

**Man-Machine:**

**The Scientific Creation of the Artificial Human in Nineteenth  
and Twentieth Century Science Fiction**

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## Abstract

The scientific creation of the artificial human is a topic which has fascinated literature since the dawn of modern scientific methodology in the late eighteenth century. Science fiction literature, which arose in definable form at the same time, became predominantly - but not exclusively - the literary form which addressed this issue. The construction of a credible science fiction narrative, then, goes hand in hand with the construction of artificial man. E.T.A. Hoffmann, in his two tales, 'The Sandman' and 'The Automata', was the first to engage with these concerns, conjoining the magico-mystical tradition of early speculative philosophy to the practical, experimentally verifiable tenets of natural philosophy or science. This formulation of disparate elements - which is, in part, a continuation of the links between the occult and the scientific in the seventeenth century and before - created a foundation from which all future science fiction texts would stem, their success often depending on the ability of the narrative to weld these elements together.

Such connections also inspired the first scientifically created artificial humans: primarily primitive automata of a mechanistic nature, but infused with the mystical theories of esoteric science found in mesmerism. Mary Shelley's *Frankenstein* reveals a similar narrative construction to Hoffmann's tales, as well as a similar engagement with the distinct forces of mechanism and mysticism. *Frankenstein*, though, proves that these elements are historically relevant; symbolising the conflict between romanticism and materialism that predominated in the early nineteenth century. Victor Frankenstein's scientifically created man is a product of both these positions, an untenable problematic with which he struggles - as does the whole novel - from the moment of his creation until his death.

The onset of industrialism does not clarify such problems. Indeed the science fiction narrative became backgrounded in this period, due mainly to the monopolising effects of a materialistic scientific and social culture. However the concerns of the creation of the artificial human were not equally sidelined, rather they were confronted by naturalist writers who inverted the debate by looking not at the humanity of the artificial but at the artificiality of the human. For the most part this was considered to be the product of mechanisation and the image of the machine became central to the debate. The later years of the nineteenth century saw the waning of industrial power and the return of the more mystical beliefs necessary to the science fiction narrative. Villiers de L'Isle-Adam's *Tomorrow's Eve* revitalises the techniques of Hoffmann and Shelley and constructs an artificial human which is by far the most sophisticated to date: relying not only on contemporary science - in the shape of electromagnetism, phonographic discovery, and psychical research - but also on the concepts of human artificiality set forward by those writers working in the industrial period. *Tomorrow's Eve* highlights, more explicitly than the previous texts, that defining the 'human' is no simple matter of organicism versus mechanism and that the properties of simulation - as defined by Baudrillard - are a question of gradation rather than hard fact.

Through early twentieth century anxieties about the man-machine, primarily Capek's *R.U.R.* and Huxley's *Brave New World*, which looks back to the era of industrialism as well as forward to the science of the future, we arrive at Philip K. Dick's *Do Androids Dream of Electric Sheep?*, which reaches the pinnacle of artificial creation. The novel's scientifically created humans (replicants) are both organic and mechanistic and further close the gap between the *born* and the *made*. While remaining structurally similar to Hoffmann, Shelley and Villiers by constructing the narrative on a foundation of scientific plausibility yet interspersing this with a semi-religious mysticism, Dick brings the man-machine debate to a fulcrum: revealing that the once wide gap between the real and the artificial has been entirely closed, that the sophistication of scientific capability has irretrievably altered the sense of self that humanity had once monopolised.

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Finally, and most importantly, to my parents, whose enduring help, both personally and financially, has always been vital to me. They, more than anyone, have ensured that four years of messing around in libraries has resulted in a useful end. I cannot thank them enough.

## **Declaration**

The following thesis, except where otherwise indicated, I declare to be entirely my own work and that no part of it has been submitted for any other degree or qualification.

## Dedication

### For Shelagh

oh god it's wonderful  
to get out of bed  
and drink too much coffee  
and smoke too many cigarettes  
and love you so much

('Steps',  
Frank O'Hara)

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## Introduction

### The Conception and Creation of Artificial Man

Know then thyself, presume not God to scan;  
The proper study of mankind is Man.  
Placed on this isthmus of a middle state,  
A being darkly wise, and rudely great;  
With too much knowledge for the skeptic side,  
With too much weakness for the Stoic's pride,  
He hangs between; in doubt to act, or rest,  
In doubt to deem himself a god, or beast;  
In doubt his mind or body to prefer,  
Born but to die, and reasoning but to err.

(Alexander Pope,  
'An Essay on Man' (1733))

"Man's a machine." Well if ever we can  
Construct one bit by bit on some new plan,  
Be sure 'twill be a Scientific Man.

(William Allingham,  
'Man's a Machine'

(1890))

The figure of the artificial human has been a constant one throughout literary history, from early Biblical tales of the cabalistically-founded golem to the proliferation of bio-mechanical human simulacrum in a great deal of contemporary, populist science fiction. *Man-Machine* aims to investigate what Baudrillard describes as the "mirror of being and appearances"<sup>1</sup> that the scientifically-created artificial human calls into question. This phrase - the scientifically-created artificial human - encapsulates those important aspects

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<sup>1</sup> Jean Baudrillard, *Simulacra and Simulations*, trans. by S.F. Glaser (Ann Arbor: University of Michigan Press, 1994), p.2.

of the literary debate which require most examination, and which provide the greatest illumination to the problem with which Baudrillard, and before him Walter Benjamin, struggled: the detection of the real in an arena where, in Benjamin's phrase, "the concept of authenticity"<sup>2</sup> is continually undermined by the presence of fakery, reproduction and simulation.

Science, in particular, provides the main impetus in each of the literary narratives discussed hereafter. It is science, in many forms, from the mechanical and the biological to the technological and the esoteric, which gives the artificial human a methodology whereby a semblance of reality (one might call it 'life') can be achieved. Prominent too is the linguistic partnership of human and artificial, where 'human' may be substituted with 'real' to set up a more obvious dichotomy. The connection of the artificial with the human is vital, however, for science does not create the human (the real), rather it creates the artificial human (the artificially real). Such a ready differentiation is one of the issues which literary representations of the artificial human reveal to be far more complex, especially in the light of increasingly invisible technologies which are the product of mid-twentieth century scientific advancement. Benjamin, in a discussion of film-making in the 1930s, captures the essence of this debate when he argues that "the equipment-free aspect of reality here has become the

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<sup>2</sup> Walter Benjamin, 'The Work of Art in the Age of Mechanical Reproduction', in *Mass Communications and Society*, ed. by James Curran, Michael Gurevitch and Janet Woollacott (London: Edward Arnold, 1977), pp.384-408, p.386.



height of artifice”.<sup>3</sup> It is the questioning of the nature of artificiality together with the concomitant deconstruction of the notions of humanity which the artificial human of the science fiction narrative primarily inspires. *Man-Machine* investigates whether the artificial human is indeed artificial when compared to the human or whether such a concept is merely a cultural construction without any basis in scientific reality. More than this it attempts, as Mark Seltzer puts it, to discover “that bodies and persons are things that can be made and its implications”,<sup>4</sup> by looking in detail at the sciences which inspire the construction and creation of the artificial human. From the beginning of the nineteenth century to the late twentieth century explorations of the role of the artificial human have been as much explorations of the role and power of science, in providing both an imaginative foundation and a factual point of origin for the creation of, among others, automata, robots and cyborgs.

It is not, however, at the start of the nineteenth century that the artificial human is first encountered. John Cohen, in his excellent study of human robots, reveals how the construction and creation of the artificial human has been an obsession of all knowledge-seekers. “As we shall see,” Cohen tells us, “the question, ‘How was Adam made?’ profoundly intrigued gnostic and cabbalist [sic], alchemist and medieval scientist, and efforts, in fancy or fact, to create a man never ceased”.<sup>5</sup> Early theologians were also fascinated by God’s creation of man and long before the short stories of

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<sup>3</sup> Benjamin, p.399.

<sup>4</sup> Mark Seltzer, *Bodies and Machines* (London: Routledge, 1992), p.3.

<sup>5</sup> John Cohen, *Human Robots in Myth and Science* (London: Allen and Unwin, 1966), p.25.

E.T.A. Hoffmann which begin the present study Albertus Magnus had constructed “a mobile robot, in the construction of which he spent thirty years”.<sup>6</sup> Of course the golem itself, as Gershom Scholem<sup>7</sup> points out, is the most ancient form of artificial creation: symbolically the recasting of Adam, the creation of a golem requires the creative power of the letters of the name of God in an ecstatic incantation. Many legends relate the power of the golem, an uncontrollable being who continues to grow each day until it must be returned to dust to allay the dangers of its strength. While still manageable, however, it was able to fulfil the tasks set by its creator. Portents of Shelley’s *Frankenstein* can be seen in this description, as well as the later unease towards the power of the machine which was viewed by many as both an asset and a danger.

It is as a form of machine, indeed, that many of the artificial humans in science fiction narratives are first imagined. With the exception of Frankenstein’s creature, who is created by a scientific process that does not have a basis in mechanics, each of the automata, androides and cyborgs in the forthcoming chapters are, to some extent, animated by means of mechanism. This bias towards a certain scientific field does, like the artificial human itself, have some historical authority. The human and the machine have often been closely connected and not only since the rise of industrialisation and the

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<sup>6</sup> Cohen, p.30. The associations with Hoffmann’s automaton The Talking Turk are clear. Magnus’ robot “could answer questions and solve problems” just as Hoffmann’s is seen to do in the short story ‘Automata’ and the Turk’s demonic aspect is foreseen by St. Thomas Aquinas who believed Magnus’ robot “had something to do with the devil [and] consigned the robot to the flames” (p.30).

<sup>7</sup> See Gershom Scholem, *Kabbalah* (Jerusalem: Keter, 1974) which defines the golem as “a creature, particularly a human being, made in an artificial way by virtue of a magic act” (p.351).

concomitant fascination with mechanisation. Lewis Mumford's "megamachine",<sup>8</sup> as a forerunner of the scientific machine and of the scientific creation of the artificial human, is relevant here. Most interesting in the present context is his assertion that the "workers during their period of service were, as it were, stripped down to their reflexes, in order to ensure a mechanically perfect performance".<sup>9</sup> Such a debasement of the human and the parallel promotion of the machine accords with the views of each of the writers discussed here in their summation of the effect of mechanisation on the human condition and reflects Walter Benjamin's appraisal of the mechanically-reproduced work of art which "may not touch the actual work of art, yet the quality of its presence is always depreciated".<sup>10</sup>

Mumford's "megamachine", Benjamin's mechanical reproduction, and the various mechanical procedures which provide a foundation for the artificial humans in the following chapters, all present one particular problem. While they are all machines, they are also all very disparate forms of the machine. It is necessary, then, to define what the machine actually is, what *Man-Machine* will mean when it refers to the machine. Thomas R. West, in a critical approach to the machine in American literature and culture, found that the word machine was also problematic:

I must acknowledge the inadequacy of the word "machine". In a century that conceptually dissolves the material world as we had known it, replaces levers

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<sup>8</sup> Lewis Mumford, *The Myth of the Machine: Technics and Human Development* (London: Secker and Warburg, 1967), p.189.

<sup>9</sup> Mumford, p.197.

<sup>10</sup> Benjamin, p.387.

and steam with electrical and nuclear power, and moves from mechanics to cybernetics, “machine” with its almost muscular connotation begins to have an archaic sound.<sup>11</sup>

West makes a valid point; the definition of machine is somewhat fluid, changing as the science of mechanics changes. This is not solely, as he would have it, a recent phenomena nor is it exclusive to the twentieth century. In fact the changing definition of the machine throughout the eighteenth and nineteenth centuries reveals the changing perception of the relationship between the human and the machine that the writers in the forthcoming chapters largely reflect. Samuel Johnson’s dictionary of 1755 defines the machine as “any complicated piece of workmanship” or “an engine”,<sup>12</sup> a fairly neutral description of mid-eighteenth century mechanics. Almost a century later, in the midst of the great period of industrialisation, Noah Webster’s *American Dictionary of the English Language* provides a more complete definition:

An artificial work, simple or complicated, that serves to apply or regulate moving power, or to produce motion, so as to save time or force. The simple machines are the six mechanical powers, viz. the lever, the pulley, the axis and wheel, the wedge, the screw, and the inclined plane. Complicated machines are such as combine two or more of these powers for the production of motion or force.<sup>13</sup>

Here we have the first intimation of the machine as seen by the creators of the artificial human: a scientific process which excites motion and power. The importance of the

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<sup>11</sup> Thomas R. West, *Flesh of Steel: Literature and the Machine in American Culture* (Vanderbilt: Vanderbilt University Press, 1967), p.xv.

<sup>12</sup> Samuel Johnson, *A Dictionary of the English Language*. Facsimile Reproduction of 1755 Edition. (London: Times Books, 1983).

<sup>13</sup> Noah Webster, *An American Dictionary of the English Language*, 2 vols. (Springfield, Mass.: Geo. and Chas. Merriam, 1845), vol. II, p.84.

imitative aspect of machinery is also stressed, although this artificiality is not set against any reality or naturality. The muscular connotations on which West remarked are apparent too in the lever, pulley, wedge and screw which Webster notes as four of the six mechanical powers. Despite the comparisons that can be made by commentators by placing these definitions of the machine in the context of the artificial human, no mention of the human is actually made in the definitions themselves. John Ogilvie's *Imperial Dictionary* of 1882, however, while providing a similar definition to both Johnson and Webster, also views the machine as:

a term of contempt applied to a person whose actions do not appear to be under his own control, but to be directed by some external agency; one who does not appear to act intelligently; a person who acts as the will or bidding of another; a tool.<sup>14</sup>

The precursor to the *Oxford English Dictionary*, James A.H. Murray's *New English Dictionary*, concurs:

a combination of parts moving mechanically, as contrasted with a being having life, consciousness and will. Hence applied to a person who acts merely from habit or obedience to rule, without intelligence, or to one whose actions have the undeviating precision and uniformity of a 'machine'.<sup>15</sup>

By the latter part of the nineteenth century there had been a significant change in the perceived relevance of the machine to human character and personality. While earlier definitions concentrated exclusively on the precise mechanical details upon which every

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<sup>14</sup> John Ogilvie, *The Imperial Dictionary of the English Language*, 4 vols. (London: Blackie and Sons, 1882), vol. III, p.93.

<sup>15</sup> *A New English Dictionary on Historical Principles*, 15 vols. ed. by Sir James A.H. Murray (Oxford: Clarendon Press, 1908), vol.6, pp.7-8.

machine is founded, as the nineteenth century continued, and as the machine increasingly became an integral part of human culture and society, so the connections between man and machine became more and more evident. As for the definitions themselves, they show that the machine-like individual is a figure of some degeneracy; artificial in nature, constricted by mechanical precision and lacking the unique personality of the human. In opposition to West's belief that the word machine lacks relevance as the physical constituents of the machine change, these definitions from the end of the nineteenth and the beginning of the twentieth century reveal a subtle appreciation of the role of the machine in the realm of the human. While the word machine may not practically encompass every aspect of mechanics in the later twentieth century, intellectually the definitions remain prescient, reflecting the viewpoint of many of the science fiction narratives included here. From these works, and from these definitions, then, *Man-Machine* will take its lead.

Other terms used throughout the following pages also requires some illumination. As certain expressions display interpretative differences when employed in contrasting fields of study, it is essential to present a brief glossary or explication of the terms, along with that of the machine, which are central to the present work but which could prove problematically ambiguous without stringent qualification. *Artificial* and *simulacrum* are terms readily employed in presenting the notion of the creation of an alternative humanity by human agency. *Artificial* is two-fold in implication, meaning not only a 'thing' created by art or artifice as opposed to naturally but also artificial in

result as well as in the process of construction. Being artificial, then, is to be artificial in the making as well as in the being. Artificial also extends, or detracts from, the notion of artifice as the open display or celebration of the non-essential. Certainly the artificial humans discussed here are openly displayed and celebrated by their creators, who revel in their artifice, but this is not to say that the artificial is a constant source of enjoyment or pride. In the context of the forthcoming narratives, then, artificial in this sense, moves between both a positive and a negative position. *Simulacrum* is equally complex, retaining its universal meaning as “a material image, made as a representation of some deity, person, or thing”<sup>16</sup> yet also becoming a term of greater connotation, positing a ‘thing’ which simulates all the qualities of the apparent original but is in fact of an order all its own, without an original source or template and free also of the human agency which creates the artificial.<sup>17</sup> *Imitation* is directly related to simulacrum but connotes a rather more crude attempt at the exact reproduction of an original. Lacking the subtlety of the simulacrum, the imitation remains primarily a copy, or an artificial similarity, a thing which may look like something else but which is easily distinguished from the original.

The concepts of *philosophy* and *ideology* are for the most part discussed in this work in their scientific context and therefore have specific meaning. Scientific *philosophy* encapsulates the broad spectrum of related ideas which together formulate a set of principles or theories which underpin the entire processes of research and

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<sup>16</sup> *O.E.D.*, ed. by J.A. Simpson and E.S.C. Weiner, 20 vols (Oxford: Clarendon Press, 1989), 15, p.502.

investigation with which scientists, at any given time, are involved. Scientific *ideology* is less encompassing. It is concerned more with individual ideas, often not factually proven but at least suggested through experimentation or research, than with the entire worldview as defined by philosophy. As is suggested by its root, a scientific ideology can be idealistic rather than pragmatic and of a visionary nature as opposed to empirically based. In this context, romanticism in the sciences, which adhered to a definite belief in the interconnectedness of every natural phenomena revealed to man, is a *philosophy*, while the belief that electricity is a powerful cosmic force which binds many forms of science together is an *ideology* within this romantic philosophy. This is not to suggest that these concepts exist in a hierarchical relationship or that they follow, say, the Marxist model of base and superstructure. For the most part, philosophy and ideology work in tandem with each other although, as the following chapters will show, this is not entirely without exception and it is more in the points of departure between them that their precise definitions take on greater importance.

Using certain terms in their scientific context within a discussion of literature highlights another potential stumbling block. It has been a widely held belief that these two distinct modes - art and science - are largely incompatible, staring aggressively at one another from opposite sides of a wide chasm. C.P. Snow's work on this subject defined that viewpoint, alienating each from the other as separate cultures whose divergence allows for little or no contact:

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<sup>17</sup> See Baudrillard and Umberto Eco, *Travels in Hyperreality* (London: Picador, 1987)



I believe the intellectual life of the whole of Western society is increasingly being split into two polar groups[. . .]. Literary intellectuals at one pole - at the other scientists, and as the most representative, the physical scientists. Between the two a gulf of mutual incomprehension - sometimes (particularly among the young) hostility and dislike, but most of all a lack of understanding.<sup>18</sup>

Snow goes further than merely stating that art and science are mutually exclusive. He sees them, in fact, as becoming increasingly polarised, as drifting away from each other. Yet in the texts studied here, and in science fiction literature in general, we see nothing of the dichotomy that Snow envisages. Indeed the SF narrative highlights many points at which art (in this instance literature) and science comply with each other. Their relationship is symbiotic, complex and vital and relies on more than the previously lauded prophetic capacity of the science fiction writer.<sup>19</sup> It is in the link of “imagination and reason”,<sup>20</sup> as Herbert Marcuse has it, that literature and science find their connections compounded. Especially in narratives of scientific fiction the dynamic of the imagination plays an important role, and it is not only from art that the power of the imagination is drawn. Science too, in theorising and speculating upon known phenomena, employs the imaginative capacity just as readily as science fiction narratives depend on reason to remain credible. This interplay of reason and

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<sup>18</sup> C.P. Snow, *The Two Cultures and the Scientific Revolution: The Rede Lecture 1959* (Cambridge: Cambridge University Press, 1962), pp.3-4.

<sup>19</sup> Various works of SF criticism argue over the visionary nature of science fiction. H.G. Wells, for example, is praised for his creation of the tank in his short story ‘The Land Ironclads’ (1903) while Aldous Huxley is credited with imagining genetic engineering and test-tube fertilisation in *Brave New World* (1932). There are numerous examples of this type and, although providing interesting anecdotal material, have little real importance in an understanding of the relationship between science and fiction.

