wrote a popularised world history as well as his infamous science fiction *War of the Worlds*,<sup>38</sup> whilst George Orwell and Aldous Huxley (who would later write theoretical texts on the links between science and literature) projected scientific and technological breakthroughs forward into a dystopian (and disturbingly prescient) future.<sup>39</sup> If the quasi-scientific texts of the eighteenth century had introduced scientific thought into philosophical considerations of man's origins and his place in the world, these texts instead warned of a world in which science had taken over, and its philosophical implications were no longer being considered.

Developments in this debate since the late twentieth century have largely been in the application of scientific knowledge to literary study, rather than literary creation. In 1983, Gillian Beer influentially argued for how Darwinism had inspired a revolution in plot-construction, creating a narrative of the struggle for life that now underpins our culture, and encouraging a search for origins in a variety of fields.<sup>40</sup> The increasing interest in applying cognitive psychology, neuroscience, linguistics, evolutionary biology, artificial intelligence, and the philosophy of mind to literary criticism was recognised in 1998 with the creation of

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<sup>36</sup> Matthew Arnold, *Literature and Science*, Rede Lecture, Cambridge, 1882 in *The Nineteenth Century* (August 1882).

<sup>37</sup> C.P. Snow, *The Two Cultures* (London: CUP, 1959).

<sup>38</sup> H.G. Wells, *The Outline of History* (London: Newnes, 1919) and *The War of the Worlds* (London: Heinemann, 1898).

<sup>39</sup> George Orwell, *1984* (London: Secker & Warburg, 1949) and Aldous Huxley, *Brave New World* (London: Chatto, 1932).

<sup>40</sup> Gillian Beer, *Darwin's Plots*, 3rd edn (Cambridge: CUP, 2009).

the MLA's Cognitive Science and Literature discussion group, and this strand of research continues to grow.<sup>41</sup> Perhaps the most significant new development in recent decades, however, is the digital humanities: from the digitising of texts,<sup>42</sup> to the creation of searchable databases, to the application of tools such as data mining and statistical analysis to reveal trends and even uncover hidden authors.<sup>43</sup> Literary scholars are increasingly required to engage with these technologies, and consider the contribution they can make to traditional critical analysis. A particularly problematic issue is the extent to which literature can be treated as data, and described in quantitative terms.<sup>44</sup>

Whilst the question of literature-as-data is currently controversial, an earlier challenge to literary studies' appropriation of scientific discourse was made in 1997 by the physicist Alain Sokal, whose *Impostures intellectuelles* condemned postmodernists' abusive employment of terms taken from maths and physics.<sup>45</sup> His damning analysis of what he viewed as the false erudition of figures including Derrida and Deleuze was not all that different to the assessment made over a century early by Henri Bergson in his *Essai sur les données immédiates de la conscience*, which includes pseudo-mathematical, parodic explanations of man's experience of the world.<sup>46</sup> Whilst literary techniques have long been appropriated to assist in the communication of science, it seems that the precision of scientific terminology prevents its easy assimilation into literary explanations of the world.

And yet this fractious relationship between the two elements has also served as a stimulus for literary creation. Rachel Crossland's article in this volume explores the richly provocative

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<sup>41</sup> Cf. the Balzan project on 'Literature as an Object of Knowledge' currently being undertaken by Terence Cave and a team of researchers from Oxford: <<http://www.sjc.ox.ac.uk/3122/The-Balzan-Project.html>> [accessed 11 January 2013].

<sup>42</sup> Cf. the ARTFL project (American and French Research of the Treasury of the French Language, <<http://artfl-project.uchicago.edu/>>, inaugurated in 1982 [accessed 11 January 2013]) which provides its members with access to North America's largest collection of digitized French resources, and EEBO (Early English Books Online, <<http://eebo.chadwyck.com/home>>, inaugurated in 1999 [accessed 11 January 2013]) which contains more than 125,000 titles published between 1475 and 1700.

<sup>43</sup> Author attribution had begun in the nineteenth century with Mendenhall's work on the plays of Shakespeare (see C. Williams, 'Mendenhall's Studies of Word-Length Distribution in the Works of Shakespeare and Bacon' in *Biometrika*, 62.1 [1975], 207–212), whilst Yule and Zipf applied statistical methods in the first half of the twentieth century (George Yule, *The Statistical Study of Literary Vocabulary* (Cambridge: CUP, 1944). It was not until the 1990s, however, that automated methods began to be applied.

<sup>44</sup> See Franco Moretti, *Graphs, Maps, Trees: Abstract Models For A Literary History* (London: Verso, 2005) and Charles Cooney, Glenn Roe, and Mark Olsen, 'The Notion of the Textbase: Design and Use of Textbases in the Humanities', in *Literary Studies in the Digital Age: An Evolving Anthology*, ed. by Kenneth Price and Ray Siemens, Modern Language Association (forthcoming).

<sup>45</sup> Alain Sokal, *Impostures intellectuelles* (Paris: Jacob, 1997).

<sup>46</sup> Henri Bergson, *Essai sur les données immédiates de la conscience* (Paris: Alcan, 1889).

questions posed by D.H. Lawrence's complex engagement with both scientific and human relativity. Meanwhile, Caroline Verdier's analysis of Elisa Brune's novels investigates the Belgian novelist's attempts to disseminate scientific concepts in literary form. Furthermore, in academia, 'literature and science' as an entity has become a widespread object of study. John Brockman's *The Third Culture* encouraged a move beyond the traditional divide to consider how influential scientists were using language to communicate their ideas to the general public, and thus harked back to the *Encyclopédie's* attempt to embellish science through literary techniques.<sup>47</sup> A decade later, Stephen J. Gould argued for a confederation of the sciences and the humanities, encouraging a focus on their commonalities rather than their differences.<sup>48</sup> The British Society for Literature and Science was founded in 2005, two decades after its American counterpart, the Society for Literature, Science and the Arts. In the UK, Liverpool, Salford and Glamorgan Universities run research groups for Literature and Science, whilst international journals such as Johns Hopkins' *Configurations* provide a space for published discussion. It seems that Brockman's third culture is coming into being: a discipline in its own right.

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A knowledge of literary tropes and techniques provided early natural philosophers with a way to communicate their findings to one another and to the public.<sup>49</sup> But as science became professionalised, and distinguished itself from literature as a separate and coherent discourse, so it became less accessible to those outside this privileged circle. The human aspect of an individual author was lost behind faceless institutions, which provided authority, but removed the tools for direct communication. It is perhaps this shift that is to blame for the situation of crisis described by contemporary activists such as Ben Goldacre, who fight for the importance of normalising the scientific approach, and deplore the fact that, for example, the UK Parliament is made up largely of Humanities graduates.<sup>50</sup> The implication of this situation is that an understanding of people and societies lies on one side of the coin, and science on the other. Yet this ignores the self-evident truth that humanity and its place in the world sit at the very heart of scientific enterprise: there is little that is more human than the

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<sup>47</sup> John Brockman, *The Third Culture* (New York: Simon & Schuster, 1995).

<sup>48</sup> Stephen J Gould, *The Hedgehog, the Fox, and the Magister's Pox* (Cambridge, MA: Harvard University Press, 2003).

<sup>49</sup> *Literature and Science in the Nineteenth Century, an Anthology*, ed. by Laura Otis (Oxford: OUP, 2002), pp. xvii-xx.

<sup>50</sup> Ben Goldacre, *Bad Science* (London: Fourth Estate, 2009).

quest to define oneself in relation to one's surroundings. The sentiment that science should not be a rarefied world, understood by the learned few, is at the centre of the modern drive towards popular science, which uses language and literary techniques to re-assert its relevance to our lives, just as so many writers have done across the centuries. These books are not written by nameless institutions, but by individuals, whose own humanity is part of their writings' success as objects of communication. Science invites us to question, to consider, to understand; and so does literature. And when they are brought together, it is in the context of communication from one human to another that they function most effectively.

In Caroline Verdier's article on contemporary Belgian novelist Elisa Brune we see an analysis of precisely this sort of communication, as Brune strives to incorporate (astro)physical concepts and language into her fictional accounts of the scientific community. However, as Verdier suggests in her examination of *Petite révision du ciel* (1999) and *Les Jupiters chauds* (2002), Brune's success in providing insights into scientific ideas and practices through the medium of the novel is rather open to question. This in turn is linked to the question of Brune's intended/ implied/ actual readership, and whether or not these works are in fact being digested by the wider novel-reading public or are being appreciated mainly by those with a formal scientific training.

The problem of incorporating 'hard' science into the novelistic genre is also central to Rachel Crossland's analysis of the role of Einstein's relativity theories in D.H. Lawrence's fictions. Focussing upon *Fantasia of the Unconscious* (1922) and *Kangaroo* (1923), Crossland emphasises the importance which Einstein's theories had for Lawrence, who not only sought to include allusions to the ideas which they propose, but actively engaged with them in his consideration of the relationship between scientific relativity and human relationships. As Crossland shows, such considerations are closely connected to other very problematic questions, including relativity's status as an absolute principle: is relativity relative, and does the relativity of relativity paradoxically make it more absolute?

The questions concerning literary form which are generated by such examinations of the role of scientific concepts in fictional works resonate very strongly with the issues explored by William Tattersdill in his article on Victorian periodical culture. The content of the illustrated magazines that emerged in the 1890s was astoundingly diverse, with popular science sharing their pages with fictional pieces (and much else besides). Tattersdill examines two stories by

Israel Zangwill that appeared in one such magazine and questions both works' status in relation to science fiction. As Tattersdill argues, when generic labels such as 'science fiction' are used retrospectively, they tend to make inappropriately sharp distinctions between writings which in reality have a great deal in common. The fluid boundary between science-fictional and non-science-fictional texts is closely linked to the more general (and equally hazy) relationship between literature and science, as Tattersdill also emphasises.

Finally, Sura Qadiri's piece shows how two works in different genres and media can be read comparatively to throw light upon their joint explorations of science's relationship with colonialism. Through an analysis of Chris Marker's science-fiction film *La Jetée* (1962) and Amin Maalouf's postcolonial novel *Le Premier siècle après Béatrice* (1992), Qadiri argues that science is deeply implicated in the troubling of colonial and postcolonial identities. In Marker, scientists seek to control and experiment upon an individual whose confused identity troubles distinctions between coloniser and colonised, whilst in Maalouf the postcolonial scientist embodies the troubled status of the coloniser in a postcolonial world.