<sup>20</sup> Herbert Marcuse, *One Dimensional Man* (London: Sphere, 1968), p.248.

imagination, then, works both ways, becoming, again in Marcuse's terms, "interdependent on common ground".<sup>21</sup> By contextualising the relationship of literature and science with a discussion of imagination and reason - which would generally be held as central to the philosophy of each field - Snow's argument is somewhat undermined. While the technical language of science may well deny the intrusion of the literary intellectual, the very existence of science fiction narrative proves that this assumed gap between art and science can be bridged at certain points. *Man-Machine* concentrates on that bridge: those works of science fiction which bring together the fields of literature and science and rely equally on both to provide a credible narrative of imaginative power.

Of these narratives themselves something must be said. The following chapters concentrate, with one exception, on either a single work or a single author. The first deals with the short fiction of E.T.A. Hoffmann, the second with Mary Shelley's *Frankenstein*, the fourth with Villiers de L'Isle-Adam's *Tomorrow's Eve* and the fifth with Philip K. Dick's *Do Androids Dream of Electric Sheep?* The third chapter is more complex as no one text is applicable. Here, in the period from 1820-1880, there is a distinct lack of an exemplary science fiction narrative which deals with the artificial human. This is not to suggest that the period was peculiarly absent of any work of science fiction; rather there was no definable narrative which conforms to the definition of science fiction as *Man-Machine* views it. The work of Jules Verne is perhaps the only

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<sup>21</sup> Marcuse, p.248.

genre science fiction which does deal with the debate and, although approaching it tangentially, remains important. While Verne does not take the artificial human as his central protagonist nor does he construct his narratives upon the foundations of both science and magic, the relevance of his work in the mid-nineteenth century is obvious and his contribution to the man-machine dilemma a worthy one. In each of the chapters, however, a particular choice has been made; a choice which is as exclusive as it is inclusive. Those texts which are discussed are not included on an ad hoc basis: each in their own way are exemplary not just of the science fiction narrative (as it is defined here in the following pages) but also of the scientific outlook contemporaneous with their publication. Mark Seltzer makes an important point on this very method of critical practice when he highlights that:

What the overly hasty historicizations - the logics of equivalence and panics of reduction that continue to govern a certain style of historicism - work to disavow is the sense that practices and discourses are never simply reducible or simply irreducible to anything else.<sup>22</sup>

In fact the very process of choice is a process of formulation: the formulation of an equivalence between texts that have previously been examined as single entities. *Man-Machine* does not claim to *reveal* a homogeneity between the texts studied in the forthcoming chapters, rather it *constructs* one. This construction has its basis in the scientific creation of the artificial human in science fiction, and as these criteria ('scientific' creation, 'artificial' human, 'science' fiction) were not in place until the

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<sup>22</sup> Seltzer, p.6.

beginning of the nineteenth century, this will be the starting-point. The chapters that follow from this will concentrate upon narratives which highlight the particular points at which scientific paradigms shift<sup>23</sup> and the artificial human debate takes on new significance. As mentioned, this process excludes a great deal, especially in the vast field of science fiction literature. While it would be impractical, and rather disingenuous, to discuss here all those texts which will not be discussed in the main body of the present work, there are those that require an explanation of their absence.

H.G. Wells is arguably the most important figure in the science fiction field whose work does not appear to any great extent in the following pages. His scientific romances, and *The Time Machine* in particular, do reveal the same formulae of narrative construction which I see as essential to the science fiction text. *The Time Machine* itself is the best example of this and also of a mechanical construct which is central to the rendering of the story. However, very simply, Wells' scientific fiction does not overtly discuss the artificial human nor do they play any significant role in his work. The close of the nineteenth century, then, is best represented for my purposes by L'Isle-Adam's *Tomorrow's Eve* which is concerned entirely with the creation of a simulacrum. Equally the period covered by *Man-Machine* ends with Philip K. Dick's *Do Androids Dream of Electric Sheep?* in 1968. There is, therefore, no discussion of William Gibson's later cyberpunk novels which fall outwith the chronological boundaries described here.

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<sup>23</sup> For an account of the scientific paradigm see Thomas S. Kuhn, *The Structure of Scientific Revolutions* (London: University of Chicago Press, 1970).

The chapter which discusses the period from 1820-1880 is another case in point. Arguing that there is no science fiction text which adheres to the definition of SF set down later in this introduction does not necessarily deny that any science fiction was written during this time and I would not wish to do so. Indeed the work of Jules Verne is one example of the type of discussion being conducted at the time. The continuing debate over the nature of the artificial human, however, moves from the science fiction field into the work of realist writers like Dickens. Dickens' novels are prominent for good reason: his different approaches to the human and the machine give a broad representation of the varied attitudes of the time as no other writer does, and despite the fact that there are doubtless many examples of the mechanisation of man in other works of fiction they do not present the range that can be seen across the canon of Dickens' work. Alongside this the work of Nathaniel Hawthorne and Herman Melville marks an interesting counterpoint. In certain gothic tales of science fantasy each of these writers makes a definite contribution to the debate being carried on by writers like Dickens. Although neither realist nor science fiction narratives, these texts give a further perspective on the nature of the human and the machine or the artificiality of humanity and are therefore relevant within the present context.

The definition of science fiction which *Man-Machine* presents, and which has been alluded to already in this introduction, requires detailed explication. Prior to this an appraisal of present interpretations of the science fiction genre, with which *Man-*

*Machine* both agrees and disagrees, will prove useful. J. O. Bailey's *Pilgrims Through Space and Time* provides one of the earliest definitions:

The touchstone for scientific fiction, then, is that it describes an imaginary invention or discovery in the natural sciences. The most serious pieces of this fiction arise from speculation about what may happen if science makes an extraordinary discovery. The romance is an attempt to anticipate this discovery and its impact upon society, and to foresee how mankind may adjust to the new condition.<sup>24</sup>

Kingsley Amis agreed when, in 1960, he wrote that “science fiction is that class of prose narrative treating of a situation that could not arise in the world we know, but which is hypothesised on the basis of some innovation in science or technology, or pseudo-technology”.<sup>25</sup> Defending the realistic portrayal of science in science fiction, Sam Moskowitz insisted that SF “eases the ‘willing suspension of disbelief’ on the part of its readers by utilising an atmosphere of scientific credibility for its imaginative speculations”.<sup>26</sup> Brian Aldiss also heralds the importance of the present state of scientific study when he defines SF as “the search for the definition of man and his status in the universe which will stand in our advanced but confused state of knowledge (science), and is characteristically cast in the Gothic or post-Gothic mould”.<sup>27</sup> If Aldiss was suggesting that the Gothic world of science fiction marked it apart from our own world he finds his definition compounded by Eric S. Rabkin who, only a few years after

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<sup>24</sup> J.O. Bailey, *Pilgrims Through Space and Time* (New York: Argus Books, 1947), p.12.

<sup>25</sup> Kingsley Amis, *New Maps of Hell* (London: Victor Gollancz, 1961), p.14.

<sup>26</sup> Sam Moskowitz, *Seekers of Tomorrow: Masters of Modern Science Fiction* (Westport, Connecticut: Hyperion Press, 1966), p.7.

<sup>27</sup> Brian Aldiss, *Billion Year Spree: The History of Science Fiction* (London: Weidenfeld and Nicolson, 1973), p.8.

Aldiss in 1976, theorised that “a work belongs in the genre of science fiction if its narrative world is at least somewhat different from our own, and if that difference is apparent against the background of an organised body of knowledge”.<sup>28</sup> James Gunn also discusses the importance of factual science on the genre, believing that science fiction “often concerns itself with scientific or technological change”,<sup>29</sup> a view which harks back to Asimov’s insistence on the influence of scientific advance. Darko Suvin, an influential figure in science fiction criticism, also provides a definition, one greatly in accord with Rabkin’s a few years earlier: “SF is, then, a literary genre whose necessary and sufficient conditions are the presence and interaction of estrangement and cognition, and whose main formal device is an imaginative framework alternative to the author’s empirical environment”.<sup>30</sup> While Judith Merrill’s 1982 definition of science fiction as “projection, extrapolation”<sup>31</sup> is rather retrospective, Amit Goswami’s 1983 interpretation is more attuned to the consensus of the 1970s. He posits that “science fiction is that class of fiction which contains the currents of change in science and society. It concerns itself with the critique, extension, revision, and conspiracy of revolution, all directed against static scientific paradigms. Its goal is to prompt a

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<sup>28</sup> Eric S. Rabkin, *The Fantastic in Literature* (Princeton, New Jersey: Princeton University Press, 1976), p.119.

<sup>29</sup> James Gunn, ed., *The Road to Science Fiction, No.1: From Gilgamesh to Wells* (New York: Mentor Books, 1977), p.1.

<sup>30</sup> Darko Suvin, *Metamorphoses of Science Fiction: On the Poetics and History of a Literary Genre* (London: Yale University Press, 1979), pp.7-8.

<sup>31</sup> Judith Merrill, *The SF Book of Lists*, ed. by Malcolm Edwards and Maxim Jakubowski (New York: Berkeley University Press, 1982), p.257.

paradigm shift to a new view”.<sup>32</sup> Tom Shippey, meanwhile, in one of the most recent definitions, does not explicitly mention science at all. Rather he opposes science fiction with the pastoral as “overwhelmingly urban, disruptive, future-oriented, eager for novelty; its central image is the ‘faber’, the smith or blacksmith in older usage, but now extended in science fiction to mean the creator of artefacts in general - metallic, crystalline, genetic, or even social”.<sup>33</sup>

From Bailey’s definition in the 1940s through the proliferation of science fiction criticism in the 1970s to the present day, commentators largely agree that the advancement of science, or at least the malleability of scientific research, is one of the central impetuses of the science fiction narrative. As science changes, SF reflects not only that change but its effects on a wider cultural or social scale. Allied to this there appears a collective belief in the ‘otherness’ of the science fiction narrative: some sense that the world of the SF novel or short story is always different from our own, always estranged. Whether that is achieved by placing the genre in the Gothic tradition, as Aldiss suggests, or by becoming revolutionary, as Goswami would argue. In the context of the *Man-Machine* debate science fiction does not altogether concur with any of these interpretations. Nor does *Man-Machine* attempt to provide a definition which can be written within a few short sentences. Narratives of science fiction are more complex

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<sup>32</sup> Amit Goswami, *The Cosmic Dancers: Exploring the Science of Science Fiction* (New York: McGraw-Hill, 1983), p.2.

<sup>33</sup> Tom Shippey, *The Oxford Book of Science Fiction Stories* (Oxford: Oxford University Press, 1992), p.ix.



than any pat aphorism can capture and I will not attempt to reduce this complexity by simplification.

Science fiction, at its most credible, is a subtle amalgam of the magical and the scientific, of the fantastic and the factual. This conjunction of apparent opposites is central to the narrative formulation of the genre and it is when they are employed to equal effect that SF is most successful. The methodology is not, however, one of grafting together two disparate codes, for magic and science, as I will show, are very much intertwined. Rather the fantastic or magical runs in parallel with the factual or scientific and they reside together as partners. Such a relationship gives science fiction the dynamic it requires in presenting a credibility of plot to the reader. While the scientific aspects of any given text may be, *by themselves*, fantastic extrapolations of empirical fact when placed against the magical or esoteric coda of the narrative they appear less fantastic and thereby more realistically creditable. Obversely, the more magical elements are, through the existence of the scientific, not allowed to overpower the narrative and take it beyond the boundaries of science fiction literature and into the genre of fantasy. In short, science fiction is a narrative form which may appear to be scientific in origin but whose foundations are based on a magical tradition.

Despite the predominant view of magic, alchemy and the supernatural as fantasy, historical evidence proves otherwise. Magic and science are closely related: cousins, say, with different parentage but a like-minded heritage. Before the rise of science, institutionalised in 1662 with the formation of the Royal Society under the patronage of

Charles II, magic and alchemy were the mainstays of natural philosophy. The Cabala - a form of magic with lengthy traditions in Jewish history - traces its origins as far back as Hermes Trismegistus,<sup>34</sup> a supposed contemporary of the Biblical Moses. Such magical traditions were not an opposing force to early science but a complementary form of divination. Henry Cornelius Agrippa,<sup>35</sup> in his Cabalistic tome, *De Occulta Philosophia*, views the Bible as his ultimate source, arguing that any magical investigation is indebted to the Scriptures and to the word of God for defining its meaning. His tone is evangelical and accords with early scientists who saw their work as the celebration of the workings of the divine in the empirical world. Agrippa, by the time of his death and throughout the following centuries, was not seen in this light. He gained a reputation as the archmagus of evil sorcery and, by the beginning of the nineteenth century, was the ultimate image of the foul necromancer. Paracelsus,<sup>36</sup> a contemporary of Agrippa and another Cabalist who was held in disregard by the beginning of the nineteenth century, maintained that the strength of belief in God was the source of humanity's understanding and that the search for knowledge was an attempt to understand the workings of heavenly power. His mystical religious belief is well documented. Paracelsus suggested, for example, that magic "is an art which reveals its highest power

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<sup>34</sup> It is from this mythological figure that the term Hermetic Philosophy derives.

<sup>35</sup> Agrippa (1486-1535) was a great admirer of an earlier Cabalist, Albertus Magnus, and wrote many books on the subject of magic and alchemy which are indebted to him. Agrippa's reputation as a sorcerer was fixed by the Jesuit writer Martin del Rio who waged a lifelong campaign against him and inspired the image of Agrippa which has lasted into this century.

<sup>36</sup> Paracelsus (1493-1541) was taught alchemy, surgery and medicine by his father. He attended Basle University from the age of sixteen and returned there as a Professor some years later. He was ousted from this position, labelled a 'quack', and died in poverty at the age of 48.

and strength through faith”<sup>37</sup> and only if misused does it “give rise to sorcery[. . .]for this art is truly a gift of God”.<sup>38</sup> Paracelsus, like Agrippa, was removed from his university position on the grounds of foul practice and vilified as a sorcerer and a witch.

It is only those negative attributes of Agrippa and Paracelsus which survived throughout the following centuries and which were upheld by the scientific community as a method of further enhancing the strength of their own work by comparison with the absurd and dangerous investigations of more ancient and naive times. This is very much historical revisionism, though, and does not fully represent the contribution which the hermetic arts made to early scientific endeavours. As Charles Webster points out:

an important distorting element has been introduced into accounts of the rise of modern science through underestimation of the degree to which authors like Paracelsus, or authors belonging to the tradition of Neo-platonism or Hermeticism, remained an integral part of the educated elite into the late seventeenth century.<sup>39</sup>

The magical tradition, encompassing Cabala and alchemy, did not suddenly die at the very point of science’s introduction. Rather they remained parallel avenues of investigation and often more than parallel as eminent members of the Royal Society combined, without any notion of impropriety, the elements of scientific and alchemical

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<sup>37</sup> *Paracelsus: Selected Writings*, ed. by Jolande Jacobi (London: Routledge and Kegan Paul, 1951), p.213.

<sup>38</sup> *Paracelsus*, pp.213-223.

<sup>39</sup> Charles Webster, *From Magic to Science: Essays on the Scientific Twilight* (London: Ernest Benn, 1928), p.3.

knowledge which their own learning had made available to them.<sup>40</sup> Nevertheless the bonds between these two traditions do not rely solely upon this one tie. Linguistically, too, magic and science were connected. The seventeenth century defined philosophy as “the knowledge or study of nature, or of natural objects and phenomena; ‘natural knowledge’: now usually called science” as well as “magic or occult science; magic; alchemy”.<sup>41</sup> This collusion of alchemy, nature, magic and science in the term ‘natural philosophy’ strongly suggests the close alliance of these brands of thought in the work of early scientists and, as John Cohen states,

historians of science recognise nowadays that the alchemists and particularly the disciples of Paracelsus proved a rich source of experimental fact for the scientific workers of the seventeenth and eighteenth century.<sup>42</sup>

Despite the more recent realisation that science and magic were closely linked, which inspired G.H. Lewes to state that “ancient science is ancient magic”,<sup>43</sup> fiction in the sixteenth and seventeenth centuries largely reflected the disapproval of Cabalistic thought and process. Marlowe’s *Dr. Faustus* (1593) highlighted the illegitimacy of magical investigation and Ben Jonson’s *The Alchemist* (1610) cruelly parodied the exertions of alchemists in attempting to turn base metals into gold. Shakespeare’s *The Tempest* (1610), although contrasting Prospero’s generally ‘good’ magic with the evil

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<sup>40</sup> Webster argues this point too, suggesting that “many of the traces of these movements are reflected among the activities of the membership of the Royal Society, Newton perhaps providing the best example of all” (p.11).

<sup>41</sup> *O.E.D.*, 11, pp.688-689.

<sup>42</sup> Cohen, p.59.

Sycorax's black arts, ultimately directs his central protagonist to discard his hermeticism in preparation for a return to more civilised behaviour.

There were, of course, exceptions to this harsh treatment of magical tradition. Johannes Kepler's *Somnium* (1610)<sup>44</sup> provides the perfect example; not only does it take a more neutral attitude towards magic, it is also far more closely related to the science fiction of the early nineteenth century than any of the other texts mentioned above. The tale itself is an eclectic binding of Cabala and scientific theory, reflecting the varied interests of its author, who can be seen as a personification of the alliance between science and magic. Kepler was both an astronomer and an astrologer, making a marked contribution to the scientific field led by Copernicus and Galileo, as well as being a practical advocate of the more esoteric symbolism of the movements of the spheres. *Somnium* is a combination of all his knowledge. The story is one of a moon journey, the rendering of which is made possible by a demon conjured by the central protagonist. In a literal and metaphorical sense the demon is no more than a vehicle, for, once the moon is reached, the description of it is based on Kepler's scientific knowledge rather than any magical formulation. The creation of the demon is still important for it leads into the concerns of the present work. While it is not an artificial human *per se*, the method of its construction is highly reminiscent of the creation of the golem, one of the many

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<sup>43</sup> G.H. Lewes, 'Magic and Science', *All the Year Round*, March (1861) (repr. in *Versatile Victorian: Selected Writings of George Henry Lewes*, ed. by Rosemary Ashton (London: Bristol Classical Press, 1992), p.290.)

methods of artificial human construction which has been the central concern of both the magical and the scientific traditions throughout their long history.

It remains only to provide a resume of the scientific fiction of the artificial human dealt with in each of the forthcoming chapters. E.T.A. Hoffmann's short stories 'Automata' (1814) and 'The Sandman' (1816) provide the first discernibly scientific accounts of automata in a fictional context as well as the earliest narratives to utilise fully the techniques emulated by science fiction until the present day. For these reasons of originality the first chapter concentrates on Hoffmann. The second analyses Mary Shelley's *Frankenstein* (1818) which, although written only a few years after Hoffmann's tales, provides the first novel-length example of science fiction and embraces the conflict of philosophies which the scientific community was engaged in at the beginning of the nineteenth century. Also, as a narrative placed immediately before the onset of the second impetus of the Industrial Revolution (which greatly affected the nature of scientific research), *Frankenstein* acts as an important contrast to those narratives firmly rooted in the industrial or post-industrial era.

The period from 1820-1880, around which the third chapter is constructed, differs from the earlier part of the century in that it does not afford such an important text as *Frankenstein* nor does it produce tales which reflect the precise narrative form of science fiction which *Man-Machine* finds necessary. However this lack of a germinal

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<sup>44</sup> Although written in 1610 it was not published until after Kepler's death in 1630. See *Kepler's Dream: With Full Text and Notes of Somnium, Sive Astronomia Lunaris, Joannis Kepleri*, ed. by John Lear (Berkeley: University of California Press, 1965).

text invites as many questions and illuminates the age as well as any one narrative, and the reasons behind such an absence are discussed in some detail. The debate over the artificial human is still prevalent, most engagingly in the work of Edgar Allan Poe, Charles Dickens and Jules Verne. The changing relationship between the human and the machine (which becomes the driving force of scientific creation in this period) is examined largely in the light of the man-machine debate as confronted by writers of what is often called the realist tradition rather than science fiction.

Villiers de L'Isle-Adam's *Tomorrow's Eve* (1888) marks a return to a discussion of a single exemplary narrative and one which falls at a time when the heights of progress reached by industrialisation were waning and materialism was weakening its grip on scientific culture. L'Isle-Adam's novel also re-engages with the techniques of the science fiction narrative which had fallen into disrepute throughout the mid-nineteenth century. The twentieth century sees a continuation of these techniques, although mediated slightly by the falling away of esotericism in favour of a more determinedly scientific approach. Philip K. Dick's *Do Androids Dream of Electric Sheep?* (1968) represents an advancement of the man-machine debate, through the work of H.G. Wells and early modernist fiction, including Wilde, Eliot, Huxley and Capek, to a point where the oppositions between the human and the artificial are very difficult to discern. This is due largely to the more sophisticated forms of science available to Dick as well as to the different cultural reactions to science, which no longer views it with amazement and celebration but attempts to disguise or hide its influence.

## Staring Stiff and Motionless:

### The Short Fiction of E.T.A. Hoffmann

In the early years of the nineteenth century - while E.T.A. Hoffmann was working on 'The Sandman'(1814) and 'Automata'(1816)<sup>1</sup> - science was displaying the first symptoms of what would become a full-blown reformation: the Industrial Revolution. Before this was fully into its stride, however, scientific philosophy underwent an almost equally dramatic upheaval: the overturning of romantic ideologies and the consequent embracing of materialism. The first two decades of the nineteenth century witnessed the progress of this philosophical sea-change, which ended ultimately with romanticism (for so long the central defining philosophy of scientific endeavour) banished to the boundaries of mainstream research and replaced by a materialistic philosophy which favoured mechanistic force and practical scientific power above all else. It was the outcome of this battle which led Thomas Carlyle to expound, in 1829, that

The science of the age, in short, is physical, chemical, physiological, and, in all shapes, mechanical.[...]Our true deity is Mechanism. It has subdued external nature for us, and, we think, it will do all other things. We are Giants in physical power, in a deeper than a metaphorical sense, we are Titans, that strive, by heaping mountain on mountain, to conquer Heaven also.<sup>2</sup>

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<sup>1</sup> E.T.A. Hoffmann, 'The Sandman' in *Tales*, ed. by Victor Lange (New York: Continuum, 1982), pp.277-308 and 'Automata' in *The Best Tales of Hoffmann*, ed. by E.F. Bleiler (London: Dover, 1967), pp.71-103. All references in the text refer to these editions.

<sup>2</sup> Thomas Carlyle, 'Signs of the Times', *Edinburgh Review*, 49 (1829), 439-459 (pp.445-453). Carlyle is a fine example of the oppositions apparent in romantic and materialist philosophies. Despite having a transcendental view of the cosmos, Carlyle was reluctantly impressed by the vast power of mechanisation and the difficulty he had in reconciling these opposing views is evident in a great deal of his work in the first half of the nineteenth century, most markedly in the essay included here.



Yet only thirty years before Carlyle provided these 'Signs of the Times', Friedrich Schelling was outlining a romantic philosophy of science in *Ideas Towards a Philosophy of Nature* (1797) and *First Outlines* (1799). Even as late as 1817, Hegel included Schelling's work as a central tenet of his new *Encyclopaedia*.<sup>3</sup>

It is not, therefore, so easy to delineate the downfall of romanticism and the succession of materialism. At no point can one highlight any particularly significant moment - scientific, cultural or artistic - which provides a definitive touchstone for a change of philosophical direction. Indeed, even with the advent of materialism during the onset of the Industrial Revolution, romanticism did not entirely disappear: less traditional avenues of scientific research remained faithful to the totalising view of the natural world which was a central ideology of romantic belief. Likewise, materialism did not spring suddenly from the increased mechanisation which aided the initial impetus of the industrial revolution. Descartes' dualistic description of the human - which separated the soul from the body and maintained that the human form was no more than a complex piece of mechanism - influenced the scientific community from 1650 onwards,<sup>4</sup> well before Schelling's work on scientific

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<sup>3</sup> Schelling's scientific romanticism - which he called *naturphilosophie* - was based upon cosmic principles. Schelling put forward the thesis that the universe was constructed upon polar oppositions which kept everything in a state of constant flux. This allowed for an appreciation of the world as a living organism, with the core of this organism residing in the spirit or soul. On the whole, Schelling's approach to science was a totalising one, in direct contrast to those advocates of mechanism - from Descartes onwards - whose theories were almost entirely reductionist and separatist.

<sup>4</sup> Cartesian dualism - as the separation of mind and body came to be called - was the subject of Descartes' thesis of 1649, *The Passions of the Soul* (repr. *Les passions de l'âme* (Paris: Gallimard, 1969)) It is revealed in this work that "a human being must be, for Descartes, some kind of union of two distinct things; a soul, or mind, and a body. The body is part of mechanical nature; the mind, a pure thinking substance. Since the body is a mechanical system, the soul is not (as in the opinion of

romanticism. In actual fact, Descartes' metaphor of dualism admirably exemplifies the state of scientific philosophy in the late eighteenth and early nineteenth centuries; where both romanticism and materialism effected scientific thought and were affected by the scientists themselves. Running diachronically but separately, the romantic and the materialistic (or mechanistic) influenced the nature of the sciences, and through them, the very fabric of European culture, in a time when "everyone, rich and poor, native and foreign, could directly or indirectly witness the advantages attributed to science."<sup>5</sup>

Ultimately, though, a conflict of belief<sup>6</sup> did arise and it is within this atmosphere of oppositions that Hoffmann's short tales supply science fiction with one of the earliest creations of the artificial human:<sup>7</sup> the animated automaton. Automata, within the scientific community, were the product of a more artistically skilful science than the profession normally generated. As the *Edinburgh Encyclopedia* of 1830 stated, the Androides (machines resembling the human figure) were

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the ancients) the principle of life" (*Encyclopedia of Philosophy*, ed. by Paul Edwards, 8 vols (London: Macmillan, 1972), 2, p.353).

<sup>5</sup> G.S. Rousseau, 'Science', in *The Eighteenth Century*, ed. by Pat Rogers (London: Methuen, 1978), pp.153-207 (p.157).

<sup>6</sup> The range and nature of the conflict between romantic notions of scientific endeavour and a materialistic view of the workings of the natural world should not be over-stated. Materialism and mechanism did not remove romanticism entirely from the scientific profession. Rather, in the first decades of the nineteenth century, the materialistic foundations of proper and successful scientific research became the traditional, mainstream criteria for any credible work in the field. Romanticism was not killed off, merely pushed into a more peripheral role. The conflict, then, was hardly a bloody battle fought to a finish but an intellectual challenge to the central tenets of scientific methodology and orthodoxy.

<sup>7</sup> Hoffmann's automata are certainly among the first fictional accounts of the robot. *The Encyclopedia of Science Fiction* states that "machines which mimic human form date back, in both fiction and reality, to the early nineteenth century. The real automata were show-pieces: clockwork dummies or puppets. Their counterparts in the fiction of E.T.A. Hoffmann - the Talking Turk in 'Automata'

considered as the most perfect or difficult of the *automata* or self-moving machines; because the motions of the human body are more complicated than those of any other living creature. Hence the construction of an *Androides*, in such a manner as to imitate any of these motions with exactness, is justly considered as one of the highest efforts of mechanical skill. (p.62)

And yet it was not during the Industrial Revolution - that period of history in which the skills of mechanisation were so celebrated - that the construction of automata reached its zenith. In fact the golden age of automata production (or more specifically of *Androides*: automata which imitated the human form) comes in the mid-eighteenth century; with Jacques de Vaucanson's imitation of a flute-player, which was exhibited in Paris in 1738 and the Turkish chess-player of M. de Kempelen, which - having been built around 1769 - became a sensation across Europe in the early 1780s.<sup>8</sup> While these automata, and many others, displayed a limited range of qualities, remaining unable to represent human speech effectively, reply to questioning, react to individual prompting, or at all deviate from their programmed responses, they were regarded - by society - with wonder and astonishment. Indeed those most impressive in their representation of the human form were most often believed to include either human agency or the processes of magic in their performance as well as their construction. As early as the thirteenth century, the philosopher Albertus Magnus "formed an artificial man, in the

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(1814) and Olympia in 'The Sandman' (1816) [the earliest cited examples] - present a more verisimilitudinous image" (p.1018).

<sup>8</sup> Jacques de Vaucanson (1709-1782) was a member of the *Académie royale des sciences*. Besides constructing many skilful automata (including a duck which ate, swallowed, defecated, and was capable of very realistic sound), Vaucanson is credited with the creation - in consultation with others - of the first automatic weaving loom. M. de Kempelen (dates unknown) is known primarily for the Turkish chess-player mentioned here. See Illustrations (pp.151-152).

construction of which he spent thirty years of his life” and “which appeared so wonderful to the ignorant multitude, as to draw upon [the inventor] the dangerous imputation of being addicted to magic”.<sup>9</sup> However, the automata makers themselves did little to persuade the uninitiated that their creation of the artificial human was one of mechanical skill and not of supernatural origin. While, as Otto Mayr, an historian of automatic machinery, points out, “mechanical[. . .]in a certain sense, was the opposite of magical”<sup>10</sup> those automatons exhibited to the public were “purposely kept at a distance[. . .]with the circumstances of the display carefully stage-managed to produce a mood of mystery and magic”.<sup>11</sup> The outcome of such a preternatural foundation was the wide regard of automata as “mediators between the worlds of magic and rationality”.<sup>12</sup> This impression of automata as *supernatural* (being both within and, at the same time, more than, nature) led only to a reinforcement of the beliefs of the mechanists that they were attempting - and in some way succeeding - in their creation of the human form. As one critic argues:

Vaucanson and other automata makers of his day had in fact no lesser goal than the re-creation of life. Like Prometheus, these men dared to investigate the secrets of creation which, until then, had been considered beyond the reach of mankind.<sup>13</sup>

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<sup>9</sup> Saint Albertus Magnus (c.1200-1280) - sometime pupil of Thomas Aquinas - was apparently a greatly skilled mechanist. Aquinas, it is said, destroyed Magnus' artificial man as it was seen to be ungodly. History, though, also attests that he did so merely to prove that he could undo in one moment what had taken years to create. Quotes from the *Edinburgh Encyclopedia*, ed. by D. Brewster, 18 vols (Edinburgh: Blackwoods, 1830), 3, p.62.

<sup>10</sup> Otto Mayr, *Authority, Liberty and Automatic Machinery in Early Modern Europe* (London: The Johns Hopkins University Press, 1986), p.55.

<sup>11</sup> Mayr, p.24.

<sup>12</sup> Mayr, p.26.

<sup>13</sup> Christian Bailly and Sharon Bailly, *Automata: The Golden Age, 1848-1914* (London: Sotheby's, 1947), p.14.

It was a goal, of course, which remained outwith the reach of even the most skilled makers of automata. Despite their many excellent re-creations of life the mechanised human forms remained “narrow and specialised; in particular, they could not make appropriate responses to unexpected challenges from the outside. Automata, then, were not capable of participating in dialogue or answering questions”.<sup>14</sup>

Essentially it is in these last two statements that the dichotomy of the early nineteenth century automata lies: while their limitations were easily understood and immediately obvious, the aura of suspicion which surrounded such imitation of human form and action, with the concomitant spectre of magical interference, lent an atmosphere of both admiration and distrust whenever the subject of the automaton was raised. M. de Kempelen’s chess-player provides a very pertinent example in this case. Despite the many attempts of its creator to show that it was a merely mechanical construct, of those who seriously considered its origin, not one could desist from believing the automaton a product of more than a plethora of wheels, gears and levers. The *Edinburgh Encyclopaedia* captures the general sentiment of the commentators of the time:

The construction of machines capable of imitating even the mechanical actions of the human body, display exquisite skill; what then shall we say of one capable, not only of imitating actions of this kind, but of acting as external circumstances require, as if it were endowed with life and reason? This, however, was to all appearances accomplished by M. de Kempelen, a gentleman of Presburg, in Hungary, who, excited to rival the mechanical performances of M. Vaucanson, was supposed at length to have greatly excelled them. We allude here to the *Androides*

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<sup>14</sup> Mayr, p.66.

which that gentleman not long ago exhibited at Paris, Vienna, London, and other places, and which was capable of playing skilfully at the game of chess. Every one in any degree acquainted with the principles of this game, must be well aware, that it is so far from being mechanically performed, that it requires a greater effort of judgement than is sufficient to accomplish many matters of greater importance. An attempt, therefore, to make a mechanical chess-player must appear nearly as ridiculous as to make a mechanical counsellor of state.<sup>15</sup>

This passage provides many clues to the dominant assumptions of the period. There is a distinct cynicism throughout, exemplified by the mediation of “supposed” which calls into question the veracity of historical evidence, and which is reinforced by the phrase “to all appearances”, suggesting that the present writers are rather dubious of the apparent facts they are reporting. Add to this the insistence that the creation of a mechanical chess-player is “ridiculous”, an insistence which springs more from discomfort than from mere pessimism, and several conclusions can be fairly drawn. Central, then, in contemporary opinions such as this, was the concern over the actual production of those pieces of clockwork humanity which appeared capable of far greater human simulation than mechanical science seemed to offer. More succinctly, those automata with many limitations and little imitation were found to be admirable show-pieces of scientific excellence while those with greater imitation, combined with fewer limitations, were viewed with scepticism and no little distrust.

Hoffmann’s ‘Automata’ (1814) is easily categorised with the latter of these two types. The Talking Turk - “a very remarkable automaton”<sup>16</sup> - “was attracting universal attention, and setting the town in commotion” (p.78) and, as Theodore -

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<sup>15</sup> *Edinburgh Encyclopaedia*, 3, p.64.

<sup>16</sup> E.T.A. Hoffmann. ‘Automata’, p.78. All further quoted material from this text will be marked by the page number within the body of the text but will not be referred to in the footnotes.

Hoffmann's narrator - makes clear, as an example of artificial humanity it was far in advance of the rather poor copies normally exhibited to the public:

The hall where this automaton was exhibited was thronged by a continual stream of visitors, of all sorts and conditions, from morning till night, all eager to listen to the oracular utterances which were whispered to them by the motionless lips of this wonderful quasi-human figure. The manner of the construction and arrangement of this automaton distinguished it very much from ordinary mechanical figures. It was, in fact, a very remarkable automaton. (p.78)

Undeniably, regardless of the artistic skill involved in copying the human form to such a fine degree, the Talking Turk's singularity springs from its ability to provide the most astonishingly apt "oracular utterances" in answer to specific questions:

Despite the puzzling, mysterious nature of this exhibition, perhaps the interest of the public might soon have grown fainter, if it had not been kept alive by the nature of the answers which the Turk gave. These were sometimes cold and severe, while occasionally they were sparkling and witty - even broadly so at times; at others they evinced strong sense and deep astuteness, and in some instances they were to a high degree painful and tragic. But they were always strikingly apposite to the character and affairs of the questioner, who would frequently be startled by a mystical reference to the future, only possible, as it would seem, to one cognizant of the hidden thoughts and feelings which dictated the question. (p.80)

Many of the Talking Turk's character traits - sparkling, witty, sensible, astute - are not those associated with automata. In fact the very admission of character at all is not something one would encounter in a description of mechanics. Indeed these are more commonly applied to human, rather than mechanical, nature. From this aspect, Hoffmann's automaton is readily comparable with Kempelen's chess-player, displaying efforts of judgement that are "far from being mechanically performed"

(p.80). The similarities, however, do not end here. As well as in character, Hoffmann parallels Kempelen's creation in form, demeanour, dress and situation, as a comparison of the two - from 'Automata' and Edgar Allan Poe's first-hand account of the chess-player - will reveal:

In the centre of a room of moderate size, containing only a few indispensable articles of furniture, sat this figure, about the size of a human being, handsomely formed, dressed in a rich and tasteful Turkish costume, on a low seat shaped like a tripod. The exhibitor would move this seat if desired, to show that there was no means of communication between it and the ground.

The Turk's left hand was placed in an easy position on its knee, and its right hand rested on a small moveable table. Its appearance, as has been said, was that of a well-proportioned, handsome man, but the most remarkable part was its head. A face expressing a genuine Oriental astuteness gave it an appearance of life rarely seen in wax figures, even when they represent the characteristic countenances of talented men.

A light railing surrounded the figure, to prevent the spectators from crowding too closely about it; and only those who wished to inspect the construction of it (so far as the exhibitor could allow this to be seen without divulging his secret), and the person whose turn it was to put a question to it, were allowed to go inside this railing, and close up to the Turk. (pp. 78-79)

And from Poe's account of Kempelen's chess player:

At the hour appointed for exhibition, a curtain is withdrawn, or folding doors are thrown open, and the machine rolled to within about twelve feet of the nearest of the spectators, between whom and it (the machine) a rope is stretched. A figure is seen habited as a Turk, and seated, with its legs crossed, at a large box apparently of maple which serves it as a table. The exhibitor will, if requested, roll the machine to any portion of the room, suffer it to remain altogether on any designated spot, or even shift its location repeatedly during the progress of a game. The bottom of the box is elevated considerably above the floor by means of the castors or brazen rollers on which it moves, a clear view of the surface immediately beneath the Automaton being thus afforded to the spectators. The chair on which the figure sits is affixed permanently to the box. On the top of this latter is a chess-board, also permanently affixed. The right arm of the chess-player



is extended at full length before him, at right angles with his body, and lying, in an apparently careless position, by the side of the board.<sup>17</sup>

Minor cosmetic differences apart, it is clear that Hoffmann had Kempelen's automaton very much in mind when creating his own fictional version: the Turkish costume, the cordon of rope and railing, the highlighting of the floor area directly beneath the mechanism, the particular references to the positioning of the hands and the role of the exhibitor provide such close links as to make no other explanation as plausible.

Most important, though, is the more extended comparison that can be made with regard to the guiding principle of these automata. Kempelen's chess-player was discovered not to be the result of scientific genius but a collection of useless mechanical parts whose only use was to hide a human controller within the bowels of the automaton.<sup>18</sup> By association, Hoffmann's Talking Turk - while showing similar, apparently non-mechanical prowess - is regarded as clever only by the devious nature in which it has secreted some human agency. As Ferdinand, the central protagonist of the tale, argues:

The figure [of the Talking Turk] (which everyone says is a handsome-looking one, with nothing ludicrous or repulsive about it) - the figure really plays a very subordinate part in the business, and I think there can be little doubt that the turning of the head and the eyes,

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<sup>17</sup> Edgar Allan Poe, 'Maelzel's Chess-Player', *Southern Literary Messenger*, April (1836) repr. in *The Collected Works of Edgar Allan Poe*, ed. by James A. Harrison, 17 vols (New York: AMS Press, 1965), 14, pp. 6-37 (pp.12-13). See also illustrations, p.152.