As Qadiri's piece shows, the relationship between literature/ film and science goes to the very heart of our comprehension of ourselves and of our relationship to otherness. It thus emphasises that an analysis of the interactions between literature and science not only casts light upon the status of these two fields, but also serves as a lens through which we are able to explore much broader political and ontological questions: the troubled relationship between literature and science is one which demands our urgent attention.

## 'De la science dans la fiction'<sup>1</sup>

### Elisa Brune's *Petite révision du ciel* and *Les Jupiters chauds*

Caroline Verdier

Belgian writer and journalist Elisa Brune (b.1966) is a versatile writer who has published in many genres (epistolary, documentary, biographic, scientific etc.) and, in most of her narratives, either adds a new twist to the genre in which she is writing, or combines several disciplines.<sup>2</sup> In the two novels under consideration in this article, she combines literary creativity and scientific knowledge with the aim of popularising science, as is clear from her statement that it is 'une motivation majeure que d'essayer de partager une passion qui est la mienne'.<sup>3</sup> She does so by centring her plots around the life of a man who becomes a scientist, and thus including elements of scientific discourse throughout the text. In *Petite révision du ciel* and its sequel *Les Jupiters chauds*, the main character Vincent turns his life around and goes from being employed by an insurance company to becoming an astrophysicist.<sup>4</sup> Although she acknowledges she is not the only one to do so, Elisa Brune is keen to mix science and literary writing, explaining that 'le romancier prend la liberté de [...] rassemble[r] dans un même espace narratif des disciplines que l'organisation académique sépare complètement'.<sup>5</sup> This article gives a brief overview of these two novels, examining how successfully science has been included in them and how effective both narratives are at popularising science.

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<sup>1</sup> Elisa Brune, 'De la science dans la fiction', *RDT Info*, March 2004, <<http://www.elisabrune.com/pdf/ScienceDansLaFiction.pdf>> [accessed 5 October 2012].

<sup>2</sup> For Elisa Brune's bibliography, see her website, <[www.elisabrune.com](http://www.elisabrune.com)> [accessed 15 September 2012].

<sup>3</sup> Carmelo Virone, 'Le ciel de César, d'Alexandre et d'Elisa', *Le Carnet et les Instants*, 125 (November 2002-January 2003), pp. 18-21 (p. 19).

<sup>4</sup> Elisa Brune, *Petite révision du ciel*, 2<sup>nd</sup> edn (Paris: J'ai Lu, 2000); *Les Jupiters chauds* (Paris: Belfond, 2002). These editions are used throughout this article, hereafter referred to as PRC and LJC respectively. Brune's other scientific novel, *Relations d'incertitude* (Paris: Ramsay, 2004) cannot unfortunately be discussed in this article for reasons of space.

<sup>5</sup> Brune, 'De la science dans la fiction', op. cit., p. 1. In addition to this desire to bridge the gap between the two disciplines, Brune also believes that there is necessarily a link between the scientists' personal lives and their discoveries. See Virone, op. cit., p. 20.



*Petite révision du ciel* was Elisa Brune's first novel, and the unusual mix of narration and science found therein contributed to its success. To begin with, the structure of the novel itself is inspired by mathematics, since the book is divided into 256 numbered fragments – 4 to the power of 4 – spread over 16 parts. The name of the main protagonist, Vincent, is also a *clin d'œil* to numbers (vingt + cent). In addition, many fragments of the novel deal with 'des digressions sur la physique, les bizarreries mathématiques, ou encore la logique et ses apories' linked to Vincent's scientific and mathematical background.<sup>6</sup> Thus, the novel is a sort of analysis, interwoven with philosophical and scientific considerations about the life of the narrator, who tries to understand why he needed to leave everything behind and start afresh.

Throughout the narrative, Elisa Brune includes no fewer than twenty-five explicit references to scientists and to science (physics, mathematics, scientific theories and experiments). For instance she refers to mathematical concepts such as Gödel's incompleteness theorem (PRC 9, 169) and explains what 'palindromes numériques' are (PRC 121); she also mentions the theory of relativity (PRC 106, 107), Heisenberg (PRC 93-94) and Schrödinger's cat experiment (PRC 234). Brune aims to make science more accessible to a wider audience through this novel and its sequel<sup>7</sup> and believes that 'l'auteur capable de raconter la science en mots, en histoires, en intrigues, se met en mesure de renverser les résistances et de passionner [...] pour la conquête de Mars ceux-là même qui avaient exécré leurs manuels de science.'<sup>8</sup> However, in attempting to make science more accessible to non-scientific readers, there is a fine balance to be struck: a certain level of complexity could trigger their curiosity and encourage them to discover more independently, but too much could deter them from reading any further in the novel. If we now turn our attention to the way in which science is included in the narrative, we observe that Brune occasionally struggles to find this balance, introducing concepts which remain beyond the grasp of a reader lacking a solid scientific background.

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<sup>6</sup> Daniel Arnaut, '(Méta)physique des passions', *Le Carnet et les Instants*, 111 (January-March 2000), pp. 52-53 (p. 53).

<sup>7</sup> Virone, op. cit., p. 19.

<sup>8</sup> Brune, 'De la science dans la fiction', op. cit., p. 2. Brune has also been described as 'une enthousiaste soucieuse de vulgariser la science tout en peignant notre époque qu'elle observe avec sympathie, d'un œil vif, parfois caustique', in Colette Nys-Mazure, 'Elisa Brune, *L'Unité de la connaissance, Les Jupiters chauds, Penser c'est autre chose*', *Indications* online, <[www.indications.be/brune59.html](http://www.indications.be/brune59.html)> [accessed 1 November 2005].

Brune often takes an insignificant event in Vincent's life as a starting point for a scientific explanation. For instance, when Vincent starts considering the fact that the Japanese eat the best part of their meal first in case of an earthquake, he ends up pondering quantum physics:

dès que j'y pense, je ne sais plus très bien que penser, ni quel ravioli attraper. Ce qui me mène tout droit à la physique quantique et au principe d'incertitude d'Heisenberg. Heisenberg dit: quand on observe le comportement d'une particule, on ne peut faire autrement que de modifier son comportement. (PRC 93)

In this instance the inclusion of science within the narration is effective, as it is easy enough for any averagely educated reader to understand this basic explanation of Heisenberg's theory, however unrelated the context leading to the simple scientific explanation may be. With regard to Heisenberg's theory, it is worth commenting here on Vincent's conclusion that 'observer, c'est modifier, du moins à l'échelle individuelle' (PRC 94). This might be read as an explanation of what Brune intends to do in her novels, that is to say, observe and report on human behaviour and by doing so perhaps modify her readers' behaviour (towards science in this instance): in other words, to apply Heisenberg's theory to her readership.

However, she is not always as successful in achieving her aim of sharing and popularising specific items of scientific knowledge, as the readership needs to have a certain level of knowledge to really understand and appreciate some fragments of the novel. There are thus instances where this insertion of science does not truly function as part of the story, and seems disconnected from the text surrounding it. One example is fragment 162, which begins abruptly with an explanation of infinity that lasts the whole fragment (PRC 150-52):

Il faut que je revienne sur l'infini, la pire des impasses logiques, celle qui n'a cessé de me hanter depuis l'adolescence. [...] Georg Cantor s'est fait une spécialité de distinguer plusieurs sortes d'infinis. [...] Ce type de démonstration par appariement (ou bijection) est devenu un grand classique et produit de nombreux paradoxes fondés sur l'ambivalence de tout avec l'une de ses parties. (PRC 150)

This fragment does not have any link with the ones before or after it, and does not contribute anything to the plot. It is as though Elisa Brune absolutely wanted to include a reference to infinity in the novel, but did not know how to introduce it. In addition, this fragment, whilst discussing what is a standard reference for scientists, is highly complex and possibly too difficult to be fully grasped by non-specialists, suggesting that Elisa Brune is not always successful in making science accessible in her work.<sup>9</sup>

Let us now examine *Les Jupiters chauds*. In this novel Elisa Brune returned to the character of Vincent, but this time used her own experience of the scientific sphere, combined with elements of scientist David Charbonneau's life and research, as a basis for the narrative. Indeed, in the acknowledgments at the end of the novel, Elisa Brune reveals that 'Vincent, c'est lui. Il a accepté de s'effacer derrière ce personnage qui existait déjà, et sur lequel j'ai enfilé comme un gant la fabuleuse histoire de la découverte du premier transit extra-solaire' (LJC 435). That is, Vincent evolved from a purely fictional character in *Petite révision du ciel* to a 'host' for Charbonneau's real-life story.

In this narrative, Brune continues with the combination of fiction and science, however there is a stronger sense of alternation than in the previous example. This is reflected in the structure of the novel, which is divided into eight parts that alternate between the narration of Vincent's life in Belgium on the one hand (parts 1, 3, 5 and 7) and his trips around the world for his research and to conferences on the other (parts 2, 4, 6 and 8). This is combined with observation and reports on the scientific community and 'de larges pans de reportages scientifiques (visite d'observatoire, rencontre d'astrophysiciens etc.)'.<sup>10</sup> Quantitatively, the content of the book is thus more science-related, and the alternating and more extended rhythm with which science appears in the novel is different from *Petite révision du ciel*, with its occasional injection of science. This results in much longer passages focused around the theme of science — especially astronomy — and scientists. This unusual alternation and mix of genres has been remarked upon by critic Ghislain Cotton, who decried the novel as one in

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<sup>9</sup> Jean-François Haït comments that 'Elisa Brune en profite pour vulgariser autant que faire se peut [...] [mais] on n'a pas toujours tout compris [...]', in 'Le goût piquant de l'univers', *Ciel & Espace*, 410, July 2004, no pagination.