<sup>18</sup> Poe's essay on the subject describes how the construction of the chess-player very cleverly allowed the audience to believe they had been shown the entire inner workings of the mechanism - which allocated no room for a human being - while actually revealing only certain sections, in a strict order, which allowed the human hidden within to move from section to section in order to avoid detection. For a full description of how this was achieved please refer to pages 22-37 of Poe's discussion.

and so forth, are intended to divert our attention for the very reason that it is elsewhere that the key to the mystery is to be found. That the breath comes out of the figure's mouth is very likely, perhaps certain; those who have been there say it does. It by no means follows that this breath is set in motion by the words which are spoken. There cannot be the smallest doubt that some human being is so placed as to be able, by means of acoustical and optical contrivances which we do not trace, to see and hear the persons who ask questions, and whisper answers back to them. (pp.81-82)

The dubiously founded seer-like quality of the Talking Turk removes it from the world of the mechanistic and places it to some degree in the world of the mystical, or, of more concern for narrative integrity, the fraudulently unscientific. For Hoffmann - working within a cultural climate where a rational, empirical science was beginning to undermine the cosmic, speculatively-based romantic notions of scientific investigation, and, more particularly, within a field which distrusted the authenticity of the more fantastic elements of automata creation - the creation of an artificial human which appeared suitable only to the realm of *fantasy* narrative was anathema to the *scientific* foundations on which the tale was laid.<sup>19</sup>

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<sup>19</sup> Hoffmann's scientific narratives can be analysed according to Russian formalist principles; they invoke what Shklovsky termed *ostranenie* ('estrangement'), which defamiliarises the commonplace by placing the everyday in parallel with some supernatural 'otherness'. Hence we find a fairly ordinary automaton 'made strange' by its more supernatural ability to answer questions in an oracular manner. Scientific fiction often works in this way: Darko Suvin, in *The Metamorphoses of Science Fiction: On the Poetics of a Literary Genre* (London: Yale University Press, 1979), argues that "it is - potentially - the space of a potent estrangement" (p.viii); Eric Rabkin finds SF in narrative if "its narrative world is at least somewhat different from our own, and if that difference is apparent against the background of an organised body of knowledge[science]"(p.119) in *The Fantastic in Literature* (New Jersey: Princeton University Press, 1976). Fantasy literature, on the other hand, displays many similarities with these definitions, not least Colin Manlove's belief, set out in *Modern Fantasy: Five Studies* (Cambridge: Cambridge University Press, 1975), that the fantastic is "of another order of reality from that in which we exist and form our notions of possibility" (p.3). However, it is the idea of possibility which firmly separates the two: fantasy, while adhering to its own internal rules (for example, Tolkien's "subcreation" discussed in *Tree and Leaf* (London: Allen and Unwin, 1964)), may take any form, however implausible. Scientific fiction, though, must adhere strictly to contemporary reality, disguising the fantastic elements of its narrative by throwing an air of possibility over the mechanics of the story. It is the narrative's ability to provide such a "suspension of disbelief" that gives scientific fiction its unique nature and its power.

This is immediately suggestive of some failing on Hoffmann's part to remain true to the rules of the science fiction narrative. However, it is in the combining of the mystical with the scientific that the strengths of this type of narrative lie. Hoffmann's creation of the artificial human is influenced not only by the opposing philosophies of romanticism and materialism but also by the very fabric of his narrative construction. The fictional world of 'Automata' may appear to belong largely to nineteenth century scientific rationalism; however, the rules governing the evocation of this world belong solely within the tradition of magic, alchemy and ancient esotericism. This chapter has begun by highlighting the apparently twin edifices of magic and science which seem to play a particular part in the personality of the Talking Turk. So far these two forces have been kept apart but it is in the conjoining of them in the narrative background that the tale comes to life. As already suggested, rational science and esotericism are two sides of the same investigative coin and they play an equal and complementary part in Hoffmann's subtle building of his narrative foundations. The Talking Turk's incredible abilities cannot be created by mechanistic science alone, for the tale would easily fall into the realms of fantasy were an extrapolation of mechanical procedure suddenly found able to induce an active intelligence. Likewise if Hoffmann were to create the Talking Turk along magical lines (which would allow the narrative to employ any rules at all) the story would no longer be scientifically credible. In fact, Hoffmann combines the two: the Talking Turk is outwardly mechanistic, consisting of the cogs and wheels with which Vaucanson built his flute-player, and inwardly esoteric, finding some form of life from a realm other than the scientific. Neither is allowed to

dominate, instead they play off one another and off the historical precedents which have always allied the artificial human with magic just as easily as with science. This type of construction does not apply solely to the figure of the Talking Turk. The entire narrative is created upon similar grounds.

The narrative form of 'Automata' resembles the structure of Russian dolls: one fitting within another until we reach the smallest and last, which remains empty, revealing nothing. The story of Adelgunda's paranormal visions - transmitted orally by Cyprian - together with Theodore's manuscript of 'Automata' are mediated by the narrator's account of the events that led to the exposition of both these tales. This reveals the outermost walls of the story's complex framework but if we turn inward to the core of the narrative structure we are brought to the manuscript of 'Automata' itself. Initially urged upon his fellows by Theodore in an attempt to retrieve some sanity in the wake of Cyprian's ghost story, the exegesis of the Talking Turk ends somewhat prematurely for the gathered company, Theodore's fellows becoming dismayed at the hollowness of the denouement. This is the innermost of the Russian dolls, offering no solution or enlightenment of the facts therein.

Why, therefore, do the tales within tales of Hoffmann's short story offer only fragments of the whole? Scientific empiricism seemed able to unearth the very secrets of nature, but here the protagonists fail to draw any concrete conclusions from what appears to be a rational and scientific narrative. Indeed scientific method - as personified by the multitude of experts who examine the workings of the Talking Turk - reveals nothing. Contemporary science provides only the portrait: the culture of magic and sorcery composes the frame. A.E. Waite tells us that in the world of

legerdemain “the visible melts into the unseen, the invisible is manifested openly[. . .]all paradoxes seem to obtain actually, contradictions coexist logically, the effect is greater than the cause and the shadow more than the substance.[. . .]Words and wishes possess creative power, thoughts are things, desire realises its object”.<sup>20</sup> To continue our artistic metaphor in the light of this information, it is as though Hoffmann’s tale resembles a painting by Joseph Wright enclosed in a frame by Dali.<sup>21</sup> Moreover Waite convincingly proves that magical literature from the Middle Ages onward became remarkably conservative, unwilling to reveal complete formulae or describe entire rituals. This gave rise to a fragmentation of information in the world of sorcery which, nonetheless, could provide substantial instruction if several texts were considered simultaneously. As Waite has argued, “what is obscure in the one may be understood by the help of the other”.<sup>22</sup> No wonder then that scientific investigation proves fruitless. A magical method is necessary for the understanding of such a magical world. ‘Automata’ presents living proof of this method.

In deciphering the mystical narrative of the Talking Turk one must juxtapose this text with that of Cyprian’s tale of Adalgunda as well as the narrator’s description of the events that began the story. These disparate accounts must be approached magically, as an initiate of the paranormal world would approach three magical texts in the knowledge that the art works “by definite formulae [and is] a

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<sup>20</sup> A.E. Waite, *The Book of Ceremonial Magic: Including the Rites and Mysteries of Goetic Sorcery and Infernal Necromancy* (London: William Rider, 1911), p. 3.

<sup>21</sup> See for example Wright’s famous scientific painting ‘An Experiment Upon a Bird in the Air Pump’. As for Salvador Dali, I refer here to the surreal illogicality that can be found in the majority of his more famous works.

process in words”.<sup>23</sup> Hoffmann, in building the world of ‘Automata’ on the principles of magic, presents the reader with three fragments, suggesting that any useful criticism demands the analysis of all three texts.

The tale of the Talking Turk is the central text of these three. It encompasses not only the mystical, preternatural frame around which the entire tale is built but also the science with which Hoffmann paints in the details of his portrait. The Turk itself provides several problems. Its construction can be readily dismissed as the ingenious creation of a skilled mechanist, but the oracular answers received by its inquisitors are more difficult to define. Indeed science can provide no reconciliation for its “marvellous intelligence” (p.80). Explaining the seer-like qualities as a derivative of spiritual influence fails to convince. Leonardo da Vinci for example, himself a mechanist of some skill, totally rejects this hypothesis:

O mathematicians, shed light on this error. The spirit has no voice, because where there is a voice there is a body, and where there is a body space is occupied, and this prevents the eye from seeing what is placed behind that space[. . .]and if anyone should say that[. . .] a spirit may take various forms and by this means speak and move with strength - to him I reply that when there are neither nerves nor bones there can be no force exercised in any kind of movement made by such imaginary spirits.<sup>24</sup>

Yet da Vinci did believe in the spiritual principle of mechanics. Rather than magical, however, his belief sprang from alchemical theories of the growth of metals. This theory arose from the discovery in metals of various states leading alchemists to

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<sup>22</sup> Waite, p.5.

<sup>23</sup> Waite, p.7.

believe that all metals enjoyed a growth similar to plants and animals. From this point of departure was construed the assumption that metals - again akin to animals - maintained both a body and a spirit. The Turk, we remember, consists almost entirely of metal, compared at times to the workings of a clock containing “a complicated mechanism consisting of a number of wheels” (p.79). Hoffmann’s automaton presents a figure built on the principles of science but reflecting the composite world of magic and sorcery. The spirit of the metals that comprise the inner workings of the Turk has been mystified by the narrative’s sorcery to create an animised artificial human that personifies Waite’s statement of contradictions coexisting logically.

Still, the tale provides no mechanistically viable answer to the Talking Turk’s supernatural characteristics and is in danger of too heavily foregrounding the magical foundation upon which it is built. Hoffmann, though, does not attempt to extrapolate upon early nineteenth century mechanical science in order to argue the rationality of the Turk’s amazing powers. Indeed it is very clear that not even those well-versed in the construction of mechanical objects could find the slightest clue as to the source of the automaton’s intelligence:

The figure and its exhibitor were watched and scanned most closely by the eyes of the most expert in mechanical science; but the more close and minute the scrutiny, the more easy and unconstrained were the reactions and proceedings of both. The exhibitor laughed and joked in the farthest corner of the room with the spectators, leaving the figure to make its gestures and give its replies as a wholly independent thing, having no need of any connection with him. Indeed he could not wholly

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<sup>24</sup> *The Literary Works of Leonardo da Vinci*, ed. by Jean-Paul Richter (London: Oxford University Press, 1970), p.252.

restrain a slightly ironical smile when the table and the figure and tripod were being overhauled and peered at in every direction, taken as close to the light as possible, and inspected by powerful magnifying glasses. The upshot of it all was, that the mechanical geniuses said the devil himself could make neither head nor tail of the confounded mechanism. (p.80)

Instead, the narrative provides a form of mysticism that fits well with the magical foundations of the tale but is equally at home in the scientific realm. Subtly, through the other sections of the tale<sup>25</sup> and through the character of the Talking Turk's creator - Professor X - the science of mesmerism becomes inextricably linked with the creation of the artificial human, playing as vital a part in its construction as the science of mechanics. Hoffmann's use of mesmerism is vitally important and very clever. It removes the spectre of a too outwardly-magical basis but is, at the same time, a science readily amenable to a more magical interpretation.

Mesmerism received its title from the Viennese doctor Franz Anton Mesmer (1734-1814), whose work with electromagnetic treatments led to the field of study known today as hypnotism. The origins of this technique can be traced to Mesmer's agreement to undertake "to treat the patient whose malady led him to the theory of animal magnetism as a potential medical cure".<sup>26</sup> This case resulted in Mesmer defining and aggregating those elements of his treatment which were to become essential to mesmerism in a 1775 publication entitled *Letter to a Foreign Physician*.

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<sup>25</sup> 'Automata' is very much in the mould of the classic Gothic novel in its construction: there are three distinct sections to the narrative as a whole. First, the introduction of the storytellers - Vincent, Theodore, Cyprian, Lothair and the narrator - who are involved in a mind experiment over dinner. Second, the story of Adelgunda's visions, narrated by Cyprian, who finds that the answer to the strange tale he narrates probably resides with some strange spiritual principle. Third, the story of the automata, narrated by Theodore, which appears unlinked to the previous two and without a satisfactory conclusion. In fact, the three are very closely tied together.



This was followed by *Memoir on the Discovery of Animal Magnetism* (1779), written while Mesmer worked at his own clinic in Paris. Indeed the Paris years - from the late 1770s through the 1780s - saw mesmerism reach the height of its popularity, exciting as much, if not greater, interest and controversy as the best automata of the day. More books followed: Mesmer's *Short History of Animal Magnetism* was published in 1782, his *Memoir of F.A. Mesmer, Doctor of Medicine, Concerning His Discoveries* in 1799 and the final manuscript, *Mesmerismus*, in 1814, the same year as Hoffmann's publication of 'Automata'. Work on mesmerism, however, was not confined solely to its discoverer. Indeed, as Mesmer's biographer points out, "theories of Mesmerism proliferated so rapidly that, as early as 1813, before Mesmer's death, J.P.F Deleuze was able to publish a *Critical History of Animal Magnetism*." (p.208)

It is, of course, the actual techniques of animal magnetism which provided the fuel for such interest and contention. Mesmer - a doctor with firm beliefs in the philosophies of romantic science<sup>27</sup> - viewed certain illnesses as a disruption of the natural polar forces of the body.<sup>28</sup> His use, therefore, of magnetic and electrical power sources was designed, essentially, to correct the imbalance that had occurred in individual patients and thereby cure the associated diseases, be they physical or

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<sup>26</sup> Vincent Buranelli, *Franz Anton Mesmer: The Wizard From Vienna* (London: Peter Owen, 1976), p.39. This book is the source for all the information on Mesmer's life and work, including the titles and dates of published works which I refer to here.

<sup>27</sup> Certainly, those sympathetic to the views of scientific romanticism were very quick to embrace Mesmer's new-found medical cure. As Buranelli makes clear, almost immediately "mesmerism coalesced with the other elements of romanticism" (p.219).

<sup>28</sup> The concept of polar forces was central to the theses of Friedrich Schelling and his associates, thus further connecting Mesmer's work with scientific romanticism. For a more detailed discussion of magnetic, polar force see *Romanticism and the Sciences*, ed. by Andrew Cunningham and Nicholas

mental. Such treatments worked, according to Mesmer, because “the animal body reacts to the alternate effects of this agent [the magnetic or electrical force], which by entering the substance of the nerves affects them immediately” (p.101).<sup>29</sup> Further, the expansion of such treatments to embrace the sleep-inducing mesmeric trance, was no more than an extension of this basic premise from the realm of the physical into the realm of the psychological. The mesmeric trance, instigated by one who has a keen perception of the magnetic force, which Mesmer always claimed to enjoy, can bring about the same results as the magnetic or electrical agent by discovering in the psyche of the patient some event, emotion, or belief which appears to have caused a polar imbalance. Through the powerful influence of the mesmerist, this imbalance can then be corrected by ridding the psyche of its disabling factor.<sup>30</sup>

Hoffmann, while remaining “in two minds about mesmerism”<sup>31</sup> throughout his life, incorporates the mesmeric ability to influence - through cosmic, universal polar forces - the physical world, with the strictly materialist construction of the Talking Turk, to create an artificial human able to display distinctly human characteristics well beyond the imitative skills of mechanical science. The reasons for including the science of mesmerism do not only reside in the necessity to create a

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Jardine (Cambridge: Cambridge University Press, 1990), which looks far more closely at Schelling’s work in this context.

<sup>29</sup> Such an idea was not new. Paracelsus had applied similar techniques centuries before, arguing his case from an alchemical standpoint. His somewhat mystical appreciation of magnetic power is confirmed by his belief that in such treatment “the spirit is the master, the imagination is the instrument, the body is the plastic material” (Buranelli, ‘Introduction’).

<sup>30</sup> Modern psychological hypnotism employs a similar technique: revealing the hidden trauma in the unconscious mind of a patient in order to grasp, say, the often deep-seated causes of mental illness. The *Oxford English Reference Dictionary*, ed. by Judy Pearsall and Bill Trumble (Oxford: Oxford University Press, 1995) reinforces this view, revealing that “hypnotic suggestion has been used in psychotherapy, e.g. to treat addiction” (p.697).

predominantly scientific basis for the narrative as a whole. Mesmerism does not just keep up the rigidly scientific appearance of the Talking Turk: it also allows for a much freer interpretation of the role of the artificial human within the human community. It brings out more clearly the oppositions (or lack thereof) between the real and the fake. These oppositions are given greater focus when we realise that it is not the case that mesmerism springs from the automaton itself: the Talking Turk is not directly imbued with an actively powerful mesmeric facility. Rather, the effects of mesmerism work with, and upon, the characters directly associated with the Turk (primarily Professor X and Ferdinand) and thereby alter not the automaton itself but the entire assembly of participants in the tale.<sup>32</sup> The narrative, therefore, very cleverly side-steps the scientific problems of creating an artificial human as life-like as the Talking Turk by introducing a wholly scientific schema into the tale - setting up, as Darko Suvin has attested, a “potent estrangement” - which promotes the human characteristics of the automaton at the expense, not of scientific verity, but of the participants and the reader.

How, though, does Hoffmann introduce mesmeric concepts into the narrative, and how are they connected with the Talking Turk? Initially this is done through Professor X. After Lewis and Ferdinand had visited the automaton for themselves, during which Ferdinand questioned the Turk and “was very deeply moved” (p.83) by its answer, they discover that the exhibitor “really has no hand at

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<sup>31</sup> Maria M. Tatar, *Spellbound: Studies on Mesmerism and Literature* (New Jersey: Princeton University Press, 1978), p.149.

<sup>32</sup> I use the term ‘participants’ in a structuralist sense: to refer to the characters, or actants, in the sense that they are narrative creations which ‘do’ rather than ‘be’. The effects of mesmerism in creating a

all in what are the truly remarkable features of it” (p.89). Indeed it is Professor X, “a gentleman highly skilled in matters of the kind” (p.89), who is the real originator of the automaton’s marvellous powers:

The Turk had been here a couple of days, and nobody had taken any particular notice of him, though Professor X took care to go and see him at once, because everything in the shape of an automaton interests him in the highest degree. When he had heard one or two of the Turk’s answers, he took the exhibitor aside and whispered a word or two in his ear. The man turned pale, and shut up his exhibition as soon as the two or three people who were in the room had gone away. The bills disappeared from the walls, and nothing more was heard of the Talking Turk for a fortnight. Then new bills came out, and the Turk was found with the fine new head, and all the other arrangements as they are at present - an unsolvable riddle. It is since that time that his answers have been so clever and so interesting. That all this is the work of Professor X admits of no question. (p.90)

Upon hearing this revelatory disclosure, both Lewis and Ferdinand feel “strangely and vividly impressed by the[. . .]influence which he [Professor X] had brought to bear on that strange automaton” (p.90) and decide to pay a visit to Professor X’s home in the hope of enlightening Ferdinand’s despair over the Turk’s “oracular utterances” (p.90). They find the Professor an amenable figure, more than willing to show them his own automata, which are normally held in the utmost secrecy, but are less than attracted by his appearance and character. He was “dressed in an old-fashioned French style” (p.93) - perhaps hinting at Mesmer’s famous sojourn in Paris in the 1780s - and had “small grey eyes which had an unpleasant way of fixing themselves on one” (p.93), reminiscent of the technique used by Mesmer to induce a

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very effective imitation of humanity play, first and foremostly, upon the character’s actions and reactions to the automaton and only ultimately upon the psyche of these characters.

trance, in which he stared intensely into the eyes of his patient in order to bring about the sleep-like state in which he worked his cures.<sup>33</sup> More readily apparent parallels with the Viennese doctor are quickly introduced and occur soon after the end of the protagonists' interview with the Professor. Lewis and Ferdinand leave the home of Professor X rather disgruntled having discovered nothing pertaining to the mystery of the Talking Turk. Indeed, they have merely been treated to an exhibition of some equally fine musical automata. Discussing the phenomena of mechanically created music as they walk, both are intrigued to hear the most exquisite sound "which, as it swelled and became more distinguishable, seemed to resemble the tone of a glass harmonica" (p.99). Believing this enchanting piece of music to come from "a garden which was surrounded by lofty trees and tall hedges" (p.99) they move closer, affording themselves a view into the garden:

What was their astonishment to see Professor X standing in the middle of the garden, beneath a lofty ash-tree! Instead of the repellent ironic grin with which he had received them at his house, his face wore an expression of deep melancholy earnestness, and his gaze was fixed upon the heavens, as if he were contemplating that world beyond the skies, of which those marvellous tones, floating in the air like the breath of a zephyr, were telling. (p.99)

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<sup>33</sup> The Professor's stony stare not only raises associations with mesmerism but can be connected to the earlier narrative in 'Automata'. In Cyprian's ghostly tale of Adelgunda's vision (pp.72-77) which, in view of the mesmeric influence exerted over the text, can be ascribed to her own unconscious imaginative powers which allow Adelgunda - without her conscious knowledge - to move a plate through the air. In mesmeric terms Adelgunda is utilising her keen magnetic sympathies to control the forces of the ether, thereby 'making real' her claims to have seen a ghostly vision. The connection with Professor X is realised in the description of Adelgunda awarded to the reader as she watches the plate floating in front of her. Her eyes were "fixed and staring" just as the Professor's fix themselves on Lewis and Ferdinand. The only difference here is one of action: Adelgunda's fixed and staring eyes are passive while the Professor's, in seeking something to fix upon, are active. This certainly suggests that, while both are mesmerically influenced, Adelgunda has no conception of her powers while Professor X is more than aware of his own.

Professor X's rapturous enjoyment of the music, springing from a source very close to him, highlights a direct link with Mesmer, whose "reputation was that of a fashionable Viennese physician with a taste for science and music, his particular forte being the playing of the glass harmonica".<sup>34</sup> Undoubtedly, Professor X - having been singled out as the source of the Talking Turk's incredible abilities - is being portrayed as a somewhat Svengalian<sup>35</sup> figure, symbolically providing the lynch-pin between the automaton's marvellous mechanism and the mesmeric qualities which its character suggests: it should not be forgotten that Professor X not only inspired the oracular answers of the Turk but also created the figure's head. The Professor is as equally skilled in the mechanics of automaton creation (witness the musicians he shows to Lewis and Ferdinand) as he is in the more romantic science of animal magnetism.

As yet, however, we have seen little material evidence of the mesmeric ability which, the narrative continually suggests, is Professor X's peculiar talent. Even allowing for the accuracy of his comparisons with Mesmer, there is little more than circumstantial supposition to link him directly with the conversation between Ferdinand and the Talking Turk which affords the artificial human so much of its vitality.<sup>36</sup>

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<sup>34</sup> Buranelli, p.48.

<sup>35</sup> Svengali's mesmeric abilities are largely used to dubious ends: "So he would playfully try to mesmerize her with his glance, and sidle up nearer and nearer to her, making passes and counter-passes, with stern command in his eyes, till she would shake and shiver and almost sicken with fear, and all but feel the spell come over her, as in a nightmare, and rouse herself with a great effort and escape" (George Du Maurier, *Trilby* (Oxford: Oxford University Press, 1995), p.70).

<sup>36</sup> The word vitality is used here in the full knowledge of the scientific connotations which it held in the early nineteenth century. Scientists of the time - especially those with romantic sympathies - were convinced that the basic component of human life (which separated humanity from other animal forms) was a vital fluid present in the body which instigated not only animation but contained the

This conversation revolved around a locket which Ferdinand wears next to his heart. Within it is a miniature portrait - painted by Ferdinand - of a woman whom he had encountered several years before and had instantly fallen in love with upon hearing her sing. This emotional commitment is only reinforced when, in a dream that night, he recognises the woman as “the beloved of my soul, whose image had been enshrined in my heart since childhood” (p.86). Unfortunately Ferdinand has no opportunity to approach her before she leaves, and has not seen her since. Of the Talking Turk he asked whether there would ever be any likelihood of him seeing her again:

The Turk was most unwilling to answer me, as I daresay you observed; but at last, as I persisted, he said, ‘I am looking into your breast; but the glitter of the gold, which is towards me, distracts me. Turn the picture around’ Have I words for the feeling which went shuddering through me? I am sure you must have seen how startled I was. The picture was really placed on my breast as the Turk had said; I turned it around, unobserved, and repeated my question. Then the figure said, in a sorrowful tone, ‘Unhappy man! At the very moment when you next see her, you will be lost to her forever!’ (p.87)

Ferdinand’s description of the event appears to reveal the human qualities which the Turk has come to possess: unwillingness, distraction, sorrow. What it certainly does reveal is the extent to which Ferdinand has become influenced by the mesmeric power which works through the Talking Turk, to the extent that Ferdinand is providing the automaton with far greater human characteristics than it actually possesses. This is the more likely reading of Ferdinand’s narration for it most

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soul. Victor Frankenstein refers to the scientific foundations of vitalism when he attempts to imbue his monstrous cadaver with “vital warmth” (i.e. provide it with life).

strikingly provides the necessary link between Ferdinand's questions and Professor X. As Lewis and Ferdinand soon discover, the musical tones, so similar to the glass harmonica, emanating from the Professor's garden form "a profoundly sorrowful melody sung by a female voice" (p.99). This melody, too, is the basis of a song, the first lines of which Lewis recognises as the song sung by Ferdinand's childhood sweetheart. Such a tissue of apparent coincidence inextricably ties Professor X to Ferdinand and gives far more credence to the possibility that the Professor has been exerting a mesmeric influence upon Ferdinand since the very first meeting with the singer. Certainly, as Lewis heard, his colleague had related that:

When we went to our rooms at last, I threw myself down on my bed; but, tired as I was, my sleep was scarcely more than a kind of dreamy, half-conscious condition, in which I was cognizant of all that was going on about me. (p.84)

Such a description is closer to the sleep-like state of the mesmeric trance than to actual somnolence, as Mesmer witnessed: "the hypnotic subject appeared to be asleep [although] his thought processes may be more acute than ever".<sup>37</sup> Indeed - with Ferdinand captured in this mesmeric state - it would have been regular practice for the controlling mesmerist to unlock the secrets of Ferdinand's past and discover that the singer had been "enshrined in [his] heart since childhood" (p.86), for the trance often revealed:

long-forgotten events, often into childhood, by switching from his [the patient's] conscious mind to the unconscious. Most astonishing,

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<sup>37</sup> Buranelli, 'Introduction'.



he [the patient] became susceptible to post-hypnotic suggestion, carrying out when awake orders given to him during hypnosis, in total ignorance of the cause or meaning of his behaviour.<sup>38</sup>

Not only, therefore, would the mesmerist - whom we believe to be Professor X - have some knowledge of Ferdinand's secret love, he would also be able to instigate any later proceedings against him (as is the case in the answers of the Talking Turk), and would do so without Ferdinand being conscious of the cause.

Ferdinand's impotence in the face of the answers from the Talking Turk becomes, on this evidence, a great deal clearer. Even Ferdinand himself, still ignorant as to the true cause of his distraction, pronounces that:

I feel, too clearly, some hostile foreign influence at work upon my whole existence, smiting upon all its hidden strings, and making them resound at its pleasure. I am helpless to resist it, though it should drive me to my destruction! Can that diabolical, sneering irony, with which the Professor received us at his house, have been anything other than the expression of this hostile principle? (p.100)

Lewis, agreeing that Ferdinand is "very probably right" (p.100) also believes that Professor X "does exercise some sort of power or influence over your fate" (p.100). Influence - which could as easily refer to the mesmerist as to the more general definition which Lewis utilises - is used here by both the protagonists as they come close to solving what has become, for them, an indecipherable riddle. However, neither fully comprehends the 'hostile foreign influence' of Professor X and his incredible automaton, the Talking Turk, as the tale's denouement reveals.

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<sup>38</sup> Buranelli, 'Introduction'.



Ferdinand is called away on business and, as he writes to Lewis some eight weeks later, was passing through a village when he noticed a wedding about to take place at the local church. His curiosity piqued, he stays to watch, only to discover that:

- the bride was my sweet singer. She looked at me, turned pale, and fainted. The gentleman who was behind her caught her in his arms. It was Professor X. What happened further I do not know, nor have I any recollection as to how I got here; probably Professor X can tell you all about it. But a peace and a happiness, such as I have never known before, have now taken possession of my soul. The mysterious prophecy of the Turk was a cursed falsehood, a mere result of blind groping with unskilful antennae. Have I lost her? Is she not mine forever in the glowing inner life? (p.101)

Significantly, Ferdinand only finds peace after yet another meeting with Professor X. Still, though, he is unable to say exactly how his oppression has been lifted. Indeed, he has “no recollection” of the events which lead to his new-found happiness, surmising merely that Professor X may be able to provide some clarification. This is certainly likely: the blank spot in Ferdinand’s memory signifies yet another mesmeric influence, exerted by the Professor in order to remove the post-hypnotic suggestions to which Ferdinand has been enslaved, leaving him, as always, “in total ignorance” of the mesmerist’s involvement. Having done so, of course, Ferdinand finds “peace and happiness”, freed from the “mysterious prophecy” (p.102) of the Talking Turk.

While, then, the dynamism of the narrative shifts from the initial revelations of the Talking Turk to its creator, Professor X, it is the figure of the automaton which remains central to the tale. Regardless of the fact that Professor X becomes

the guiding principle of Ferdinand's obsession, it is only through the artificial human that he enjoys an important place in the story. The essential elements of the narrative, those that allow the story to progress,<sup>39</sup> are defined by, and relate to, the Talking Turk: it is this figure's initial statements that throw Ferdinand off-balance, it is the Turk's prophecy of the future which is ultimately fulfilled, it is as *the creator of the machine* that Professor X is continually characterised. Of course, it remains Professor X's mastery of mesmerism that is the driving force behind the automaton's uncanny humanity. In a certain sense the Talking Turk is a cyborg;<sup>40</sup> consisting of complex mechanical parts and mesmeric human agency. It is, after all, the amalgam of the powerful and skilful science of the mechanists with the mesmeric powers of the Professor which creates the Talking Turk. This is more readily acceptable as a symbolic relationship than a literal one: unlike, for example, Poe's man that was used up,<sup>41</sup> who is readily definable as an amalgam of man and machine, the Professor is a separate entity from the mechanism he creates. For the purpose of the narrative entire, however, the cyborg metaphor holds good. Hoffmann rests the foundations of his tale upon mesmeric principles while the Talking Turk's

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<sup>39</sup> Those parts of the narrative which move the story along, allowing it to proceed towards a conclusion, can, generally, be seen to be related to the Talking Turk. As a participant or actant in the tale, it provides the majority of the cardinal functions (those sections of narrative which lead one forward, as opposed to catalytic functions, which provide setting, atmosphere and important, but less relevant, information).

<sup>40</sup> The cyborg - from cybernetic + organism - refers, as *The Encyclopedia of Science Fiction* states, "to the product of human/machine hybridization" (p.290). In scientific fiction, cyborgs are part man, part machine (a recent example being the Hollywood movie, *Robocop* (1987), dir. by Paul Verhoeven, scr. by Edward Neumeier and Michael Miner, in which the eponymous hero is the classical SF cyborg). In Hoffmann's 'Automata', of course, the cyborg is more symbolic than literal.

<sup>41</sup> In Edgar Allan Poe's short story, 'The Man That Was Used Up' in *The Complete Works* (3, pp.259-272), the central character is a literal cyborg: having almost his entire body reconstructed from wood, metal and other inorganic substances. All that remains of his organic self is his brain, torso and relevant internal organs. This story is discussed in more detail in Chapter 4.

construction is entirely mechanical. Mesmerism, though, as a basis for the *entire* story is also a basis for the automaton, who has a place only within the narrative and therefore within the influence of mesmerism.

The construction of the artificial human in this manner works well for two reasons. Hoffmann plays upon the imaginative (fictional) nature of scientific theory as well as upon the scientific character of the tale. Scientific speculation is a process not only of experimentation and hard fact but also of extrapolation: there is a constant 'what if?' factor, a continual striving in search of new boundaries which pushes science from factual pragmatism to exuberant fictions. The mechanists of the late eighteenth and early nineteenth centuries were as guilty of this as any of their colleagues - past or present. As we have already noted of Jacques de Vaucanson, he did not want merely to create very credible automata, he "had in fact no lesser goal than the re-creation of life". So while Vaucanson is mechanistic (scientific) in practice he is also equally imaginative (fantastic) in attitude. Mechanistic rhetoric of this nature would have the layman (and the scientist) believing that the actual creation of artificial life was a distinct possibility. Each new automaton was not, then, only further practical evidence of the subtlety of gears and wheels but a step on the road to a new form of humanity, and, for this reason, was regarded with a great deal more reverence than would be ascribed, say, to a weaving loom (however similarly technically advanced it may be). Hoffmann's 'Automata' readily accepts such a dynamic between pragmatism and esotericism in creating the Talking Turk: imbued with a mesmeric scientific background which lends itself easily to a portrayal of the *super*-natural yet outwardly a product of mechanism, the tale's

automaton invites comparisons with the fictional automata of Vaucanson's scientific rhetoric as well as mirroring the way in which the narrative itself is constructed upon both scientific and magical foundations. In doing so it, like the tale entire, becomes believable and therefore strengthens its position as the state-of-the-art artificial human.

Working in a different direction, the fictional narrative employs these same two - very different - scientific topoi. The field of mechanics allows for the practical application of machine technology in building a solid foundation for the Talking Turk. The science of mesmerism is of a very different nature. It is romantic where mechanics is materialistic; mystical where mechanics is pragmatic. It provides, in short, another order of scientific reality within the text but one which is joined (by its scientific authority) in a binary connection with the field of mechanism. Thus, the interaction of these two essentially contrasting sciences provide the narrative with much more than just a linear application of scientific phenomena: they lend to it an integrational hierarchy which posits meaning on many different levels, providing a niche for the mysticism and supernaturalism of mesmeric theory<sup>42</sup> as well as the less

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<sup>42</sup> The effects of mesmerism are not only contained within the manuscript of 'The Automata' which Theodore reads to his collected friends. As already discussed (footnote 25), the other sections of the narrative - the story of Adelgunda and the friendly soiree where the other stories are disseminated - also reveal mesmeric influence. Interestingly, the first scene of 'Automata' depicts the private experiment of a group of friends into which the narrator unwittingly stumbles. As a precursor to the mesmeric influences of the rest of the narrative it has obvious relevance (see pages 71-72), concerning, as it does, the movement of a suspended gold ring through the ether by a collective force of will. What is of greater importance here are the parallels that can be drawn with the Munich seances of Johann Wilhelm Ritter. Until now most critics have agreed that Hoffmann's inspiration for this episode is provided by the informal gatherings of the Serapion Brethren, a group formed to indulge in artistic discussion and including, besides Hoffmann himself, the Berlin publisher Julius Hitzig and the mesmerist doctor Ferdinand Koreff. However, the formation of this association did not take place until October 1814, some time after the writing of 'Automata', which Hoffmann's bibliographers situate in the summer of the same year. A more likely precursor - one which is

ethereal suppositions of mechanism. This also allows, therefore, elements of the thaumaturgical to enter the tale without disrupting, or calling into question, the verifiable scientific basis (or truth) of the tale's possibility.

This suggests that the Talking Turk is a very sophisticated imitation of humanity, a state-of-the-art artificial human, as I have stated earlier. This, though, would be to miss the point. It is Hoffmann's subtle creation of the Talking Turk which is sophisticated, not the Turk itself. As the narrative reveals, the Talking Turk is in no way mistaken for a human. It is very clearly a machine, and a rather basic one at that. If we concentrate firstly on its form it is undeniable that Vaucanson's

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certainly more relevant to the rest of the narrative - is that the experiment of the golden ring represents Hoffmann's fictionalisation of the infamous seances of Ritter, performed in Munich in the first decade of the nineteenth century and commonly discussed throughout Germany at a time when Hoffmann was resident in Berlin and, later, in Bamberg.

Upon moving to Munich in 1805, Ritter was intrigued to hear of Francesco Campetti's unique abilities to sense water and metal beneath the ground. As Walter D. Wetzels notes: "the idea of man's having such an intimate relationship with inanimate nature had a great appeal to Ritter" ('Aspects of Natural Science in German Romanticism', *Studies in Romanticism*, 10 (1), (1971), 45-59 (p.57)) whose immediate wish was to subject Campetti's divination to scientific investigation. Ultimately this failed, leaving a small group (Ritter, Campetti, Friedrich Schelling and Franz von Baader) who became involved in "private seances[. . .]to watch a pendulum[. . .]perform mysterious motions" (Wetzels, p.57). The similar circumstances of Hoffmann's narration are intriguing. The narrator, describing his first view of the gathering, observes: "Vincent, opposite me, with the others, around a little table; and they were all staring, stiff and motionless like so many statues, in the profoundest silence up at the ceiling. The lights were on a table at some distance, and nobody took any notice of me. I went nearer, full of amazement, and saw a glittering gold ring suspended from the ceiling, swinging back and forth in the air, and presently beginning to move in circles" ('Automata', p.71). Likewise, the seance/experiment described here was attended - as were those in Munich - by four men. Vincent, the obvious ringleader (who denigrates the narrator with a cry of "Materialist!" (p.71) in response to his scepticism), appears to be a sketch of Ritter, while Campetti, the medium sensitive to the movements of the pendulum, is portrayed by Theodore, who admits that: "I use to sit for hours at a time making the ring go swinging in the most varied of directions[. . .]and at last I went to the length of making an oracle of it" (pp.71-72). The rendering of Schelling or Baader is less simple. I would suggest, though, that Lothair's discussion of a "higher spiritual principle" (p.72) associates him more with Baader, a prominent theosophist. This leaves Cyprian - by far the most literary and theatrical of the group - as a representation of the highly speculative, and well published, Schelling.

Such concomitance in 'Automata' with the work of those at the forefront of romantic philosophical science certainly reinforces Hoffmann's own speculations in the narrative: the subtle influence of mesmerism which pervades the entire structure of the text is a subject allied closely with

duck, which imitated the digestive movements of a real duck, is far more life-like than the rigid, rather sensational aspect of the Turk. Its movements too belie its status: it is rigid, non-fluid and more akin to the strict alterations of clockwork than to the smooth changes of the human body. Nor does mesmerism alter this. It may appear to give the Talking Turk intelligence but more so it alters the perceptions of the central protagonists who, under mesmeric influence, come to see more life in the Turk than there actually is. As an artificial human the Talking Turk is very simplistic and in no way deceives any viewer into believing it to be real. Only those drawn down into the mesmeric world - where the Turk's power lies - come to acknowledge its human qualities. This is the real deception: only by artificialising the human reaction to the Talking Turk does its own artificiality come close to an imitation of reality.

'The Sandman' (1816) - published two years after 'Automata' - projects a narrative and within that an artificial human (or automaton) which is constructed in a strikingly similar fashion. The meeting of magic with science which 'Automata' depended on for its credibility as a possible sequence of events is likewise adhered to in this story. 'The Sandman' relies primarily upon a framework of gothic supernaturalism and alchemical theory before becoming involved with the tenets of mesmerism, but these are means to a similar end. The more mystical elements are introduced in the first section of the tale where Nathanael relates the visit of Coppelius to his father's house and his own subsequent ill-treatment at the hands of

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the beliefs of Schelling and Ritter. With this in mind, Hoffmann's nod of appreciation to the great romantic scientists in the first scene of his tale is pertinent and not at all surprising.

this necromantic alchemist when he is discovered behind a curtain attempting to spy upon the experiments taking place. This entire section is charged with the atmosphere of the gothic novel prevalent in the early nineteenth century and weighs in heavily with aspects of the horrific, from Nathanael's father's "repulsive devil mask" (p.284) to Coppélius' cry of "eyes, bring eyes!" (p.284). By comparison with this early fantasy the story of the artificial human which the tale goes on to relate is grounded in a pragmatism that provides a counterpoint to the distinct unreality of the earlier episode and reinforces the credibility of the scientific fiction despite its equally fantastical status. The artificial human itself provides a further level of rationality by projecting, as 'Automata' does, an empirical portrait of mechanistic science upon a framework of mesmerism. In this tale, however, the automaton is more autonomously 'alive' than the Talking Turk and the effects of a mesmeric influence more readily apparent.