<sup>10</sup> Isabelle Burgun, 'La Muse scientifique', *Science pour tous*, 90 (April 2003), <<http://www.sciencepourtous.qc.ca/bulletin/2003/90/articles3.html>> [accessed 24 November 2006].

which ‘science et fiction romanesque [...] s’intriquent étroitement et où l’auteur joue du télescope de l’astronome et de la loupe du naturaliste avec la même maîtrise’.<sup>11</sup>

The four parts dedicated to science and conferences are evocative of Elisa Brune’s scientific essays.<sup>12</sup> The style of these sections is almost journalistic, with passages reporting purely what has been said or how an experiment was run. For instance, a passage in part 2 reads:

Jean-Philippe Beaulieu [...] a observé l’événement MACHO-97-BLG-41, et bien plus en détail. Lui aussi a observé le pic anormal dans la séquence d’amplification lumineuse de l’étoile cible. [...] Une lentille double ne fonctionne pas comme une lentille simple. Il faut prendre en compte la rotation du système pour modéliser la variation de lumière observée. Ses calculs produisent exactement le profil qui a été observé, sans devoir introduire la moindre planète dans le système.

(PRC 84-85)

The difficulty and specificity of the science described in some parts of *Les Jupiters chauds* is reflected in the regular use of explanatory footnotes, more usual in academic writing and specialised articles than in a novel targeting the wider public. This is another example of genre mixing, and yet another indication that science and scientific ideas are not necessarily straightforward to explain and convey. However, these sections of the novel are also an observation of and report on the scientific community, which enables the reader who is not familiar with the world of science to discover the nature of the scientific working environment, its processes and conventions. Moreover, since Brune uses elements of David Charbonneau’s life for Vincent’s character, but also draws on her own experience, and keeps the real names and features of the scientists she includes, the fictional component in the scientific parts of the novel appears marginal. This further enables Brune to fulfil her intention of providing her readers with an accurate account of the scientists’ lives, their work and of their point of view. This is ‘une petite sociologie de la science’,<sup>13</sup> which represents not only the results of science but also how it is produced and linked to the human beings that are

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<sup>11</sup> Ghislain Cotton, ‘Merci, docteur!’, *Le Vif/L’Express*, 6 September 2002, p. 100.

<sup>12</sup> Elisa Brune, *L’Unité de la connaissance* (Brussels: Bernard Gilson, 2002); *Le goût piquant de l’univers* (Paris: Le Pommier, 2004).

<sup>13</sup> Virone, op. cit., p. 20.

behind it.<sup>14</sup> In the main, Brune gives a positive view of science and scientists, even though she does not fail to voice some of the concerns of the scientific community when it comes to their heavy workload. Indeed,

pour mener à bien l'activité de recherche elle-même, expérimentale et théorique, l'enseignement, les tâches administratives et la course aux publications, les chercheurs sont le plus souvent portés à travailler comme des forçats. Si en plus il faut s'occuper du public, on va devenir fous, disent certains. (LJC 137)

So although scientists are aware that making science accessible to the general public is a positive thing, they feel they have little time to do so, which is where novels of scientific popularisation such as Brune's may be regarded as valuable.

Yet is *Les Jupiters chauds* an accessible novel of scientific popularisation? According to Pierre Maury, it is. In his view, when a writer tackles science, usually either s/he masters his/her topic but quickly loses his/her readers, or s/he does not master it and 'le plaque artificiellement sur le reste de matériau fictionnel.' For Maury this is not the case for Elisa Brune, who 'se situe ailleurs: son sens de la vulgarisation [...] lui permet de nous faire comprendre sans efforts apparents les données les plus complexes de l'astronomie'.<sup>15</sup> Not everyone shares this view. Whilst this may indeed be an entertaining book if the reader is fond of astronomy, the interest of the novel is greatly diminished for the reader who is not interested in scientific explanations and the search for new planets. As for the non-scientific part of the story, which makes up half of the novel, critics such as Guy Duplat and Colette Nys-Mazure comment on the regrettable predictability of the plot.<sup>16</sup> For it is true that from the very start the reader expects Vincent to make a scientific discovery, suspects that his love life may not be as straightforward as he thinks, but is sure that everything will work out for him in the end.

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<sup>14</sup> See note 5. *Relations d'incertitude* provides the most striking example of this link between the scientist's personal life and trajectory and his research.

<sup>15</sup> Pierre Maury, 'La musique des sphères', *Le Soir*, 25 September 2002, no pagination.

<sup>16</sup> Guy Duplat, 'Les étoiles peuvent aveugler', *La Libre Belgique*, 26 September 2002, <<http://www.lalibre.be/culture/livres/article/81804/les-etoiles-peuvent-aveugler.html>> [accessed 1 November 2005]; Nys-Mazure, op. cit.

If the amount of science covered deters some readers, while the plot proves too straightforward for others, this leads us to wonder about the kind of public that reads *Les Jupiters chauds*. We know that Brune sent copies of the narrative to the scientists she met and portrayed in the book, and according to her,

ils ont adoré ça. Ça les change un peu de leur quotidien. [...] Ils ne lisent pas beaucoup de romans. Là, tout à coup, ils se rendent compte qu'on peut parler de science de façon tout à fait exotique pour eux, et en général ça les met en joie.<sup>17</sup>

So scientists are enthusiastic about the novel and its mix of genres (and perhaps also about appearing in a novel). As for non-scientific readers, though, it is harder to say if they really enjoy the combination. Little information is available and, although most reviews are positive, they appear to have been written by readers who have an interest in the scientific content of the narratives – as far as we can tell from literary forums and recommendations left on websites such as *Amazon*: ‘Ce livre est à posséder par toutes personnes intéressées par l’astronomie’ writes a visitor to the website who enjoyed the novel; according to another ‘c’est la science qui fait le cœur du roman’ which provides the reader with ‘une véritable fresque de l’astronomie contemporaine’.<sup>18</sup> These comments suggest, as we ourselves believe, that this novel is only recommended for those with some interest in astronomy. Yet ultimately, the rather restricted readership enjoying Brune’s publications may come as no surprise to the author. She has Vincent explain in the novel that ‘la vulgarisation scientifique n’est évidemment une cause noble que pour autant que le public soit consentant’ (LJC 137), which suggests that although keen to popularise science and to report on the activities undertaken by the scientific community through her novels, she is not blind to the practical limitations of this rather idealistic enterprise.

This short overview of two of Elisa Brune’s scientific novels has aimed to show how Brune integrates scientific content in her work in an attempt to both popularise science for a wider readership, and to give more visibility to the scientific community. Our brief analysis has also demonstrated that, although very keen to explore new combinations and to use the novel as a medium for popularisation which, ‘face aux publications spécialisées, [...] a l’avantage de

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<sup>17</sup> Virone, op. cit., p. 20.

<sup>18</sup> <<http://www.amazon.fr/jupiters-chauds-Elisa-Brune/dp/2804023133>> [accessed 11 February 2011].

toucher un public autrement large',<sup>19</sup> Elisa Brune is not always – and probably never really expected to be – fully successful in making 'hard' science accessible to and/or interesting for all. This may be one of the reasons why Elisa Brune, wishing to please a wider readership, subsequently turned to another more commercial and accessible field of science, by exploring female sexuality in several novels and essays which have indeed proven more popular with the wider public.<sup>20</sup>

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<sup>19</sup> Brune, 'De la science dans la fiction', op. cit., p. 2.

<sup>20</sup> See notably Elisa Brune, *Alors heureuse...croient-ils! La vie sexuelle des femmes normales* (Paris: Le Rocher, 2008); Elisa Brune and Yves Ferroul, *Le secret des femmes: Voyage au cœur du plaisir et de la jouissance* (Paris: Odile Jacob, 2010). Although no sales figures are currently available, the latter publication appears to have attracted more attention than most of her previous work, in August 2010 even making the cover of *Le Nouvel Observateur* which also devoted a seven-page article to it. See *Le Nouvel Observateur*, n°2389, 19-25 August 2010, pp. 9-16.

**What D. H. Lawrence Understood of ‘The Einstein Theory’:  
Relativity in *Fantasia of the Unconscious* and *Kangaroo***

Rachel Crossland

Towards the end of his 1922 essay *Fantasia of the Unconscious*, D. H. Lawrence provides an extended summary of 'what I understand of the Einstein theory':

As far as I can see, Relativity means, for the common amateur mind, that there is no one absolute force in the physical universe, to which all other forces may be referred. There is no one single absolute central principle governing the world. The great cosmic forces or mechanical principles can only be known in their relation to one another, and can only exist in their relation to one another. But, says Einstein, this relation between the mechanical forces is constant, and may be expressed by a mathematical formula: which mathematical formula may be used to equate all mechanical forces of the universe.<sup>1</sup>

Despite his claim elsewhere that 'I like relativity and quantum theories | because I don't understand them',<sup>2</sup> here Lawrence demonstrates a perhaps unexpected grasp of Albert Einstein's special theory of relativity: there is no one absolute force in the physical universe; mechanical principles can only be known in their relation to one another, or, more accurately, in relation to their particular frame of reference; and the relation between mechanical forces is constant and is expressed using the Lorentz Transformations.

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<sup>1</sup> D. H. Lawrence, *Psychoanalysis and the Unconscious and Fantasia of the Unconscious*, ed. by Bruce Steele (Cambridge: Cambridge University Press, 2004), p. 190. Further references to this edition are given after quotations in the text.

<sup>2</sup> *The Complete Poems of D. H. Lawrence*, ed. by Vivian de Sola Pinto and Warren Roberts, 2 vols (rev. repr., London: Heinemann, 1972), I, 524.



*Fantasia* is peppered with references to relativity and to Einstein, from the light-hearted opening of the second chapter where 'We are all very pleased with Mr Einstein for knocking that eternal axis out of the universe' (p. 72), through to Lawrence's explanation of 'what I understand of the Einstein theory' above. Einstein's presence in *Fantasia* is hardly surprising when we consider what Lawrence was reading while writing this text, as I will show, but what is surprising is Lawrence's repeated absence from critical texts exploring the impact of relativity on literary works. In this paper I will explore Lawrence's direct engagement with relativity in *Fantasia of the Unconscious* and *Kangaroo* (1923), and consider some of the reasons behind the critical tendency to overlook and underestimate this engagement.

In addition to Lawrence's apparent grasp of the special theory of relativity (as evidenced in the quotation above), *Fantasia* also demonstrates Lawrence's understanding of some of the key principles behind the general theory of relativity, which had received experimental confirmation during the solar eclipse expeditions of 1919.<sup>3</sup> Lawrence employs a series of images related to curved and straight lines and deflections which tie in directly with Einstein's suggestion that light from distant stars is bent by the gravitational field of the sun before arriving on earth, thus travelling in curved lines, rather than straight lines as had previously been supposed. Lawrence writes that there is 'no straight path' between individuals, highlights 'some strange deflection as your music crosses the space between us', and describes 'the long curve of your own individual circumambient atmosphere', a particularly resonant image given that Einstein had shown that space-time itself is curved (pp. 72-73). While Lawrence's language is obviously not that of a scientist, it is clear from moments like these that Lawrence had internalized some of the fundamental ideas associated with relativity, and was seeking to work through them for himself while writing *Fantasia*.

Early in June 1921, at about the same time that Lawrence was starting work on *Fantasia*, he wrote to his friend Samuel Koteliansky with the following request: 'Lend me, or send me, a simple book on Einstein's Relativity'.<sup>4</sup> By 1921 there were plenty of books which would have met Lawrence's brief: indeed, a 'Bibliography of Relativity' in *Nature* that year lists ten such books in English published in 1920 alone.<sup>5</sup> While there is no direct evidence regarding which

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<sup>3</sup> 'Joint Eclipse Meeting of the Royal Society and the Royal Astronomical Society', *Observatory*, November 1919, pp. 389-98.

<sup>4</sup> *The Letters of D. H. Lawrence*, ed. by James T. Boulton and others, 8 vols (Cambridge: Cambridge University Press, 1979-2000), iv (1987), 23 (4 June 1921).

<sup>5</sup> 'Bibliography of Relativity', *Nature*, 17 February 1921, pp. 811-13.

book Kotlianksy sent to Lawrence, it has been suggested that it was Einstein's own popularization, *Relativity: The Special and the General Theory*, which was first translated into English in 1920.<sup>6</sup> Einstein states in his preface that his 'popular exposition' is aimed at 'those readers who, from a general scientific and philosophical point of view, are interested in the theory, but who are not conversant with the mathematical apparatus of theoretical physics', adding his hope that his book may 'bring some one a few happy hours of suggestive thought!'<sup>7</sup>

Although Lawrence's reading must have had a significant impact on his ability to understand, and then to write about, some of the ideas associated with relativity, it is clear from *Fantasia* that there are certain aspects of the theories which he failed to grasp. Most important among these is the place of absolutes within the theory: while Lawrence acknowledges that 'the velocity of light through space is the deus ex machina in Einstein's physics', he also goes on to claim that 'there is nothing absolute left in the universe. Nothing.' (p. 190). In fact, Einstein's special theory of relativity revealed that the speed of light 'plays the part of a limiting velocity, which can neither be reached nor exceeded by any real body'; that is to say, it is an absolute.<sup>8</sup> Thus when Lawrence states 'I feel inclined to Relativity myself. I think there is no one absolute principle in the universe. I think everything is relative' (p. 191), we see him making what A. S. Eddington called the 'common mistake' of conflating relativity with relativism.<sup>9</sup> However, Lawrence does not stop there, ending his paragraph with a reflection on the relative and absolute natures of individuals:

But I also feel, most strongly, that in itself each individual living creature is absolute: in its own being. And that all things in the universe are just relative to the individual living creature. And that individual living creatures are relative to each other. (p. 191)

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<sup>6</sup> See Lawrence, *Letters*, IV, 30 n. 2, and Rose Marie Burwell, 'A Catalogue of D. H. Lawrence's Reading from Early Childhood', *The D. H. Lawrence Review*, 3 (1970), pp. 193-324 (p. 258). Note that there is some confusion as to whether Lawrence read one or two books on relativity, as emphasized by Burwell's switch from 'and' to 'or' in a later version of her catalogue: 'A Checklist of Lawrence's Reading', in *A D. H. Lawrence Handbook*, ed. by Keith Sagar (Manchester: Manchester University Press, 1982), pp. 59-125 (p. 93). For further details, see my 'Sharing the Moment's Discourse: Virginia Woolf, D. H. Lawrence and Albert Einstein in the Early Twentieth Century' (unpublished doctoral thesis, University of Oxford, St John's College, 2010), pp. 125-26.

<sup>7</sup> Albert Einstein, *Relativity: The Special and the General Theory. A Popular Exposition*, trans. by Robert W. Lawson (London: Methuen, 1920), pp. v and vi.

<sup>8</sup> Einstein, p. 36.

<sup>9</sup> A. S. Eddington, *The Nature of the Physical World* (Cambridge: Cambridge University Press, 1928), p. 23.

The shift in this paragraph from the scale of the universe as a whole towards a more human, individual scale is highly significant, and also appears much earlier in *Fantasia*:

I am I, but also you are you, and we are in sad need of a theory of human relativity. We need it much more than the universe does. The stars know how to prowl round one another without much damage done. But you and I, dear reader, in the first conviction that you are me and that I am you, owing to the oneness of mankind, why, we are always falling foul of one another, and chewing each other's fur.

(p. 72)

While the tone here, as in much of *Fantasia*, is mocking, there is also a serious point being made which, as I have argued elsewhere, is relevant to the whole of Lawrence's output with its almost obsessive focus on the nature, and difficulties, of contemporary human relationships.<sup>10</sup>

It is in his suggestion that 'we are in sad need of a theory of human relativity' that we see the main difference between Lawrence's engagement with Einstein's theories and that of many of his contemporaries: Lawrence does not mention relativity in passing, like Rose Macaulay in *Potterism* (1920); nor does he transform Einstein into a representation of a means by which man can 'get outside his body' as Virginia Woolf does in *Mrs Dalloway* (1925).<sup>11</sup> Rather, Lawrence uses Einstein's theories of relativity, extending and developing Einstein's ideas in the direction that interested him most: human relationships. It could be argued that such employment of scientific ideas is not out of place within a non-fictional text like *Fantasia*; yet if we turn to *Kangaroo*, the first of Lawrence's novels to appear after the publication of *Fantasia*, we find a similar exploration of ideas of absolutes and relatives on the human scale in a fictional work.

Chapters thirteen and fourteen of *Kangaroo* contain Lawrence's most prolonged, and most confusing, explorations of the nature of relatives and absolutes. Initially Lawrence's, or rather

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<sup>10</sup> See Crossland, 'Sharing the Moment's Discourse', Part II.

<sup>11</sup> Rose Macaulay, *Potterism: A Tragi-Farcical Tract* (London: W. Collins, 1920), pp. 231-32; Virginia Woolf, *Mrs Dalloway*, ed. by Stella McNichol (London: Penguin, 1992), p. 30.

his character Richard Lovatt Somers's, claims seem straightforward: 'Life makes no absolute statement: the true life makes no absolute statement' and, a little later, 'Life is so wonderful and complex, and *always* relative'.<sup>12</sup> However, as Michael Bell has written, 'Lawrence's absolutes are always relative and his relatives are never simply relative',<sup>13</sup> and Lawrence soon presents us with the idea that the statement '*Blessed are the pure in heart*' is 'absolute truth, a statement of living relativity' (p. 267). Relativity itself becomes an absolute here, a concept which is emphasized by the phrase 'It depends' which is added to four of the following six further statements from the Sermon on the Mount (p. 268). This complication of the terms relative and absolute continues in the following chapter when Somers returns to these questions the following day, and it is worth quoting this section at length:

'Everything,' said R. to himself, in one of those endless conversations with himself which were his chief delight, 'everything is relative.'

And flap he went into the pot of spikenard.

'Not quite,' he gasped as he crawled out. 'Let me drag my isolate and absolute individual self out of this mess.'

Which is the history of relativity in man. All is relative as we flop into the ointment: or the treacle or the flame. But as we crawl out, or flutter out with a smell of burning, the *absolute* holds us spellbound. Oh to be isolate and absolute, and breathe clear.

So that even relativity is only relative. Relative to the absolute.

(p. 280)

This passage starts with the idea of relativity as an absolute, but this idea is not sustained for long, as the human self soon emerges as its own absolute, just as it did in *Fantasia*. Thus we are left at the close of this passage with the opposite idea to that with which we started: 'even relativity is only relative. Relative to the absolute'. As readers, we definitely start to feel that Lawrence is forcing us to go around in circles here; after all, making relativity itself relative in some way also makes it more absolute.<sup>14</sup>

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<sup>12</sup> D. H. Lawrence, *Kangaroo*, ed. by Bruce Steele (Cambridge: Cambridge University Press, 1994), p. 267. Further references to this edition are given after quotations in the text.

<sup>13</sup> Michael Bell, *D. H. Lawrence: Language and Being* (Cambridge: Cambridge University Press, 1992), p. 149.

<sup>14</sup> See Jeff Wallace, *D. H. Lawrence, Science and the Posthuman* (Basingstoke: Palgrave Macmillan, 2005), p. 239: 'If all is relative, then relativity is an absolute'.

That Lawrence was thinking of Einstein while writing his own theorization of the nature of relatives and absolutes in *Kangaroo* is suggested most forcefully by the fact that Lawrence makes direct reference to Einstein's work on relativity in *Kangaroo*, although on this occasion he does not mention Einstein by name. When Somers first goes to meet and lunch with Kangaroo, the latter 'started a discussion of the much-mooted and at the moment fashionable Theory of Relativity' (p. 109). Interestingly, we do not hear Kangaroo's own contributions to this discussion, but they gain significance a little later when Somers reflects on Kangaroo's 'kindly love for real, vulnerable human beings' which 'had given his soul an absolute direction, whatever he said about relativity' (p. 111). Lawrence tells us that the lunch itself 'passed frivolously' and that 'Somers was bored' (p. 110), but the choice of relativity as a topic for lunchtime conversation does not seem purely coincidental in light of the reflections on relatives and absolutes that appear later in the novel.

Despite these direct mentions of Einstein and his theories, critics have questioned the extent to which Einstein takes precedence in Lawrence's thinking of relativity, and Jeff Wallace has suggested that Lawrence's theory of human relativity and 'the modes of linguistic and cultural relativism which might inform it, were first impressed upon Lawrence by James's *Pragmatism*' which Lawrence read in 1907.<sup>15</sup> In *Pragmatism*, William James provides reflections on the interrelatedness of all things and on the relative nature of human views of reality in ways that seem relevant to some of Lawrence's later explorations of similar concepts.<sup>16</sup> However, it seems to me that Lawrence's suggestion of the need for a theory of human relativity owes at least as much to Einstein as it does to James: Einstein's influence can be seen in terms of the language and ideas associated with the theory of human relativity, whereas James's influence may instead be more evident in the structure of such a theory, in that James introduces pragmatism as a system combining 'the scientific loyalty to facts' with 'the old confidence in human values'.<sup>17</sup> Lawrence's theory of human relativity, although never explicitly formulated by Lawrence himself, would seem to provide exactly this: a scientific formulation of the contemporary situation, alongside a recognition of the importance of human values. After all, a theory of human relativity would be, to some extent at least, a theory of human values, a theory of humanity.