Initially Olympia, whom we do not discover to be an automaton until towards the end of the narrative, is a figure of some intrigue:

A tall, very slender, beautifully dressed, beautifully proportioned young lady was sitting in the room in front of a small table, on which she had placed her outstretched arms, with hands clasped. She was sitting opposite the door, so I could see her divinely beautiful face. She did not seem to notice me; indeed, her eyes seemed fixed, I might almost say without vision. It seemed to me as if she were sleeping with her eyes open. I became very uneasy and therefore stole quietly away to the neighbouring lecture room. Later, I discovered that the figure I had seen is Spalanzani's daughter, Olympia, whom he, for some strange reason, always keeps locked up so that no-one can come near her. Perhaps, after all, there is something wrong with her; maybe she is an idiot, or something like that? (p.288)



Nathanael, the central protagonist of the tale and a student at the University where Spalanzani is a professor, describes Olympia thus for a friend at home, betraying the unease which strikes everyone who comes into contact with her, despite the fact that her true mechanical nature is unknown. Indeed, from the first practical demonstrations of her construction - when Spalanzani introduces her to society at a grand party - the story seems a simple account of a skilful automaton which could not possibly be mistaken for a human being. Nathanael, present at the party, again reports that:

Olympia appeared, elegantly and tastefully dressed. No one could help but admire her beautifully shaped face and her figure. On the other hand, there was something peculiarly curved about her back, and the wasplike thinness of her waist also appeared to result from some excessively tight lacing. There was, further, something stiff and measured about her walk and bearing that struck many unfavourably. (p.292)

Despite the obvious mechanical attributes of Olympia, though, the deception goes undetected and is upheld by Spalanzani. Nathanael, in particular, remains filled with admiration for her beautiful figure, yet is still strangely inconclusive as to his emotional involvement:

He [Nathanael] was forced to confess to himself that he had never seen a lovelier figure, although, with Klara in his heart, he remained perfectly indifferent to the stiff and rigid Olympia; only occasionally did he glance up from his book at the beautiful statue - that was all. (pp.295-296).

The introduction of Coppola, the eyeglass salesman, changes this significantly. Intimidated by the similarity of Coppola to Coppelius - whom he believes instigated

his father's death<sup>43</sup> - Nathanael buys a spy-glass from him. He finds it to be "very beautifully finished" (p.297) and of skilful craftsmanship, much like Olympia. Indeed, Nathanael had never before seen "a glass that brought objects before his eyes with such clarity and distinctness" (p.297). His first act is to focus it upon Olympia, whom he can see from the window of his bedroom. The transformation which occurs in the automaton is astonishing:

For the first time now he saw her exquisitely formed face. Only her eyes seemed peculiarly fixed and lifeless. But as he continued to look more and more intently through the glass, it seemed as though moonbeams were beginning to shine in Olympia's eyes. It seemed as if the power of vision were only now starting to be kindled; her glances were inflamed with ever-increasing life. (p.297)

From a stiff and lifeless statue, Olympia takes on human characteristics: becoming "inflamed" with life when once she lacked any sign of it. The allusions to the birth of Adam are clear: Olympia's once dry and lifeless features become animated just as Adam is animated from the dead ground, or the golem is brought to life out of inanimate clay. Yet it is not only through mechanical sophistication that this occurs but through Nathanael's spy-glass, which acts as a transformer, changing Nathanael's romanticism - through the 'eye' of modern science - into obsessive

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<sup>43</sup> Nathanael relates the story of his father's death in a letter to Lothair at the beginning of the tale. It tells how his father and Coppelius (a lawyer by profession and apparent friend of the family) indulge in alchemical experiments designed to discover the workings of the human form. In essence they are automaton makers, despite the decidedly unmechanical nature of their studies. Nathanael is frightened by the gross physical presence of Coppelius, believing him to be the Sandman, and half-suspecting that he will attempt to remove his eyes (per the legend). One night Nathanael secretes himself in his father's study to witness their experiments, is discovered, and treated very badly by Coppelius, who twists his limbs one way and another in order to discover the workings. This only serves to increase his fear of Coppelius, a fear that is compounded when Nathanael's father dies during an alchemical explosion. Coppelius is suspected but is never found.

admiration for mechanistic materialism. Where once Nathanael's romantic impulses subconsciously realised the constraints of mechanism, in his criticisms of Olympia's stiff and rigid appearance, Coppola's spy-glass (a mechanism in itself) provides him with a new vision, a new set of perspectives, based upon empirical, materialistic science. His romantic outlook is suppressed and superseded by a mechanistic approach, within which Nathanael is "enchanted [by][. . .]Olympia's divine beauty" (p.297). Overcome by a new-found admiration for mechanical construction, Nathanael falls into an obsessive relationship with Olympia, laying aside everything in order to pursue her. (His only other concern appears to be an irritability over the price he had paid Coppola for the spy-glass, with which he is "strangely distressed" (p.297). While Nathanael can see "no reason for it" (p.297) the symbolism is not lost: any price, it can be argued, is too high for the loss of his romanticism and subsequent control by the forces of mechanism.) Just as the Talking Turk takes on a greater human appearance when Ferdinand is controlled by mesmerism, Olympia is more 'real' when Nathanael is made slave to the forces of mechanism. Hoffmann's technique is the same as before: reducing the deductive powers of the human protagonist and thereby raising the apparent sophistication of the artificial human.

The sudden alteration of Nathanael's sensibilities does not pass unnoticed. His close friend Siegmund attempts to uncover the error of his obsession, all but revealing the truth of Olympia's nature:

She seems to us - don't take this badly, my brother - strangely stiff and soulless. Her figure is symmetrical, so is her face, that's true enough, and if her eyes were not so completely devoid of life - the power of vision, I

mean - she might be considered beautiful. Her step is peculiarly measured; all of her movements seem to stem from some kind of clockwork. Her playing and her singing are unpleasantly perfect, being as lifeless as a music box; it is the same with her dancing. We found Olympia to be rather weird, and we wanted to have nothing to do with her. She seems to us to be playing the part of a human being, and it's as if there really were something hidden behind all of this. (pp.301-302)

Nathanael's reaction to this speech is perfectly ironic. He claims that "Olympia may indeed appear weird to you cold and unimaginative mortals. The poetical soul is accessible only to the poetical nature" (p.302). While Siegmund has tried to prove to Nathanael that he is being duped by "some kind of clockwork", Nathanael retorts with what is, in this context, a largely romantic argument, charging Siegmund with a lack of romanticism where indeed it is Nathanael himself who has deserted this position. Siegmund - also realising "how things were with his friend" (p.301) - does not press the matter further, saying only that he believes Nathanael to be "moving in an evil direction" (p.302).

Whether or not the direction in which Nathanael is moving is evil, it is certainly one, as in 'Automata', prescribed, at least partly, by mesmerism. Both Spalanzani and Coppola (the creators of Olympia) are in some way connected with the science of mesmerism as well as with bringing Nathanael into such close contact with their artificial human. Besides the spy-glass which Coppola sells Nathanael and which first inspires his obsessive admiration for Olympia there are other factors (some less coincidental than others) which push the two together. Coppola visits Nathanael early in the narrative at his lodgings, which Nathanael soon vacates to take a trip home. Upon returning he finds they have been burnt to the ground and his

new lodgings, found in his absence, are directly opposite the home of Spalanzani. Not only is this fortuitous for Nathanael (or at least he believes so) but, even more surprisingly, he looks directly into the room in which Olympia spends her entire day, a room whose windows and curtains are always open to his glances. More than this, Spalanzani invites Nathanael to the grand party at his house, does not dissuade him from approaching Olympia and, by the close of the evening, actively encourages him to return to see her, without any mention of her mechanical nature. Nathanael accepts this invitation and continues to visit Olympia, falling more deeply in love with her at each meeting.<sup>44</sup> Still Spalanzani is encouraging, appearing “to be most pleased by the intimacy which had developed between his daughter and Nathanael, and he gave Nathanael many unmistakable signs of his delight” (p.303). Most astonishing of all, Spalanzani even intimates that he will allow his ‘daughter’ to

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<sup>44</sup> Hoffmann’s depiction of the dialogues between Nathanael and Olympia is very carefully constructed upon contemporary scientific possibilities. While revealing Nathanael to be besotted, it casts Olympia in the light of a genuine automaton, without extrapolating upon the abilities of the mechanism with which she is put together. For example, in one conversation between them, Nathanael describes how wonderful a listener he found Olympia to be: “She neither embroidered nor knitted; she did not look out of the window nor feed a bird nor play with a lapdog or kitten; she did not twist slips of paper or anything else around her fingers; she had no need to disguise a yawn by forcing a cough. In brief, she sat for hours on end without moving, staring directly into his eyes, and her gaze grew ever more ardent and animated. Only when Nathanael at last stood up and kissed her hand and then her lips did she say, ‘Ah, ah!’ and then add, ‘Goodnight, my dearest’” (pp.302-303). In an earlier episode, Olympia’s lack of communicative response is even more marked: “He sat beside Olympia, her hand in his, and with fervour and passion he spoke of his love in words that no one could understand, neither he nor Olympia. But perhaps she did, for she sat with her eyes fixed upon his, sighing again and again, ‘Ah, ah, ah!’ Whereupon Nathanael answered: ‘Oh, you magnificent and heavenly woman! You ray shining from the promised land of love! You deep soul, in which my whole being is reflected,’ and more of the same. But Olympia did nothing but continue to sigh, ‘Ah, ah!’” (p.300). Nathanael is blind to her lack of humanity, her inability to respond to direct questioning, all of which are exemplary of the state of automaton creation in the early nineteenth century. As Otto Mayr has said, and as I have quoted earlier, “Automata[. . .]were not capable of participating in dialogue or answering questions”, they were, in fact, incapable of any response other than those already involved in their construction. Hence we have Olympia’s sighing, ‘Ah, ah!’, as she has been programmed to do, and staring fixedly, as her mechanics remain idle, but little else. Olympia is the archetypical automaton, only Nathanael, deceived by some other force, is unable to grasp this essential concept.

become Nathanael's wife: "When, at great length, Nathanael ventured to hint delicately at a possible marriage with Olympia, the Professor's face broke into a smile and he said that he would allow his daughter to make a perfectly free choice" (p.303).

At every stage, Spalanzani and Coppola attempt to further ensnare Nathanael in their deception, a process which is successful only by their ability to alter Nathanael's perception of Olympia: to have him believe that Olympia is human rather than clockwork, to instil life in their automaton through Nathanael's misdirected belief that there is the spark of life already there. It appears that the means to this end are to be found in the mesmeric influence placed upon Nathanael by Coppola. The power of vision - so central to mesmeric control<sup>45</sup> - is granted by Coppola, and the spy-glass functions in not one but two ways: as a symbol of enchanting mechanism and as a purveyor of mesmeric forces which subtly influence Nathanael's opinion of the automaton. Coppola, after all, is constantly associated with the power of sight. He is compared with Coppelius/The Sandman (who removes vision) and is found also to be the creator of Olympia's eyes (where Nathanael first finds the spark of life). On a more superficial level, Coppola also takes the guise of an eyeglass salesman in order to influence Nathanael's own vision. Spalanzani, too, is found to be of a similar nature to the earliest proponents of mesmerism. Indeed, Nathanael himself sets up an oblique comparison between

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<sup>45</sup> In discussing Hoffmann's other tale, 'Automata', I have more fully explicated the role of vision and the importance of the eyes in mesmeric techniques and practice. It is unnecessary, therefore, to replicate that evidence here.

Spalanzani and Mesmer himself, when attempting to describe the Professor to his epistolary friend, Lothair:

This professor is an eccentric fellow. A small, chubby man with big cheekbones, a thin nose, protruding lips, and small piercing eyes. But better than from any description, you can get a picture of him if you look at a picture of Cagliostro as painted by Chodowiecki in any Berlin pocket almanac. Spalanzani looks just like that. (p.288)

Besides illuminating the trickery of Spalanzani by comparing him with Cagliostro - an infamous confidence trickster and charlatan<sup>46</sup> - Nathanael also, unconsciously, introduces Mesmer into the equation, for the Viennese doctor was continually compared with Cagliostro throughout his career (albeit by those cynical of his methods), a point which Buranelli makes in his biography of Mesmer, claiming that the connections were made because there were those who appeared to believe that both Mesmer and Cagliostro could “call spirits from the nether world”.<sup>47</sup> The importance of such a comparison should not be underestimated. Cagliostro and Mesmer are inextricably linked, and by comparing Spalanzani with Cagliostro one also compares Spalanzani with Mesmer.<sup>48</sup>

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<sup>46</sup> Cagliostro was infamous in his time for having tricked many a wealthy Parisian into parting with large sums of money, ostensibly to fund his alchemical research. He was compared to Paracelsus (based on his interest in alchemy), which is rather unfair on the latter, and made many extravagant claims for his esoteric art, including, of course, his ability to discover the philosopher’s stone: a material which would enable him to turn base metals into gold as well as making those in possession of it immortal. It was on assumptions such as these that so many were willing to pay Cagliostro large sums of money. Needless to say, his claims were entirely without foundation and constituted no more than fraud.

<sup>47</sup> Buranelli, p.132.

<sup>48</sup> Comparisons can also be made with Spalanzani and Professor X. Besides both having the same prefix to their name, the descriptions of their physiognomy and character traits also bear some resemblance. Professor X had a very fixed stare and Professor Spalanzani’s eyes are small and piercing. Professor X had a very unpleasant, almost creepy manner and Professor Spalanzani appears “sinister and ghostly” (p.300). It is indubitable that Professor X was a powerful mesmerist, and

This conflation of mechanism and mesmerism is also symbolic of the narrative formulation which Hoffmann employs both here and in 'Automata'. On one level, mechanistic and mesmeric science seem at odds with each other; one representative of materialism and the other of romanticism. Yet they appear to work in concert to dupe Nathanael. Their irreconcilability, nevertheless, is a vital tool in the construction of a credible narrative framework which plays one against the other, balances the two in opposition, and allows for each - by their very difference - to reinforce the other. While this occurs in the form of the tale, it is also realised in the content. Spalanzani and Coppola, through the medium of the spy-glass, use a mechanistic device to bring Nathanael under a mesmeric influence which, in turn, inspires his aggrandisement of mechanical artistry. Again mechanical and mesmeric sciences are given equal weight, each aiding the other toward a particular end: the subjugation of Nathanael's will to Olympia.

In effect, 'The Sandman' brings life to Olympia in a way similar to that of the Talking Turk in 'Automata': both automata are constructed well within the boundaries set by contemporary mechanical science; both rely upon the introduction of a more esoteric science (mesmerism), which, in altering the framework of the narrative, also alters their status as automata, imbuing them with a humanity which mere mechanism had to reject;<sup>49</sup> both are indebted to their creators for instigating

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certainly reinforces Professor Spalanzani's similar position in the light of the similarities in the two characters.

<sup>49</sup> While the projection of a greater humanity than the mechanistically formed automata were capable of is the central task of mesmeric science in the narratives, there are other off-shoots, side-effects if you will, which are the product of a mesmeric foundation. Especially in 'The Sandman' - but also in 'Automata' - there appear many coincidences and illogical connections which drive the narratives to their conclusions. These, too, are the product of Hoffmann's romantically-oriented hypotheses, most



this alternative scientific reality which allows them to become a viable imitation of life; both depend upon the acceptance (unconscious or otherwise) of this other order of reality by the central characters. Nevertheless, while ‘Automata’ was relatively clear in creating the Talking Turk upon materialistic conceptions (mechanics) and instilling a freer extrapolation of its nature by the use of romantic principles (mesmerism), ‘The Sandman’ has a more complex genesis. It deals more substantially with the oppositions of materialism and romanticism as well as with the collusion of the two. Nathanael is primarily of a romantic persuasion, easily susceptible to the influence, it would seem, of a mesmeric force. Yet it is through materialism (in the shape of the spy-glass) that he is first made aware of Olympia’s vitality. Mesmerism, primarily a romantic force in ‘Automata’ acts, in this tale, as a double agent: providing a foothold for mechanisation within Nathanael’s psyche and allowing the tenets of materialism (seen here as obsessive admiration of Olympia) to fill his vision. This, of course, occurs surreptitiously; Nathanael still believes himself an advocate of romanticism, claiming that his friends’ denial of Olympia’s beauty reveals a *lack* of a “poetical soul” rather than an abundance of it. Constantly ‘The Sandman’ invites a contrastive approach to romanticism and materialism: at once belittling Nathanael’s glorification of mechanics and highlighting the skill and beauty of Olympia’s construction.

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obviously his keenly-felt belief in a spiritual principle (which drew him towards mesmerism originally). As he argues himself, and as quoted by Maria Tatar, “the world spirit, known to be a capable experimenter, has built somewhere a highly efficient electrical machine; from it mysterious wires run all over the earth, and we would be wise to avoid them by sneaking around them. But at one time or another we are sure to step on one of them: a shock will then jolt our innermost being, and everything will take on a new shape” (p.127). From the discussion here of Hoffmann’s narrative

Essentially the argument is a scientific one: what, in scientific terms, constitutes humanity? For the rational materialist to be human is to be no more or less than a complex machine, one which can be readily imitated by mechanical science, if only the skill and knowledge of the mechanists was equally sophisticated. For the romantic scientist, humanity resides not in the intimate workings of cogs and wheels but in a vital force (often allied with the soul) which no mechanistic investigation can hope to replicate. The Talking Turk and Olympia are of neither order: their mechanical construction alone is in no way a creditable imitation of the human nor does mesmerism appear to provide them with the soul, or vital force, which would bring them entry to the realm of humanity. After all, it is only those characters influenced by mesmerism who find their mechanism at all life-like and it is only they who are predominantly altered by a mesmeric force, not the automata themselves. It cannot be argued, then, that either the Talking Turk or Olympia is a successful simulation of the human. Indeed, in Baudrillard's terminology (whose interpretation of the definition of simulacra this work will adhere to) neither of the automata in Hoffmann's short stories are simulacra at all. "To dissimulate", says Baudrillard, "is to pretend not to have what one has. To simulate is to feign to have what one doesn't have. One implies a presence, the other an absence".<sup>50</sup> From this immediate context the Talking Turk and Olympia certainly are simulacra; they do after all "feign to have" what they do not have, human life. But, as Baudrillard continues,

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technique this could very well stand as a critique of his fiction: describing the philosophical basis for the coincidences and connections which riddle his narratives without any apparent logical structure.

it is more complicated than that because simulating is not pretending: 'Whoever fakes an illness can simply stay in bed and makes everyone believe he is ill. Whoever simulates an illness produces in himself some of the symptoms' (Littre). Therefore, pretending, or dissimulating, leaves the principle of reality intact: the difference is always clear, it is simply masked, whereas simulation threatens the difference between the 'true' and the 'false', the 'real' and the 'imaginary'.<sup>51</sup>

Only through Ferdinand and Nathanael are these differences threatened. From a wider perspective the automata do not call into question the opposition between the born and the made, the natural and the unnatural. And it must be this wider perspective that we take as the dominant criteria, for to be human both Olympia and the Talking Turk must pass as such in society at large rather than to a mere few. Within the human community, therefore, there is no concern over their role: they are easily identifiable as scientific constructs, and especially in the case of the Talking Turk, rather unsophisticated ones. As Baudrillard points out, their "difference is always clear", they are mere pretence, or dissimulators rather than simulacra. Neither romantic science in the form of mesmerism nor materialist science through the rigorous construction of mechanics contrives to create a widely credible artificial human, despite the fact that both, in their different ways, argue that such a feat is possible. As for the conflict between romanticism and materialism over the nature of artificial construction, Hoffmann - in 'Automata' and 'The Sandman' - comes at this only tangentially, touching briefly upon their basic oppositions in his fictional construction of the Talking Turk and (more pertinently) Olympia. Yet he fails to

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<sup>50</sup> Baudrillard, p.3.

<sup>51</sup> Baudrillard, p.3.

directly confront their differences, preferring a policy of appeasement and co-operation. Still, his involvement with them provides a landmark in the fictional representation of the artificial human and gives impetus to the genre of science fiction, an impetus which will find other narratives joining with such arguments in a more dynamic and confrontational manner.