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<sup>15</sup> Wallace, p. 95; Jessie Chambers, *D. H. Lawrence: A Personal Record* (Cambridge: Cambridge University Press, 1980), p. 113. It is worth noting that William James is the name given to a character in *Kangaroo*.

<sup>16</sup> See William James, *Pragmatism: A New Name for Some Old Ways of Thinking* (London: Longmans Green, 1907), pp. 137 and 246.

<sup>17</sup> James, p. 20.

The question that remains, then, is why Lawrence is absent from so many accounts of the literary response to Einstein and relativity. Lawrence is not included in Alan Friedman and Carol Donley's *Einstein as Myth and Muse*, nor in Thomas Vargish and Delo Mook's *Inside Modernism*.<sup>18</sup> In addition, while Michael Whitworth has made the useful suggestion that Lawrence 'resembles Conrad in combining a negative valuation of science with an enthusiasm for the new physics and its philosophical consequences', his analysis of relativity in *Fantasia* is brief, and he does not mention *Kangaroo*.<sup>19</sup> This combination of negativity and enthusiasm may remind us of Nancy Katherine Hayles's assertion of Lawrence's 'ambivalent approach', although it is worth noting that Hayles's assessment is rather drawn into question by her misplaced claim that Lawrence was 'essentially ignorant of the New Physics'.<sup>20</sup> Bruce Clarke has also considered Lawrence's 'literary relativity', highlighting the importance of relativity for Lawrence as 'an authoritative metaphor with which to express, paradoxically, the metaphysics of individuality'.<sup>21</sup> However, these case studies also serve to make Lawrence's absence from broader surveys of modernist literary responses to relativity more striking.

Part of the reason behind this absence clearly lies in the common perception of Lawrence's negative approach to science, but I would suggest that there is more to this critical omission: Lawrence's approach to contemporary scientific concepts does not fit easily into standard critical models for analysing a literary author's response to science. For example, Morse Peckham has described the range of responses to Charles Darwin's *On the Origin of Species* (1859) as follows:

Those who totally rejected it; those who completely misunderstood it; those who incorporated it into their existing set of attitudes by misinterpreting it; and finally those who understood it and subjected their personal cultures to a complete restructuring.<sup>22</sup>

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<sup>18</sup> Alan J. Friedman and Carol C. Donley, *Einstein as Myth and Muse* (Cambridge: Cambridge University Press, 1985); Thomas Vargish and Delo E. Mook, *Inside Modernism: Relativity Theory, Cubism, Narrative* (New Haven: Yale University Press, 1999).

<sup>19</sup> Michael H. Whitworth, *Einstein's Wake: Relativity, Metaphor, and Modernist Literature* (Oxford: Oxford University Press, 2001), pp. 124 and 188.

<sup>20</sup> Nancy Katherine Hayles, 'The Ambivalent Approach: D. H. Lawrence and the New Physics', *Mosaic*, 15 (1982), 89-108 (p. 107) (repr. in slightly different form as 'Evasion: The Field of the Unconscious in D. H. Lawrence', in N. Katherine Hayles, *The Cosmic Web: Scientific Field Models and Literary Strategies in the Twentieth Century* [Ithaca: Cornell University Press, 1984], pp. 85-110).

<sup>21</sup> Bruce Clarke, *Energy Forms: Allegory and Science in the Era of Classical Thermodynamics* (Ann Arbor: The University of Michigan Press, 2001), p. 210.

<sup>22</sup> Morse Peckham, 'Darwinism and Darwinisticism', *Victorian Studies*, 3 (1959), pp. 19-40 (p. 33).

In order to explain Lawrence's response to Einstein's theories of relativity, we need a new category which would include elements of Peckham's third and fourth categories, but also acknowledge that Lawrence restructures Einstein's theories in order to apply them to the question which interested him most: human relationships. Rather than 'appropriating' the language of relativity in order to 'debunk' its theories, as Fiona Becket has suggested,<sup>23</sup> Lawrence uses Einstein's theories, appropriating their language and some of their ideas in order to create a new theory of his own.

Reading about Einstein and writing about his theories in *Fantasia* certainly seems to have had an effect on Lawrence's fictional writings, and yet, writing to Koteliansky after reading that 'simple book on Einstein's Relativity', Lawrence stated that 'Einstein isn't so metaphysically marvellous'.<sup>24</sup> In the foreword to *Fantasia*, Lawrence describes a metaphysic as a philosophy which 'governs men at the time, and is by all men more or less comprehended, and lived' (p. 65). Later in *Fantasia*, Lawrence appears to suggest that relativity itself may have played such a role in the early twentieth century when he writes that 'people have got the word Relativity into their heads, and catchwords always refer to some latent idea or conception in the popular mind' (p. 190). Lawrence's increasing use and privileging, after 1921, of concepts such as relatives and absolutes to discuss human identity and relationships, an area with which he had been engaging since his earliest writings, suggest that Lawrence saw some kind of parallel between Einstein's theories of relativity and his own explorations of relationships and relatedness. 'Einstein isn't so metaphysically marvellous' for Lawrence in his apparent revelation of the relatedness of all things because Lawrence was already aware of something similar: 'He knew and approved of Einstein's Theory of Relativity because it confirmed his belief in the total interdependent connectedness of the universe',<sup>25</sup> and Lawrence's reading of William James no doubt played a part in this belief.

Gerald Holton has proposed that when literary writers include science in their work they make 'a new alloy'.<sup>26</sup> The new alloy which Lawrence created in the early 1920s, combining what he had read of Einstein with what he had read by James along with his own ideas on human individuals and relationships, was his 'theory of human relativity'. Lawrence's

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<sup>23</sup> Fiona Becket, *D. H. Lawrence: The Thinker as Poet* (Basingstoke: Macmillan, 1997), p. 43.

<sup>24</sup> Lawrence, *Letters*, IV, 37 (16 June 1921).

<sup>25</sup> Michael Wutz, 'The Thermodynamics of Gender: Lawrence, Science and Sexism', *Mosaic*, 28 (1995), pp. 83-108 (p. 84).

<sup>26</sup> Gerald Holton, *Einstein, History, and Other Passions: The Rebellion Against Science at the End of the Twentieth Century* (Cambridge, MA: Harvard University Press, 2000), p. 137.

highlighting of our need for such a theory in *Fantasia*, and his subsequent explorations of relatives and absolutes in relation to human individuals in *Kangaroo*, suggest that Lawrence did indeed find in his reading of Einstein the 'suggestive thought' that the latter had hoped for his readers, a thought which resonated in some way with Lawrence's own understanding and vision of the world, and of human relationships in particular.



## Questioning Categories of Science and Fiction in *Fin de Siècle* Magazines

Will Tattersdill

Studies in Literature and Science have so far tended to pass over science fiction (sf), the genre whose very name provocatively situates it on the two-culture divide. There are a number of reasons this might be the case, not least of which is that sf already has a considerable academic community associated with it, and there may be a wariness of repeating work or treading on toes. Equally, Literature and Science is a relatively young field of enquiry, and it may be felt that a focus on canonical figures is necessary to reinforce its legitimacy as a scholarly approach.<sup>1</sup> Despite this, sf and other popular literatures are a crucial part of the public consumption and reinterpretation of scientific ideas, and their study can significantly improve our understanding of science's cultural trajectory. This passage from Paul Fayer's essay on 'Late Victorian Science and Science Fiction' suggests how Gillian Beer's celebrated two-way traffic might be explored in demotic literature:

Professional scientists not only helped shape science fiction, in many cases their work was shaped by it [...] If we pay attention to the content and diverse cultural locations of both science and science fiction, to who was writing it and who was reading it, we will notice a fluid exchange of ideas – not only across national and disciplinary boundaries, but across lines traditionally separating amateur and professional, highbrow and lowbrow, established knowledge and speculation, science and fiction.<sup>2</sup>

Fayer's comments remind us that the study of Literature and Science is, essentially, a study of processes of categorization. Interrogating the boundary between them almost inevitably throws us into contact with the artificiality of other divisions, including those of genre.

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<sup>1</sup> '...science fiction is, rightly or wrongly, not taken seriously as a genre of literature with a capital 'L', and I hope this book might be taken seriously' (Charlotte Sleigh, *Literature and Science* [Basingstoke: Palgrave Macmillan, 2011], p. x–xi).

<sup>2</sup> Paul Fayer, 'Strange New Worlds of Space and Time: Late Victorian Science and Science Fiction', in *Victorian Science in Context*, ed. by Bernard Lightman (Chicago: University of Chicago Press, 1997), pp. 256–80 (p. 257).

Fayter's stress on location is also important. It directs us, for the purposes of this essay, to a medium which not only played a crucial role in the emergence of sf as a distinct and commercially viable genre, but which entangled literature and science in a host of unpredictable ways: the general magazine of the *fin de siècle*.

Exemplars of the New Journalism, these publications – referred to by Mike Ashley as 'Standard Illustrated Popular Magazines' – took advantage of breakthroughs in print and distribution technology to appeal to as wide an audience as possible.<sup>3</sup> The *Strand Magazine* (January 1891 – March 1950), published by George Newnes, was the first and remains the best-known of them. However, as the 1890s progressed, a host of imitators surfaced which also shared a publishing strategy depending in equal measure upon a diversity of content and an ability to shape that content into a coherent editorial identity. These magazines necessarily comprised a homogenous range of material that we might today consider incommensurate, a fact that makes them an excellent case study for anyone wishing to interrogate dyadic division in general, and the two-culture separation in particular.

In this essay, I have chosen just two stories from the enormous periodical archive of the *fin de siècle* in order to elucidate one corner of this argument. The stories were both written by the same man, Israel Zangwill, and were published in the same magazine, the *Idler* (February 1892 – March 1911), within a few months of one another. A propensity for retrospective categorisation, however, impels us to estrange them. In what follows, I problematize this instinct, finding the inherent inclusivity of the general magazine's format within each story at an internal level, pointing out that neither tale rigidly conforms to the categories by which it might today be understood, and arguing that this characteristic is both positive and useful. Space prevents me from comparing the stories with the other articles and tales which originally accompanied them in the *Idler*, but interested readers with access to ProQuest's *British Periodicals* database will find both stories reproduced, together with the other contents of the issues in which they appeared.<sup>4</sup> The *Idler* is also held in a number of large research libraries, including the Bodleian Library and Cambridge University Library, whilst

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<sup>3</sup> Mike Ashley, *The Age of the Storytellers: British Popular Fiction Magazines 1880-1950* (London: The British Library, 2006), p. 197.

<sup>4</sup> I. Zangwill, 'The Memory Cleaning House', <[http://search.proquest.com/\\*\\*docview/3351933?accountid=\\*\\*11862](http://search.proquest.com/**docview/3351933?accountid=**11862)> [accessed 23 November 2012] and I. Zangwill, 'Cheating the Gallows', <[http://search.proquest.com/\\*\\*docview/3335994?accountid=\\*\\*11862](http://search.proquest.com/**docview/3335994?accountid=**11862)> [accessed 23 November 2012]. All further references given here are to the original print versions rather than these electronic resources.

the British Library has an almost complete set of issues.<sup>5</sup> Viewing these magazines in physical form remains the best way of gaining a hold upon the theoretical issues relating to format and genre which are discussed here.

The first of the stories I have selected is ‘The Memory Clearing House’, which appeared in the July 1892 issue of the *Idler*, and is a comic tale that turns around the invention of a new kind of thought-reading technology, the noemagraph. This device is initially a boon to its inventor, the politician O’Donovan, who uses it as the basis of a business on the Strand at which memories can be bought and later sold. Initially, only harmless memories (such as addresses) are exchanged, but the technology rapidly becomes used for far more serious purposes, such as erasing recollections of deceased loved ones: ‘The inventor himself had not foreseen the extraordinary uses to which his noemagraph would be put, nor the extraordinary developments of his business’.<sup>6</sup> All ends tragically when the story’s narrator, a successful novelist, buys the memory of a murder in order to write a more realistic description of a killer’s thoughts and feelings. He is arrested for the crime he describes, and at its close, it is revealed that the whole tale is written from prison on the eve of his execution.

‘The Memory Clearing House’ is officially sf, by which I mean that it is mentioned in the *Science Fiction Encyclopedia* as an ‘[e]arly Proto sf example’ of memory edit, a trope of the genre related to ‘selective Amnesia and/or implantation of false memories’.<sup>7</sup> It also receives a mention in Everett F. Bleiler’s *Science-Fiction, The Early Years*, an index which proposes to list every sf story published before 1930, and which has lengthy and rigorous selection criteria, enumerated in a lengthy preface that excludes, for example, all utopian writing and most tales with anything approaching supernatural elements.<sup>8</sup> 1930 was an important moment in the history of sf, because it was at around this time (following the appearance, in April 1926, of the American magazine *Amazing Stories*, the first English-language magazine dedicated exclusively to printing sf) that ‘science fiction’ began to emerge as a term describing a distinct cohort of sub-literary popular writing. It is important to note, as we go on, that Zangwill and his readers could not have considered ‘The Memory Clearing House’ to

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<sup>5</sup> Comprehensive holdings information for *The Idler* may be found in Mike Ashley, *The Age of the Storytellers: British Popular Fiction Magazines 1880-1950* (London: The British Library, 2006), pp. 99-100.

<sup>6</sup> I. Zangwill, ‘The Memory Clearing House’, *The Idler*, I (1892), 672–85 (p. 678).

<sup>7</sup> David Langford, ‘Memory Edit’, *Science Fiction Encyclopedia*, 2012, <[http://sf-encyclopedia.com/entry/memory\\_edit](http://sf-encyclopedia.com/entry/memory_edit)> [accessed 5 November 2012].

<sup>8</sup> Everett F. Bleiler, *Science-Fiction, The Early Years* (Kent, OH: Kent State University Press, 1990), p. 839.

be a work of sf as we now understand the term, and that all works described in the Bleiler index have had the ‘science fiction’ label applied to them retrospectively.

Each entry in *Science-Fiction, The Early Years* ends with a short subjective evaluation (a remarkable feature of the index is that Bleiler personally read each of the 3,000+ items he lists in it). These evaluations, which follow bibliographic and plot description and are intended to convey a sense of the work’s quality, are typically one or two sentences in length. In the entry for ‘The Memory Clearing House’, however, we get only a single word: ‘Flat’. Bleiler’s failure to enjoy this story is easily understood when we approach it, as he does, as an early example of an idea that would later become a staple of sf, explored in an array of fiction across the twentieth century. Memory edit, a concept that is, for instance, at the heart of recent films such as *Inception* (2010) and *Eternal Sunshine of the Spotless Mind* (2004) is certainly something with which Zangwill engages: ‘...nothing was more pathetic’, the narrator observes at one point, ‘than to see the humble artisan investing his hard-earned “tanner” in recollections of a seaside holiday’. However, the story seems to fall short of the interrogations of the link between technology and consciousness which this theme might be expected to anticipate (p. 680). The noemagraph itself is not described, nor is the process of its invention; in fact, the device is mentioned by name only twice in the whole story. O’Donovan is a politician, not a scientist (the word ‘scientist’ is never used), and we neither see the inside of a laboratory nor read even a superficial description of the mechanics of memory transfer. The excuse for the latter omission is provided in the character of the narrator, who, on the one occasion O’Donovan seems set to explain something, reports only that:

He rambled on about volts and dynamic psychometry and other hard words, which, though they break no bones, should be strictly confined in private dictionaries.

(p. 677)

This light, humorous tone, which is characteristic of the story as a whole, is complemented by A. J. Finberg’s cartoon-like illustrations, none of which depicts the noemagraph or, indeed, any other technology. In short, the tale seems to glide past opportunities to dwell on the scientific structures that Zangwill is describing, and indeed the philosophical issues behind them.

Approaching the text with this requirement of it, however, is anachronistic. Finberg's illustrations are all of characters (or even caricatures) rather than objects or incidents; the story is centrally concerned with the *social* consequences of the technology, its very title emphasising the locale of the events it describes — the 'Memory Clearing House' — rather than the machine that drives them. Asides on everything from the question of Irish Home Rule to the ethics of after-dinner speaking abound, and the most prominent theme in the story is its commentary on the literary establishment, which the narrator blames for the noemagraph's invention (the link is comically abstract) and, of course, for his own personal downfall, when he publishes the true story of a murder:

Alas! it was damned universally for its tameness and the improbability of its murder scenes. The critics, to a man, claimed to be authorities on the sensations of murderers, and the reading public, aghast, said I was flying in the face of Dickens. [...] Stung to madness, I wrote to the papers asserting the truth of my murder, and giving the exact date and place of burial. The next day a detective found the body, and I was arrested.

(p. 685)

This is a social comedy: the lack of detail in the philosophical and technological explorations of the noemagraph are not deficiencies so much as they are symptomatic of a different set of priorities.

If 'The Memory Clearing House' surprises us by being not as science-fictional as we might expect given a summary of its plot, the opposite is true of the second Zangwill story I have chosen. 'Cheating the Gallows' appeared in February 1893's *Idler*, seven months after 'The Memory Clearing House'. Its less melodramatic prose is complimented by George Hutchinson's illustrations, which are more lifelike than Finberg's: a whole-page frontispiece of a corpse being dragged up from the Thames sets the tone for the piece. The story is as follows. Tom Peters and Everard G. Roxdal share lodgings in London. The two men are of entirely different character: Peters is an artistic layabout, whilst Roxdal is the manager of the City and Suburban Bank. One day Roxdal, a man of previously excellent character, vanishes with several thousand pounds. Foul play is suspected, but the man is never found, and it is proposed that he has fled to South America. As the hubbub dies down, Peters grows closer to Roxdal's fiancée. Feeling absolutely betrayed by Roxdal, she has overcome her initial dislike of Peters to the point of being on the verge of marrying him, when a strange dream causes her

to direct police attention to the missing man's room-mate. They find the stolen money and, shortly afterwards, a body is washed up from the river. Peters is executed, but not before revealing in a written statement that he and Roxdal are both the same man. The corpse, whose face was unidentifiable, was a coincidence, and in fact the identities of both Peters and Roxdal had been created by the criminal in the hopes of absconding with the money. The story ends with the condemned man contemplating his fate: 'The only thing that puzzles me, though, is whether the law has committed murder or I suicide'.<sup>9</sup>

'Cheating the Gallows' contains no inventions more elaborate than a false beard and, perhaps in consequence, finds no place either in Bleiler's index or *The Science Fiction Encyclopedia*. A closer reading, however, may justly give us pause. The dream sequence, in which Roxdal apparently visits his fiancée from beyond the grave to warn her off Peters, seems at first solidly in the tradition of the ghost story:

And she dreamt a terrible dream. The dripping form of Everard stood by her bedside, staring at her with ghastly eyes. Had he been drowned on the passage to his land of exile? [...] The wraith's stony eyes stared on, but there was silence. (p. 15)

Although this dream leads directly to the apprehending of the criminal, it is significant that it does not immediately lead to the unmasking of his dual identity. We do not learn the full truth until Peters/ Roxdal himself reveals it to us whilst awaiting his sentence. In fact, the dream is wrong: Peters did not kill Roxdal, and at the time of the dream Roxdal is neither dead nor a ghost. The criminal's own response to this detail — 'I made none of the usual slips, but no man can guard against a girl's nightmare after a day up the river and a supper at the Star and Garter' — emphasises the fact that this story is driven not by the supernatural apparatus whose aesthetic it assumes, but rather by the power of coincidence and, ultimately, a rationalist, scientific view of the world (p. 18). Despite its initial appearance as a representative of the urban gothic, with London fog, double identity, and a prescient dream-sequence, this is a tale that offers a simple, scientific explanation for everything it describes. In this, it resembles a more famous tale of the urban gothic, one that is accorded a place in the Bleiler index: Robert Louis Stevenson's *Strange Case of Dr. Jekyll and Mr. Hyde* (1886). This novel also has dual identity at its heart, but is more easily aligned with sf as a genre by