## A Hideous Phantasm?:

### Mary Shelley's *Frankenstein* and the Romantic/Materialist Debate

Mary Shelley's *Frankenstein; or, The Modern Prometheus*<sup>1</sup> directs itself more forcefully towards the arguments we find in Hoffmann's fiction. However, the first problem to confront the nineteenth-century reader of the novel was not its perceptive account of the differences between romantic and materialist philosophies, as portrayed through the characterisation of Frankenstein's monstrous artificial human, but the difficulty of classification. Despite the similarities with Hoffmann's tales critics maintained that the novel did not appear to belong to any previously formulated genre of fiction. Either that or it seemed to belong to too many: the gothic, the horror, the supernatural or the fantastic. In actual fact, *Frankenstein* is a narrative which works by the same method as 'Automata' and 'The Sandman'. Granting that it is the first such narrative of novel length, and therefore unique at the beginning of the nineteenth century, it is most certainly not the first to employ both the form of the scientific and the fantastic in the dissemination of its content. Nevertheless, at the time of publication this grafting together of disparate modes of representation was the instigator of much confusion. The reviewers of *Blackwood's Edinburgh Magazine* captured the prevailing critical mood in admitting that "this is

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<sup>1</sup> The edition of the novel which will be used for the purposes of this thesis is that first published in 1831. There is contention over the 'best' edition of *Frankenstein*, between the original 1818 version and the updated 1831 edition, but it would appear to me that the latter - inclusive of Mary Shelley's final corrections - is most appropriate. Textual scholars often agree that a definitive text should include every correction made by the author within their lifetime and, with that criterion in mind, the edition published in 1831 can lay the strongest claims for being such a definitive text. All references

a novel, or more properly a romantic fiction, of a nature so peculiar that we ought to describe the species before attempting any account of the individual production".<sup>2</sup> Regardless of the apparent bafflement of the commentators, the *Blackwood's* reviewer remains rigorous in applying a set of standards to which *Frankenstein* must conform, standards which seem to go some way towards a definition of the genre in which Mary Shelley was writing. As he writes: "we grant the extraordinary postulates which the author demands as the foundations of his [sic] narrative, only on condition of his [sic] deducing the consequences with logical precision".<sup>3</sup> It is upon such statements that Shelley's novel is regularly measured. The success of the narrative, its internal cohesion, is dependent, claim many critics, on a strict adherence to *Blackwood's* criteria: the deduction of the extraordinary in logical, pragmatic, terms. With this in mind contemporary critics have largely discredited *Frankenstein*. While Muriel Spark agrees with nineteenth century reviewers that the novel was "the first of a new and hybrid species"<sup>4</sup> she remains in the minority. More regularly the novel is accused of being a work of fantasy, entirely lacking in the plausibility which would allow it to be ranked alongside other works of science fiction. Radu Florescu argues that "Mary's monster is more the child of the alchemists and occultists than of the scientists"<sup>5</sup> while Robert Kiely believes that "though Frankenstein himself scorns the notion, his "scientific" method has a large

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in the text are to Mary Shelley, *Frankenstein; Or, The Modern Prometheus*, ed. by Maurice Hindle (London: Penguin, 1992)

<sup>2</sup> Sir Walter Scott, 'Remarks on Frankenstein; or, The Modern Prometheus', *Blackwood's Edinburgh Magazine*, 2 (12) (1818), 613-620 (p.613).

<sup>3</sup> Scott, p.614.

<sup>4</sup> Muriel Spark, 'Frankenstein' in *Mary Shelley*, ed. Harold Bloom (New York: Chelsea House, 1985), pp.11-30 (p.11).

dose of hocus-pocus in it and comes a good deal closer to alchemy than it does to physiology.<sup>6</sup> These views are reinforced by James E. Reiger, who, in direct opposition to Muriel Spark, is certain that:

It would be a mistake to call *Frankenstein* a pioneer work of science fiction. Its author knew something of Humphry Davy's chemistry, Erasmus Darwin's botany, and perhaps Galvani's physics, but little of this got into her book. Frankenstein's chemistry is switched-on magic, souped-up alchemy, the electrification of Agrippa and Paracelsus.<sup>7</sup>

More particular in her criticism and allied closely to the standards set by *Blackwood's*, Edith Birkhead claims that "by resting her terrors on a pseudo-scientific basis and by placing her story in a definite locality, Mrs. Shelley waives her right to entire suspension of disbelief".<sup>8</sup>

Throughout the criticism of each of these commentators there runs a common thread: *Frankenstein* is more fantastic than scientific, more alchemical than empirical. However, as David Ketterer points out, "superficially, there can be no question that there is indeed a science-fictional feel about *Frankenstein*".<sup>9</sup>

Indeed the novel is undoubtedly SF; descended directly from the short fiction of E.T.A. Hoffmann and remarkably similar in its narrative construction. Whilst Hoffmann's 'Automata' and 'The Sandman' are portraits of scientific narrative enclosed within a magical framework which remains backgrounded and subdued at a

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<sup>5</sup> Radu Florescu, *In Search of Frankenstein* (London: New English Library, 1977), p.83.

<sup>6</sup> Robert Kiely, 'Frankenstein' in *Mary Shelley*, 65-80 (p.70).

<sup>7</sup> James E. Rieger, ed., *Frankenstein; or, The Modern Prometheus (1818 Edition)* (Chicago: Chicago University Press, 1982), p.xxvii.

<sup>8</sup> Edith Birkhead, *The Tale of Terror: A Study of the Gothic Romance* (London: Constable, 1921) p.164.

textual level, *Frankenstein*, again at the superficial level of text, is a more obvious amalgam of these two distinct narrative streams: the scientific (Victor Frankenstein's creation of the artificial human based upon an extrapolation of nineteenth century electrical research) and the magical (in the form of oblique alchemical nuances and an element of gothic sensationalism). Such a method of structuring the narrative does not in any way devalue the novel as a work of science fiction, rather it is an addition to, and a lengthier example of, the basic formula of SF as Hoffmann created it. Nor does *Frankenstein* waive its "right to entire suspension of disbelief" by including an apparently large amount of "hocus-pocus" or "souped-up alchemy". In fact, it is the inclusion of such esoteric, fantastical foundations which allows Shelley to create an atmosphere in which the extrapolation of known science into the unknown is more plausible and less likely to be held up to close scrutiny.

One such tactic employed in the novel is its obvious relation to the gothic novel of the late eighteenth century. In *Frankenstein* we find many of the trappings normally associated with the work of, for instance, Charles Maturin, Horace Walpole, Matthew Lewis and Anne Radcliffe.<sup>10</sup> Shelley's use of the gothic form as represented by these writers lends an aura of supernaturalism to the world of the

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<sup>9</sup> David Ketterer, *Frankenstein's Creation: The Book, the Monster and Human Reality* (Victoria: University of Victoria, 1979), p.81.

<sup>10</sup> Maturin, Walpole, Lewis and Radcliffe are the leading proponents of the gothic genre as literary criticism now views it. The particular works which appear to have some relevance to Mary Shelley's *Frankenstein* include Matthew Lewis, *The Monk* (1796, rev. edn ed. by Howard Anderson (Oxford: Oxford University Press, 1980)); Horace Walpole, *The Castle of Otranto* (1757, repr. in *Three Gothic Novels*, ed. by Peter Fairclough (London: Penguin, 1986)); Anne Radcliffe, *The Mysteries of Udolpho* (1794, rev. edn ed. by Bonamy Dobree (Oxford: Oxford University Press, 1980)); William Godwin, *St. Leon* (1799, rev. edn (London: Colburn and Bentley, 1831)); and Charles Maturin, *Melmoth The Wanderer* (1820, rev. edn ed. by Douglas Grant (Oxford: Oxford University Press, 1992)). Godwin, of course, was Mary Shelley's father and there is circumstantial evidence that Mary Shelley read a copy of *The Monk* in the months prior to the writing of *Frankenstein*.



novel, but not one which is over-powering or detrimental to the largely empirical nature of the subject matter. Indeed the inclusion of generically gothic sensibilities is an asset to the reality of the scientific narrative, as the philosophy of the gothic 'tale of terror' insists upon the natural, worldly order of its apparently fantastical elements. As Linda Bayer-Berenbaum argues:

Gothicism insists that what is customarily hallowed as real by society and its language is but a small portion of a greater reality of monstrous proportion and immeasurable power. The peculiarly *gothic* quality of this extended reality is its immanence, its integral, inescapable connection to the world around us. The spirit does not dwell in another world; it has invaded an ordinary chair, a mirror, or a picture. The soul has not gone to heaven; the ghost lingers among the living.<sup>11</sup>

It is not, therefore, applicable to argue that Shelley's gothicism undermines the novel's attempt at rational extrapolation of verifiable scientific truth. Quite the reverse, in actual fact, as theoretical critics would agree. The introduction of certain gothic elements not only grounds the narrative firmly in the real world, it also prepares "the reader for later apparition, reducing his [sic] incredulity and encouraging a suspension of disbelief".<sup>12</sup> While to some extent all fiction requires a certain suspension of disbelief, in the context of the science fiction novel such considerations take on greater importance. *Frankenstein* employs a predominantly gothic aesthetic in its creation of the artificial human in order to enhance the narrative's propensity for the fantastic and supernatural whilst maintaining firm connections with "the world around us". The gothic "fascination with disease and

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<sup>11</sup> Linda Bayer-Berenbaum, *The Gothic Imagination: Expansion in Gothic Literature and Art* (London: Associated University Presses, 1982), p.21.

decomposition”<sup>13</sup> sits comfortably with the scientific aspects of the narrative, especially as the central protagonist, Victor Frankenstein, seamlessly conjoins the two alternative approaches in his own studies of anatomy and physiology: attending lectures which pledge their allegiance to the ‘new science’ of Humphry Davy, Luigi Galvani and Franz Oersted<sup>14</sup> whilst at the same time spending nights in graveyard crypts and burial chambers (both common motifs in the gothic novel tradition) to witness at first hand the decay of the human form.<sup>15</sup>

Likewise the supernatural (which such gothicism automatically inspires) takes on a similar role to that found in the novel’s own vision of Frankenstein’s creation of the monster. Linda Bayer-Berenbaum points out that “the aim of the supernatural in Gothic literature is to become as natural as possible, an extension of nature; therefore, in the Gothic context, a more fitting term might be *transnatural*”.<sup>16</sup> Victor Frankenstein also attempts to construct a transnatural rather than supernatural being in the creation of his artificial human: the bringing to life of a creature which is not unnatural but rather an addition to nature, a pushing back of the boundaries of natural science as opposed to a bastardisation of them. Similarly, then, Frankenstein’s artificial man is also, in Bayer-Berenbaum’s definition, “*transnatural*”; his physical make-up being the conclusion of an extrapolation of

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<sup>12</sup> Bayer-Berenbaum, p.21.

<sup>13</sup> Bayer-Berenbaum, p.28.

<sup>14</sup> These chemists are but three of the leading scientists of the early nineteenth century whose methodology and experimental techniques set them apart from the earlier ‘amateur’ scientist of the mid-eighteenth century. The approach which they took - both practically and philosophically - became known as the ‘new science’.

<sup>15</sup> See *Frankenstein*, p.53 for Victor Frankenstein’s personal account of his sepulchral visits.

<sup>16</sup> Bayer-Berenbaum, p.33.

known, natural scientific phenomena (not supernatural, with all its overt connotations of fantastical and mystical intervention).

It is not, therefore, that Mary Shelley fails to construct a narrative of science fiction because of her reliance on the traditions of the gothic genre. Rather, the inclusion of the philosophical and atmospheric tenets of the gothic novel enhances the narrative's claims to science fiction by highlighting the possibility of the unusual without over-riding the governing aesthetic of scientific enquiry. Just as Hoffmann buries the magical foundations of his science fiction within the narrative framework of his stories, so too does Mary Shelley - in her choice of the gothic mode - find an ally for rational science which reinforces its position of prominence. At the same time, the juxtaposition of the empirical with the supernatural creates a narrative form which allows scientific extrapolation full expression. After all, with many aspects of the supernatural residing in the foundations of the narrative the fantastical suppositions of science in which the novel indulges seem less outlandish and far more pragmatic.

An extrapolation of science is certainly the correct way to describe the scientific content of *Frankenstein*. Mary Shelley relies to a far greater extent than Hoffmann on contemporary scientific theory.<sup>17</sup> Although Shelley's science fiction is

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<sup>17</sup> Mary Shelley's reliance on theory as opposed to fact is yet another piece of evidence which those critics sceptical of her credentials as a science fiction writer use to defend their position. They argue - like those critics included above - that there is actually very little scientific fact within the novel and that even the animation of Frankenstein's 'monster' shirks any committal to scientific possibility. Allene Stuart Pye argues that "Mary appears to have been almost totally ignorant of the scientific explorations of her day, and she makes little effort to give verisimilitude by sprinkling scientific words or laboratory jargon into the conversations of her characters" (*Mary Shelley* (Washington: Starmont House, 1988), p.38). Elizabeth Nitchie is less damning but still finds the science "questionable" (*Mary Shelley: Author of Frankenstein* (New Jersey: Rutgers University Press, 1953), p.29). As I shall discuss in the main body of the text, however, Mary Shelley is greatly influenced by

decidedly 'harder'<sup>18</sup> from this perspective than that in Hoffmann's tales it does not lead the narrative towards one particular philosophy of science: just as Hoffmann's automata are ambiguously placed between a largely mechanistic, empirical scientific credo and a more romantic, mesmerically-inspired existence. *Frankenstein*, likewise, cannot afford to load the creation of its artificial human with the beliefs of one school of scientific thought. The central role of the novel is to explicate the conflict between romantic and materialist notions of scientific truth: a battle that was fought throughout the late eighteenth and early nineteenth centuries. Within this context the real purpose of Victor Frankenstein's artificial man is two-fold: to discover the problems inherent in creating a version of humanity through particular forms of science as well as to examine rigorously the effects of differing scientific philosophies upon the creation and future development of a scientifically created imitation of the human.

In her choice of electricity as the animating principle Mary Shelley found a scientific foundation from which to present an examination of romantic and materialist attitudes to scientific research which did not swing markedly towards either philosophy. In contemporary investigations by many leading scientists into the

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contemporary scientific fact and her reluctance to clearly define any particular form of scientific investigation is not an error on her part but a vital component of the conflict between romanticism and materialism which *Frankenstein* attempts to induce.

<sup>18</sup> 'Hard' science fiction is the term used to describe any scientific narrative which is highly technical in its application of the sciences. Allen Steele defined 'hard' science fiction as "the form of imaginative literature that uses either established or carefully extrapolated science as its backbone" (*The Encyclopedia of Science Fiction*, ed. by Peter Nicholls (London: Granada, 1979), p.542). 'Hard' science fiction also has its direct opposite in 'soft' science fiction: narratives which, as *The Encyclopedia of Science Fiction* defines, do "not deal with recognizable science at all, but [emphasise] human feelings" (p.1131). Generally the differences between 'hard' science fiction and 'soft' science fiction relate fairly closely to the differences between the hard and soft sciences; the

nature of electricity, *Frankenstein* found its touchstone: a branch of scientific investigation which was heralded as a major reinforcement of ideology by all sides of the scientific debate, romantic and materialistic alike. To fully uncover the position of the novel, and especially Mary Shelley's own view of this debate, it is vital to form a detailed comprehension of the theories from which the battle over the nature of electricity are drawn.

Initial interest in electricity centred upon the disagreement over its composition as either a solid or a fluid. Newton had argued that it undoubtedly tended towards the latter, although his statement that "electrical effluvia seem to instruct us, that there is something of an ethereal nature condensed in bodies"<sup>19</sup> appears to invest something altogether more intangible in the nature of electricity than a bald confession of its fluidic state. Nevertheless the hypothesis that electricity was indeed a fluid persisted: the discovery of the Leyden Jar<sup>20</sup> in 1745 proving conclusive to many scientists who reasoned that the excess electricity which sparked at earthed points when the jar was full was symptomatic of an overflow of electrical fluid from within the jar itself. Benjamin Franklin then extended the range of electrical power with his discovery of atmospheric electricity. Having compared clouds with the Leyden Jar he argued that the electrical charge which they built up

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former being led by physics, chemistry, astronomy and mathematics and the latter by the social sciences of anthropology, ecology and linguistics.

<sup>19</sup> Ritterbush, Philip C. *Overtures To Biology: The Speculations of Eighteenth Century Naturalists* (New Haven: Yale University Press, 1964), p.15.

<sup>20</sup> The Leyden Jar was the first form of electrical condenser and was discovered independently by two scientists: E. J. von Kleist in 1745 and A. Cunaeus in Leyden in 1746 "It consisted of a water-filled phial charged while held in the hand. In a later form called a 'Franklin square' a plate of glass replaced the phial and coatings of metal the water and the hand" (*Dictionary of the History of Science*, ed. by W.F. Bynum, E.J. Browne and Roy Porter (London: Macmillan, 1981), p.233).

was released as lightning. As Philip C. Ritterbush points out “this discovery of atmospheric electricity inspired speculation that all kinds of natural phenomena were caused by electricity”<sup>21</sup> and many inexplicable effects began to be defined as electrical occurrences.

The medical profession was most enthusiastic in embracing the powers of electricity and turning electrical treatments into miracle cures. While some illnesses were no doubt aided by the use of electricity, many successes were undoubtedly due to psychological rather than somatic effects. It was from the successes of electricity in medical practice, however, that the idea of internal electricity gained currency: immanence (the belief that related subtle fluids caused all physical and vital phenomena) had long been in vogue and electricity appeared to provide an actual incarnation of these ‘subtle fluids’. Certainly it was logical to assume that illness - caused, it was argued, by a loss of subtle fluids - which was treated and cured with electricity, pointed directly to electricity as the provider of the fluid necessary for recovery. Although such ideas may seem bizarre they were accepted with great sincerity for, as Ritterbush reveals:

The inheritance of a harmonious system of forces was made to order for electrical speculation. This relationship between the speculative framework and the newly discovered cosmic force accounts for the extravagance of belief.<sup>22</sup>

The growing belief that electricity was the vital power of living organisms was reinforced by the experiments of Luigi Galvani.<sup>23</sup> His assertion in the mid-1780s that

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<sup>21</sup> Ritterbush, p.25.

“all animals stored electricity on their tissues”<sup>24</sup> was the result of lengthy investigations in which he agitated the limbs of small organisms with electricity and gained a significant reaction. These reactions, Galvani assumed, were the result of an overflow of electrical effluvia, thereby proving that the limbs already contained their own store of electricity. Many proponents of electricity took Galvani’s experiments as almost undeniable proof that electricity was the vital force of life.<sup>25</sup>

Galvani, however, was incorrect in his assumptions and his errors were highlighted by Volta<sup>26</sup> as early as 1792, only a year after Galvani had made public his remarkable findings. Ritterbush places a great deal of importance on Volta’s explosion of the notion of the life-giving properties of electricity:

At a stroke electricity was dethroned from its position as master of the

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<sup>22</sup> Ritterbush, p.48.

<sup>23</sup> Luigi Galvani (1737-1798), Italian anatomist, conducted experiments into the nature of electricity from the early 1770s until the publication of his book *De viribus electricitatis in motu musculari commentarius* in 1791. His most famous experiments were comprised of frog preparations to which he attached an electrical current and found that the legs became greatly agitated, moving around of their own accord as though the frog itself were still alive. These ready-prepared frogs “consisted of the spinal cords, crural nerves and lower limbs dissected as a unit. Using these preparations, he [Galvani] at first touched the conductor of a static electrical machine directly to the spinal cord (kept on a pane of glass) and watched the convulsive contractions of the muscles in the lower limbs, which rested on a so-called ‘magic square’, a flat plate condenser made by attaching a sheet of metal foil to both sides of a single pane of glass” (*Dictionary of Scientific Biography*, ed. by Charles Coulston Gillispie, 16 vols. (New York: Scribners, 1971-1980), 5, (1976), 267-269 (p.267).

<sup>24</sup> Ritterbush, p.51.