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<sup>9</sup> I. Zangwill, 'Cheating the Gallows', *The Idler*, III (1893), 3–18 (p. 18).

the fact that its central identity shift is chemically, rather than theatrically, induced. Despite the lack of bubbling test tubes, though, ‘Cheating the Gallows’ is in at least one respect just as science-fictional as Stevenson’s book: despite its uncanny trappings, it offers an empirical rather than a magical explanation of the mysterious events that it describes. The distinction between these two different outlooks is at the heart of several definitions of sf, and the grey area between them is the subject of the third (and most well-known) of Arthur C. Clarke’s laws of prediction.<sup>10</sup>

Of these two short stories, then, the first contains science fictional elements which seem to recede under examination, whilst the other bears no discernable trace of sf, yet yields up thematic concerns which would later be identified as amongst the genre’s defining characteristics. Which, if either of them, is ‘really’ sf? I submit that this question is less interesting than the observation that a scholar using Bleiler’s index (for example) to trace a history of early sf would encounter one, but never see the other. A reading which tacitly assumes the retrospectively-imposed distinction to be essential overlooks the very obvious fact that these stories have much in common; from their jail-cell confessional dénouements to their appearance in the same physical space (the *Idler*) within a few months of each other. They were written by the same author and edited by the same editors (Robert Barr and Jerome K. Jerome), but Bleiler’s determination that one of these stories fits in a different category to the other all too readily deemphasises even these most basic similarities. With the two of them back alongside each other, we see a complex interplay of satire, urban gothic, crime fiction, mysticism, and rationalism, which was contributing to the emergence of a new form of popular literature. With the blinders on, and ‘The Memory Clearing House’ read in isolation, we just see one word: ‘Flat’.

We divide things up into categories for good reason. It would be unfair to expect Bleiler to have documented every text that aligns itself with a scientific explanation of the world, and indeed this is not a traditional definition of sf. It is relevant, though, that sf has proven throughout its history extremely resistant to formal definition, and that some critics argue that it is now best understood ‘as a fuzzily-edged, multidimensional and constantly shifting

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<sup>10</sup> Arthur C. Clarke, *Profiles of the Future: An Inquiry into the Limits of the Possible* (London: Victor Gollancz, 1982), p. 36.

discursive object' rather than a distinct corpus with a specific set of characteristics.<sup>11</sup> My contention, following Bruno Latour, is that the division between literature and science can also be understood as a notion emerging out of, and retrospectively imposed on top of, a complex history of closely interrelated processes, rather than a fundamental truth from which those processes are a distraction.<sup>12</sup> Analysing these two stories is but to skim the surface of the vast and multifarious entanglements which existed in the periodical press of the *fin de siècle*, with which comprehensive engagement would be impossible in a single lifetime.

Specialisation is an essential part of how we make this abundance manageable, but it is important not to lose sight of the fact that, as Bakhtin puts it, 'the boundaries between fiction and nonfiction, between literature and nonliterature and so forth are not laid up in heaven'.<sup>13</sup> We create the boundaries between these things, and are too often inclined afterwards to treat them as inherent. Literature and science, like Peters and Roxdal, are not the opposites they are made out to be: they may have distinct personae, but they are always united by the body they share, and we deceive ourselves when we pretend otherwise. This essay is intended as a reminder of the complexity which categorisation occludes, and the need to have it at the forefront of our minds when we use pigeon-holes. At the moment of burgeoning scholarly interest in the subject, I hope it also serves as a caution against the creation of (or, at least, dogged adherence to) a pigeon-hole called 'Literature and Science'. Our thinking needs to stay connected.

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<sup>11</sup> Mark Bould and Sherryl Vint, *The Routledge Concise History of Science Fiction* (London: Routledge, 2011), p. 5.

<sup>12</sup> See Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, MA: Harvard University Press, 1999).

<sup>13</sup> Mikhail Bakhtin, 'Epic and Novel: Toward a Methodology for the Study of the Novel', in *The Dialogic Imagination*, ed. by Michael Holquist, trans. by Cary Emerson and Michael Holquist (Austin: University of Texas Press, 1981), pp. 3-40 (p. 33).



**Metaphors of Science and Empire:  
The Entomologist Narrator in Amin Maalouf's *Le Premier siècle après Béatrice*, and the Scientific Subject in Chris Marker's *La Jetée***

Sura Qadiri

**Introduction**

Amin Maalouf's novel, *Le Premier Siècle après Béatrice*, tells the tale of the global rise in popularity of 'fertility beans', sold inside containers shaped like scarab beetles. These ensure the birth of male heirs to those who take them, and the result is that women begin to face global extinction. This causes the spread of global unrest, and the threat of apocalypse hangs in the air. The story is narrated by a Parisian entomologist, who first comes across the beans at a humanities conference on the mythological importance of the scarab beetle, where he is asked to offer a token scientific account of the scarab. The novel is narrated in a linear fashion, with twenty-six chapters headed A-Z. Thus a strong sense of narrative control is juxtaposed with the chaos of the events recounted. At an aesthetic remove, Chris Marker's film, *La Jetée*, tells the story of a prisoner of war living in an underground world in post-apocalyptic Paris. Whilst the subject of a time-travel experiment, he is projected into the Parisian past, and pieces together disjointed memories, before being shot dead by those running the experiment.

Comparative consideration of these two works reveals a common preoccupation with postcolonial issues on, at the very least, an implicit level.<sup>1</sup> Both portray protagonists who struggle to maintain a sense of identity in the wake of traumatic events. Through the use of subtle imagery, these events become closely associated with the issues of decolonisation, specifically the decolonisation of Algeria in *Jetée*. In both works the protagonists' struggles with self-narratives are also presented through images and tropes relating to science.

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<sup>1</sup> See Max Silverman, 'Interconnected Histories: Holocaust and Empire in the Cultural Imaginary', *French Studies*, 52: 4 (2008) 417-428. Silverman makes the case that Holocaust and Empire have made a huge impact on the public imagination, to the extent that one or both of these may be evoked even where it is not being discussed explicitly in literature and film.

Scientists are depicted as figures of control who seek to impose order on their subjects: most easily accomplished when they are dead. The protagonist in *Jetée* constitutes a living subject, striving to construct a narrative of his own and being killed for it. Both works feature a struggle between scientist and subject for control of an identity narrative. The protagonist in *Jetée* struggles for control of his own psyche, whilst in *Béatrice*, the main character works hard to maintain a distance between himself as a rational figure, and the chaotic events of the world around him. Both struggles parallel broader problems of representation in narrative, and ultimately reinforce the idea that science, like literature or film, is part of wider discourse, and inevitably linked to ideological positions.

### **Marker, Maalouf and Postcoloniality**

Maalouf's oeuvre is largely made up of tales set in a pre-colonial, sometimes pre-Islamic, Middle East, seemingly with a view to increasing awareness of the region's historical, ethnic and religious diversity. *Samarcande* tells the semi-biographical story of Persian poet Omar Khayyam, whilst *Le Rocher de Tanios* is based on a centuries-old folkloric tale originating in a Christian Lebanese village. *Béatrice* is unique amongst his texts, in that it is set in the future. Yet the novel is saturated with images evocative of a preoccupation with a colonial past. Moreover, the fact that the narrator of the book is an entomologist, whose job it is to scrutinise museum collections of preserved insects and produce academic evaluations of them, calls strongly to mind the colonial fondness for ethnography: the cultural, and even anatomical, fascination with and scrutiny of non-Western ethnic groups.

The imagery in *Béatrice* is, at times, strongly evocative of the colonial. The encounters of the entomologist, even happy personal ones, are characterised by a colonial language of possession. He reminisces in the following terms about his first meeting with Clarence, the journalist who becomes his wife: 'Je me souviens d'avoir passé mon regard en premier sur ses lèvres, barques de couleur rose nuit, tendues vers le lointain comme sur certaines fresques égyptiennes' [I remember first letting my eyes rest on her lips, *boats*<sup>2</sup> of deep magenta, pointing into the distance, as in certain Egyptian frescoes'].<sup>3</sup> The image of the 'barques [...] tendues vers le lointain' is suggestive of the dawn of the colonial era, when explorers set off

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<sup>2</sup> My emphasis. The word 'barque' is rendered 'shells' in the published translation. I have chosen to retain the original image of boats in order to sustain the passage's evocation of colonial travel and quest.

<sup>3</sup> Amin Maalouf, *Le Premier Siècle après Béatrice* (Paris: Éditions Grasset & Fasquelles, 1992), p.21/*The First Century After Beatrice*, trans. by Dorothy S. Blair (London: Abacus, 1993), p.16.

for faraway lands: a poetic time of the ‘couleur rose de nuit’ and of ‘fresques égyptiennes’; a time that predates the ethical crises and pain of colonialism, and the forced loss of vast expanses of colonial land. Clarence evokes captivating memories of innocent colonial youth, memories that may well be imaginary.

Images of the entomologist as a welcome and loveable colonial traveller abound in the text. He calls Clarence his ‘igloo’, based on the sound of her surname Nesmiglou: ‘Qu’est-ce que c’est qu’un igloo?’ ‘Un bloc de glace à l’abri duquel on se sent au chaud’ [‘What is an igloo?’ ‘A block of ice in the shelter of which one feels warm’], thereby paralleling himself with the kindly European traveller who is welcomed into native homes.<sup>4</sup> Moreover, the arms of Béatrice around his neck as he drops her off at school are like a ‘guirlande brune’ [‘brown garland’],<sup>5</sup> just like the exotic garlands welcomingly placed around the necks of European visitors to faraway lands. Clarence is impressed by the entomologist’s academic setting, which she describes as an ‘oasis,’<sup>6</sup> and is content to listen to him ‘toute antenne dehors’ [‘she listened, her antennae raised’], like one of his insects; his subjects.<sup>7</sup>

Such images convey a romanticised colonial nostalgia, emerging from the perspective of a declining colonialist. This serves to express a domineering element to the entomologist as single narrator. His account hegemonically lacks other voices, in the same way that a selective account of history might. Indeed, all events are ultimately subsumed in *Béatrice* by a language of self-aggrandizement and self-justification. Clarence’s journalistic accounts of events are only alluded to, and never featured. Other voices in the text are commonly paraphrased and summarised. As a scientist, the entomologist represents himself as a figure of unquestionable empirical truth. This effect is enhanced by the fact that the narrative does not reveal his name. His namelessness makes him a pure voice of reason, not a personality through which information is distorted, unlike all the other (mediated) characters in the novel. Yet this representation of him is constantly undermined by the sinister colonialist subtext, which exposes the workings of his narrative-building as manipulative, selective and romanticist.

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<sup>4</sup> *Ibid.*, p.27/24.

<sup>5</sup> *Ibid.*, p.73/81.

<sup>6</sup> *Ibid.*, p.26/23.

<sup>7</sup> *Ibid.*, p.26/my translation; the image of antennae was lost in Blair’s translation.

Marker's film was made in 1962, in the wake of Algerian Independence, and at a time when Marker was also completing *Le Joli Mai*, a documentary film about the French response to Algeria. Moreover, Marker's 1953 film with Resnais, *Les Statues Meurent Aussi*, looks at the commercialisation of colonial art, and is often understood to carry an anti-colonial message.<sup>8</sup> It was even banned by the French government in the late 1950s at the time of the outbreak of the conflict in Algeria.<sup>9</sup> Marker's commentary on the film has obvious anti-colonial overtones. He says: 'we are the Martians of Africa. We arrive from our planet with our ways of seeing, our white magic, our machines.'<sup>10</sup> Traces of this preoccupation with colonialism may be identified in *Jetée*. Emily Tomlinson draws parallels between images of the scientists surrounding the protagonist in the film, and the images of Algerians being tortured in Pontecorvo's *The Battle of Algiers*.<sup>11</sup> At the beginning of the time-travel experiment in *Jetée*, the narrative voice tells us that 'les images commencent à sourdre comme des aveux' ['begin to ooze like confessions'],<sup>12</sup> suggesting the beginnings of colonial guilt in the wake of Algerian decolonisation. It is as though the French psyche is confronting memories, or perhaps hitherto little known facts, of the perpetration of colonial torture. The fact that the captors spy on the dreams of their prisoners and pry into their minds is evocative of the intellectually and spiritually invasive aspects of colonial domination, reminding us that colonial powers did not merely seek to conquer lands.

Both *Jetée* and *Béatrice* thematize the desire for stable identity and narrative order at moments of political upheaval. Their chaotic settings are implicitly connected to the end of colonial history, and chart the desire to construct a stable sense of identity in the wake of trauma. The idea of science in both the film and the novel becomes associated with struggles for control, hegemony and dominion, both because of its historic role in such struggles, as suggested in *Jetée*, and because of its claims to detached empirical fact. Like other discourses, it is shown in both cases to be ideologically motivated.

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<sup>8</sup> See Catherine Lupton, *Chris Marker: Memories of the Future*, (London: Reaktion Books, 2005), p.35.

<sup>9</sup> *Ibid.*, p.36.

<sup>10</sup> *Ibid.*, p.36.

<sup>11</sup> Emily Tomlinson, 'Torture, Fiction, and the Repetition of Horror: Ghost-Writing the Past in Algeria and Argentina' (unpublished doctoral thesis, University of Cambridge, 2002).

<sup>12</sup> *La Jetée*, dir. by Chris Marker (Argos Films, 1962), 11:05.

## Narrating Chaos

The subtextual preoccupation with colonialism common to both *Jetée* and *Béatrice* is representative of discourses that are politically, economically and ideologically motivated. The emergence of a postcolonial critique of colonialism has undermined the idea that such discourses carry any objective weight. In the two narratives, the subjective colonialist account is juxtaposed with the motif of science, which represents a mode of discourse that is preoccupied with empirical facts as opposed to ideological agendas. Moreover, whilst discussions surrounding colonialism are ethically fraught and messy, science, in contrast, can offer tidy, unambiguous conclusions. By creating an implicit interplay between these two modes of discourse, *Jetée* and *Béatrice* ultimately show how much they have in common, and destabilise scientific claims to objectivity. In turn, the scientific strand in both texts represents a struggle for authority and control over the narrative, which constantly fails. In particular, both *Jetée* and *Béatrice* posit a sustained sense of distinction between the identities of coloniser and colonised as an indication of narrative control, where the failure to maintain the distinction suggests a loss of such control.

In *Jetée*, there is a marked blurring of identities. Ambiguity is introduced at the start of the film, where images of Paris destroyed by a nuclear war (gesturing towards ideologically-motivated uses of science) historically coincide with a war that is raging on Algerian soil. Historical buildings have been reduced to ruins and rubble, whilst a huge chunk is missing from the Arc de Triomphe, suggesting a blow to Parisian pride and identity. Images of a collapsed building reflected in a pool of water suggest a Paris that is actively contemplating its new, post-Algerian image, yet seeing nothing but wounded pride and destruction.

The ambiguity increases considerably with the introduction of the time-travelling protagonist. Although the memories of this time-traveller are of Sunday afternoons in Paris, his status as victim in the film, as well as his curiously Algerian appearance (he is of a slightly darker complexion than his captors), suggest an Algerian identity. He has clearly engaged in combat, and still wears a necklace that is linked to his military action. Yet he does not wear a military uniform. Instead, his clothing is that of a civilian resistance fighter, and gives him the look of an Algerian *maquisard*. We are thus presented with a figure who looks like an Algerian freedom fighter and is tortured like one, but who has the childhood memories of a Frenchman. His hybrid identity suggests a collapse of the colonial binary distinction between

French and Algerian, between coloniser and colonised, who have now come to be embodied by the same figure.

Feelings of trauma, confusion and dislocation are foregrounded in *Jetée*, but in Maalouf's text, conflict is relegated to the background, and is not experienced personally by the protagonist. His distance from it gives him a stronger ability to order his account. Yet the subtext of his narrative reveals his own sense of decline in a world filled with ideological change. Beyond his quiet sphere, he notes the spread of riots in distant countries like Sri Lanka, Burundi and South Africa.<sup>13</sup> These two works might be seen to trace the impact of decolonisation on the French psyche over time. In the immediate wake of the Algerian War, there is shock, defeat, confusion, and an inability to make sense of what has happened, all of which is successfully depicted in *La Jetée*. Over time, the events in Algeria are integrated into the French self-narrative, distanced, tamed and rationalised, as in *Béatrice*. The images of decolonisation that appear in the text are of gradual decline, not of abrupt and explosive ending. The following is a description given by the entomologist of his office:

Et pour ce qui est de ce bureau, je vous dirai qu'il m'inquiète plutôt. Vous le voyez ainsi, majestueux, massif, mais sous cette apparence fallacieuse, il est miné par des réseaux de galeries où cavalent des colonies de percebois hilares [...] Et un jour, ils auront si bien labouré qu'il me suffira de poser ma serviette à cet endroit pour que tout s'écroule.

[And as for this desk, I must tell you it rather worries me. You see its impressive, massive looks but underneath this deceptive appearance, it is undermined by a network of galleries where colonies of wood borers cavort gaily [...] And one day they will have worked so hard that I shall only have to put my briefcase down on this spot for everything to crumble].<sup>14</sup>

The imperialistic description of the office as 'majestueux' and 'massif' is accompanied by an image of slow decline, a gradual gnawing away from beneath as opposed to any sense of explosive conflict. The insects seem to represent colonial subjects, arranged in 'réseaux', as the maquisards were believed to be.<sup>15</sup> These insects are living, unlike the dead objects of the entomologists's study, arranged in display cases around his office. The term 'réseau' recurs in the text when the entomologist establishes the 'Réseau de Sages' [Network of Sages], an alliance of Western professionals united against the spread of fertility beans. Whilst the word

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<sup>13</sup> Maalouf, *Béatrice*, p.81/83.

<sup>14</sup> *Ibid.*, p.23/18.

<sup>15</sup> As seen in Pontecorvo's film *The Battle of Algiers* (1966).

‘sages’ suggests an imperialistic and scientific sense of intellectual superiority, ‘réseau’ calls to mind once again the theme of anti-colonialist underground resistance, thus betraying a sense of confused identity.

Later on in the text, the entomologist describes his father/son relationship with his old friend André who, since his childhood, has lent him books to read. Amongst the earliest of these is the colonially and scientifically suggestive *Gulliver’s Travels*. The entomologist notes that once a book is removed from the shelves, the gaps are not closed up, such that over time, the library acquires a look of toothlessness, becomes ‘édentée’ [like ‘a toothless mouth’],<sup>16</sup> thus evoking the image of an old man slowly losing his teeth and declining intellectually. Colonialism is gently retreating from the world with its dignity more-or-less intact, just as the entomologist retreats from civilisation to a safe place in the hills. However this toothless image also conjures up the faint ghost of the tortured resistance fighter, possibly subjected to the horrors of tooth extraction. The happy, nostalgic memory of friendship is troubled by uncomfortable images of terror and decline, suggesting moments of slippage in the entomologist’s control over his narrative. However, this remains subtle. There is no shock, no humiliation, no personal loss (whilst women are vanishing from the world, the entomologist acquires both a girlfriend and a daughter during the course of the narrative). The authoritative figure of the scientist, with his retrospective, diegetic account of events, papers over moral ambiguity, and offers a tidy narrative.

## **Conclusion**

The figure of the scientist in *Béatrice* becomes synonymous with order, wisdom and inertia, producing a narrative that is linear and lucid. He is also subtextually equated with an old and jaded colonialist, keeping himself dignified and distant from traumatic events. Images in his account suggest that, although it is well ordered, there are suppressed forces lurking in its margins that may destabilise it. In *Jetée*, the protagonist confusedly embodies several identities, and is not in command of his memories. He is under the control of scientists. These scientists whisper to each other in German, and call to mind the notorious Holocaust experiments carried out on human subjects. Indeed, this implicit reference to historic

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<sup>16</sup> Maalouf, *Béatrice*, p.38/38.

scientific atrocities goes some way to explaining the cultural use of scientists as figures of suspicion (both latently and overtly) which is presented here.

The scientist is also metaphorically equated with the writer. The entomologist in *Béatrice* is writing down his account of events. He struggles with his images and metaphors, just as he struggles with the natural world: his office is still under threat from insects, despite the glass cases full of moths that have been captured and catalogued. Both as a scientist and a writer, his task is to generate a sense of order and to give meaning to his surroundings. Both tasks involve the building of narrative, and yet both are open to the same threats of messiness, inconclusiveness and failure.