<sup>25</sup> Philip C. Ritterbush highlights an amusing anecdote concerning such thoughts. In 1837 Andrew Crosse announced that he had caused water mites to appear with the use of electrical currents. His excitement was quickly exploded, however, when it was discovered that the creatures were actually a common parasitic mite which had been introduced to his experiment from his fingers in the preparatory stages. (See Ritterbush, p.199).

<sup>26</sup> Alessandro Volta (1745-1827) was a physicist by profession and an influential figure in the fields of Galvanism, electrostatics and meteorology. As the *D.S.B.* states “the tendency of Volta’s results [in Galvanic experiments on frogs] was to restrict more and more the domain of animal electricity. By November 1792, after countless trials on diverse unlucky creatures from insects...to mammals, Volta had concluded that all galvanic excitations arose from external electrical stimulation” (14, (1976), 69-82 (p.77)). Today, of course, Volta’s name remains in common usage; the unit of electromotive force is universally known as the volt.

cosmos and shown to be a property of common matter. This difference of emphasis, as much as the specific errors disclosed in the theory of life, destroyed the idea of immanence upon which speculations on electricity had been based.<sup>27</sup>

While this is certainly true from a contemporary perspective, it was far from obvious to the scientific community or society at large in the late eighteenth century. Indeed Galvani re-asserted the validity of his research and there began a series of attacks and counter-attacks between the opposing camps which lasted long into the first decades of the nineteenth century.<sup>28</sup> It was into this arena of conflict that Mary Shelley entered in the Summer of 1816 when the concept of *Frankenstein* began to take shape.

The creation of the artificial human in *Frankenstein* has electricity at its core. Mary Shelley admits as much herself in the introduction to the 1831 edition of the novel, musing over the possibilities of a re-created human form:

Perhaps a corpse would be re-animated; galvanism had given token of such things: perhaps the component parts of a creature might be manufactured, brought together, and endued with vital warmth. (p.8)

Electricity would come to play a large part in the definition of the artificial man throughout the narrative. Primarily though electricity acts as an impulse, a vital spark, so to speak, that gives Frankenstein's creation the impetus to move on. Unlike Hoffmann's short fiction, where the mechanistic and mesmeric sciences continue to

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<sup>27</sup> Ritterbush, pp.55-56.

<sup>28</sup> While Volta had dismissed Galvani's ideas entirely by 1793, Galvani would not admit his errors. He fought back with counter-evidence throughout the mid-1790s and was still in conflict with Volta at the time of his death in 1798. "When Galvani died, prospects for the survival of his theory were very



play an important, tangible part throughout the tales, *Frankenstein* releases its artificial human having already pre-determined the science which will dominate its character throughout the remainder of the novel. Victor Frankenstein's "odious handywork"(p.9) is therefore of a different provenance to the automata we find in Hoffmann. Frankenstein's creature is not altered by science throughout the narrative but given a definable set of scientific features at the point of its creation. This is an important point to grasp: it does not suggest that Hoffmann continually added to his automata as his tale went on, as though adding extra pieces of hardware or software to a computer. Rather, it means that while the Talking Turk is slowly revealed through the ongoing narrative, Frankenstein's creature is given his own scientific criteria at the very beginning and is afforded no additions as the novel continues. Mary Shelley's novel does not indulge in any form of supposition as to the area of science most likely to create a credible artificial human. *Frankenstein*, instead, invites a different form of analysis; concentrating upon one form of scientific enquiry and debating the different roles this form of science will play in creating the artificial human. It is obvious to all that there are no mechanical parts in Victor Frankenstein's creature but this does not admit to any distaste for materialist science. Merely, the novel concentrates upon the properties of electricity as espoused by both the romantic scientists and the materialist scientists. It is this conflict which will decide the nature of the artificial human, which will decide whether it is an imitation

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uncertain. Nevertheless, support for the concept of animal electricity survived into the nineteenth century and ultimately led in the 1840s to the basic work of Emil du Bois-Reymond" (*D.S.B.*, p.268).

or a simulacrum. Indeed, the first skirmish of this conflict is the one which will dominate the novel: the existence, or lack of, a soul.

In 1831, more than a decade after the initial publication of *Frankenstein* but in the same year as the following edition, which included Mary Shelley's own introduction, she also published the short story 'Transformation' in *The Keepsake*.<sup>29</sup> Although it retains certain echoes of the earlier novel, this later story is far more explicit in its concerns over the nature or existence of the soul. Comparisons can be made between Victor Frankenstein's "hideous phantasm"(p.9) and the "misshapen dwarf"(p.174) with "squinting eyes, distorted features, and body deformed"(p.174) who plays a major role in the short story. The dwarf, though, reveals a greater empiricism than Frankenstein's creature in his dealings with the spiritual. Guido - the belatedly romantic hero - banished from his home city of Genoa for improper behaviour towards the father of his beloved, Juliet, is persuaded (by the forementioned 'misshapen dwarf') to exchange his soul for a casket of treasure, an operation which requires intermingling the blood of both giver and receiver in order to transmit the soul from one to another in ethereal transfusion. The tale follows late gothic sensationalism by concluding with Guido's admirable recapture of his own soul in a clever parody of epic mortal combat:

In the midst of my frenzy there was much calculation:- fall I might, and  
so that he did not survive, I cared not for the death-blow I might deal  
against myself. While still, therefore, he thought I paused, and while  
I saw the villainous resolve to take advantage of my hesitation, in the

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<sup>29</sup> Mary Shelley's many stories published in *The Keepsake* can be found collected in *Tales and Stories* by Mary Wollstonecraft Shelley (Boston: Gregg Press, 1975). 'Transformation' is reprinted here from pp.165-185.

sudden thrust he made at me, I threw myself on his sword, and at the same moment plunged my dagger, with a true, desperate aim, in his side. We fell together, rolling over each other, and the tide of blood that flowed from the gaping wound of each mingled on the grass. (p.184)

Providing the soul with such physicality marks an important deviation for Mary Shelley. The association of the life-force, which in its romantic connotations is supposedly intangible and ethereal, with the life-blood involves, in this context, a tangibility that sits uncomfortably with the romantic philosophies she had previously championed. However, this apparent desertion does not go as far as to embrace the opposing materialist camp. By asserting that the soul embodies one's entire personality and individuality and forcefully rejecting the materialist 'man as machine' hypothesis, Mary Shelley leaves herself in a void: sceptical of the ideologies of romantic transcendentalism yet equally antagonistic of materialist reductionism.

*Frankenstein* faces some of the same problems. Mary Shelley places the same uncertainties upon the creation of artificial man as were found in 'Transformation': the conflicting philosophies of romanticism and materialism, in a scientific context, do not so much leave a void as allow for a discursive analysis of the reality or artificiality of the created human, of which the point of departure is once again the existence of the soul. *Frankenstein*, though, displays this existence much less readily than 'Transformation'. Indeed, for its central theme, the novel is peculiarly reticent over the practical origins of the monster's psyche. Certainly the question has been largely disregarded by recent criticism, which accepts *a priori* the humanity of the creature (at least as far as his anatomy and consciousness are

concerned). Only Maurice Hindle briefly addresses the soullessness of Frankenstein and his creation, arguing that our belief in the artificial man's lack of soul is a response to the 'Frankenstein myth' rather than to the novel itself. He concludes that:

The 1818 edition of *Frankenstein* has a passage explicitly referring to electricity as a 'fluid'. This suggests that Frankenstein's cosmology does originally contain the notion of an immaterial, but a 'sensing' human soul, one that shares its life-nature with electricity.<sup>30</sup>

Although this surmise is basically correct, Hindle does not seem to appreciate the great divergence of belief among contemporary scientists as to the nature of electrical forces. Victor Frankenstein's simple reference to electrical fluid in no way allows for the instantaneous leap of logic from a liquid conception of electricity to a similarly formed human soul, that Hindle apparently makes. As I have already suggested, although it is possible to look back from the late twentieth century and conclude that the theory of an electrical 'effluvia' or fluid had been disproved by the beginning of the nineteenth century, thereby confining Victor Frankenstein's role to that of the eighteenth century romantic scientist convinced that electricity is the stuff of life, the scientific community of that time had no such clear dividing lines. The continuing usage of fluid imagery in connection with electricity was as much a matter of scientific terminology as it was of philosophy and, albeit perhaps unconsciously, highlighted the on-going uncertainty over the actual properties of electrical charge. Hence in 1815 (the year before Mary Shelley wrote *Frankenstein*) we find a thesis on electricity admitting that the author was unsure whether

electricity was best explained “by the hypothesis of one, or of two such fluids” and that he was certain only that “electricity pervades all nature” and has a tendency “to unite with and in inert matter”.<sup>31</sup> Hindle’s immediate assumptions concerning Victor Frankenstein’s theoretical position, then, are historically naive and throw into doubt the assumption that Victor Frankenstein’s creature is a complete human, with the necessary form, consciousness and soul. Indeed the uncertainties over the nature of electricity are very clearly represented in the creature, and Mary Shelley, finding arguments from the romantic and the materialist camps taking opposing positions, is equally undecided as to the constitution of the creature’s inner being. Science did not appear to provide one solution to the problem of the creature’s creation and, drawn to the arguments on both sides of the debate, the novel highlights the difficulty faced by science in clearly defining the make-up of electrical force.

On the one hand there were scientists of that period who did consider electricity a force vital to human life, predominantly those associated with the German *Naturphilosophie* and Friedrich Schelling<sup>32</sup> in particular. Schelling provides us with an excellent example of the cosmic theses constructed around electrical

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<sup>30</sup> Maurice Hindle, ‘Vital Matters: Mary Shelley’s *Frankenstein* and Romantic Science’, *Critical Survey*, 2 (1) (1990), 29-35 (p.34).

<sup>31</sup> Anon., *An Essay, &c. (An attempt to find a general principle to connect the outlines of the various branches of the science of nature, and to trace an uniform, and consistent, and intelligible explanation of the whole.)*. This essay is in manuscript form in the Science Collection of the University of Edinburgh (ref. O.S. .537 Ess), pp.5, 10, 33. The view that electricity was a fluid is not particular to this work. E.T. Whittaker reports that “electrostatic theory was, however, suddenly advanced to quite a mature stage of development by Simeon Denis Poisson in a memoir which was read to the French Academy in 1812. As the opening sentences show, he accepted the conceptions of a two-fluid theory” (E.T. Whittaker, *A History of the Theories of Aether and Electricity: From the Age of Descartes to the Close of the Nineteenth Century* (London: Longmans, 1910), p.59).

<sup>32</sup> Friedrich Schelling (1775-1854) was the recognised leader of the German *Naturphilosophie* movement. While the majority of his work was carried out in the final decades of the eighteenth century his ideas did not entirely die with the advent of the materialistic and mechanistic sciences in

investigations. His work, collected in *Ideas Towards a Philosophy of Nature* (1797) and *First Outlines* (1799), expressed a belief in one ultimate force, which was life-giving and universal. While often this force appeared immaterial the existence of electricity - which was a material manifestation of the universal force - proved, for Schelling, the veracity of his argument. Other material expressions included magnetism, heat, light, and various chemical substances such as hydrogen and oxygen (producing water). This magnificent all-encompassing cosmic force was the ultimate provider of life and electricity, by its tangible nature, an *Urphanomene* (primal force) holding a position high in the echelons of Schelling's theory. Clearly *Frankenstein* would reflect Hindle's apparent certainty of the existence of the creature's soul if it were to take this scientific stance.

However, Schelling's propositions reflected the view of a minority of romantic scientists in the first years of the nineteenth century. Others - while still remaining firmly in the romantic camp - were less transcendental than Schelling. Electrical 'effluvia' were undoubtedly a vital force of nature but one which was separate from the human soul. Erasmus Darwin,<sup>33</sup> speaking for many late eighteenth century naturalists, insisted that electricity may provide animation in matter but could not do so for the spirit. Likewise Humphry Davy<sup>34</sup> - a staunch defender of romantic philosophies - was concerned by the extremist desire for total explanation

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the early 1900s, as shown by the inclusion of his theories in Hegel's *Encyclopedia*, first published in 1817.

<sup>33</sup> Erasmus Darwin (1731-1802), the grandfather of Charles Darwin and an eminent biologist in his own right. His many works include *The Loves of the Plants* (1789; repr. Oxford: Woodstock, 1991), *The Botanic Garden* (1790; repr. New York: Garland, 1978), and *The Temple of Nature* (1803; repr. London: Menston Scolar Press, 1973).

and universal theory which revolved around electrical experiment. He advocated a less extravagant approach to electrical force which centred upon the minutiae of scientific experiment and observation, a concept alien to Schelling and his followers. Taking this view, electricity would provide the creature only with animation but not with a soul.

In opposition to these romantic philosophies of the properties of electricity, more pragmatic and materialistically-minded scientists - such as Volta or Oersted<sup>35</sup> - were convinced that electricity was not only not a fluid but was also merely another property of matter, entirely devoid of any regenerative *spiritus animus*, as romantic science claimed. Such claims are the most reductive within the context of the novel; denying even that electricity could provide animation for Victor Frankenstein's artificial human and suggesting that to portray electricity as doing so is closer to fantasy than to fact.

There is, therefore, a great deal more to the construction of the artificial human in *Frankenstein* than critics generally suppose. The hypotheses of the opposing romantic and materialist philosophies engage in a battle, on the one hand, to reconstruct the human soul in artificial man and, on the other, to condemn such a possibility. Mary Shelley understood enough of the scientific milieu of the late eighteenth and early nineteenth centuries to present the views of both factions subtly and, largely, objectively. Hers is not a damning indictment of either mechanistic or

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<sup>34</sup> Humphry Davy (1778-1829) was a pioneer of electro-chemistry and one of the leading English chemists of his time.

<sup>35</sup> Hans Christian Oersted (1777-1851) discovered the magnetic effects of electrical currents and was a vibrant champion of the new scientific method of research, observation and experimentation as opposed to mere theoretical scientific investigation.

romantic philosophy (although considering her own connections to romantic literature the former would be a more likely scenario than the latter), more an experiment in the scientific creation of an artificial human in its entirety: from, say, 'birth' to 'death', from pre-construction to post-destruction.

Indeed, *Frankenstein*, along with L'Isle-Adam's *Tomorrow's Eve*, is one of the few scientific fictions that treats the theme of artificial man in such a manner. From Hoffmann's automata to Philip K. Dick's androids, the man-machine is generally in place throughout the narrative, its 'coming into being' discussed retrospectively. Shelley, however, confronts the process of creation, describing meticulously the genesis of how "the component parts of a creature might be manufactured, brought together, and endued with vital warmth" (p.8). By the time Victor Frankenstein completes his undergraduate training at Ingolstadt University and begins the lengthy process of creating artificial man his scientific pragmatism has blotted out all trace of the romantic outlook of his youth. Even the blatantly materialistic M. Krempe - one of the University lecturers whom Victor at first despises - now imparts "a great deal of sound sense and real information" (p.49). The rationalism with which Victor pursues nature "in her hiding places" (p.47) is reflected in his account of the research he has undertaken to discover "the cause of generation and life" (p.51). It consisted of a combination of observation - "[I was] forced to spend days and nights in vaults and charnel-houses" (p.50) - and experimentation - "[I] tortured the living animal to animate the lifeless clay" (p.53) - which hint not only at Galvani's electrical experiments of the 1790s but also at Oersted's investigative technique, which served as a model for all later scientific



experiments and was used to greatly disparage the romantic scientists' disregard for what were seen as the appropriate procedures.<sup>36</sup> Already, then, the creation of the monster is overshadowed by empiricist philosophy, yet the gross materialism of his actual construction far outweighs the subtle infusions of materialist leanings that Shelley has revealed so far in the re-animative process. Victor describes each stage of his hideous task in powerful detail:

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<sup>36</sup> The entire novel can actually be seen to represent the new scientific techniques of the early nineteenth century which so many materialist scientists defended and which became the template for the method of scientific research still carried out today. As the *McGraw-Hill Encyclopedia of Science and Technology* states, experiments - "the test of a hypothesis under controlled conditions" (6th edn, 15 vols (New York: McGraw-Hill, 1987), 5, p.264) - "must be clearly defined in terms of questions to be answered, hypotheses to be tested, specifications to be met, or effects to be estimated" (5, p.265). *Frankenstein* follows these guidelines very closely: clearly defining its central question, "perhaps a corpse would be re-animated" (p.8), testing hypotheses, "galvanism had given token of such things" (p.8), meeting specifications, by collecting "bones from charnel-houses" (p.53) and estimating effects, as the final third of the narrative follows the progress of Victor's creation to its inferred death. Victor Frankenstein, too, adheres to the tenets of such scientific methodology in his construction and animation of artificial man. The *McGraw-Hill Encyclopedia of Science and Technology* provides the pattern once more, noting the different stages essential to any properly conducted scientific experiment: "the researcher should describe the five following aspects" - "treatments", "experimental material", "size of experiment", "experimental techniques" and "related variables" (5, pp.516-517). Victor's treatments - those objects to be tested - are sections of the human body which require him to spend "days and nights in vaults" (p.50) to determine the effects of certain substances, such as "the corruption of death" (p.50-51) or the inheritance of the worm over "the wonders of the eye and brain" (p.51). Having decided upon the most fortuitous conditions, Victor begins to collect together his 'experimental material' from "the unhallowed damp of the grave" (p.53) or the often visited charnel-houses in order to begin the more active phase of his discoveries. Before we become embroiled in this, however, the "size of the experiment" is clearly delineated: "as the minuteness of the parts formed a great hindrance to my speed, I resolved, contrary to my first intention, to make the being of a gigantic stature; that is to say, about eight feet in height, and proportionably large" (p.52). "Experimental techniques" are necessarily backgrounded as Shelley's was an extrapolation of science rather than mere reportage of scientific fact, yet a glimpse of the basic ideology which defines the technique is afforded when Victor reveals: "[I] collected the instruments of life around me, that I might infuse a spark of being into the lifeless thing that lay at my feet" (p.56). The "related variables", however, are never employed. Victor Frankenstein becomes "unable to endure" (p.56) his research and even when later invited by the monster to create another creature he refuses, dramatically tearing his half-finished cadaver to pieces. Perhaps, though, a better relation to this final category can be found in the figure of Robert Walton who, in some way, acts as a 'control' in the novel, set up to oppose the hubris of Victor Frankenstein despite his apparently similar dreams and ambitions. Certainly Victor is concerned to reveal to Walton the error of his own ways in the hope that Walton will not follow a similar path.

Textually, *Frankenstein* duplicates each of the prescribed experimental stages: characters taking the place of physical or chemical substances. Indeed, by the time of the monster's death Mary Shelley's experiment is all but complete. She has answered all the questions posed and clearly set out

I collected bones from charnel-houses and disturbed, with profane fingers, the tremendous secrets of the human frame. In a solitary chamber, or rather cell, at the top of the house, and separated from all other apartments by a gallery and a staircase, I kept my workshop of filthy creation. The dissecting room and the slaughter-house furnished many of my materials[. . .]. His limbs were in proportion, and I had selected his features as beautiful. Beautiful! - Great God! His yellow skin scarcely covered the work of muscles and arteries beneath; his hair was of a lustrous black, and flowing; his teeth of pearly whiteness; but these luxuriations only formed a more horrid contrast with his watery eyes, that seemed almost of the same colour as the dun-white sockets in which they were set, his shrivelled complexion and straight black lips. (pp.53-56).

Through the basic skeleton, the ‘muscles and arteries’ and the facial complexion a picture is built of a straining mass of sepulchral material barely held together. The monster, at this point, personifies scientific materialism in the most literal sense. His appearance tangibly parallels the dominant philosophical beliefs of Victor Frankenstein, who recognises this connection in the dream sequence which follows his animation of the creature. Slumbering, he sees “Elizabeth, in the bloom of health” (p.57) becoming “livid with the hue of death” (p.57) as he “imprinted the first kiss on her lips” (p.57), thus associating his own materialist touch with that of the graveyard constituents from which his artificial man has been assembled.

When the full horror of the monster’s countenance is revealed, it is hardly surprising to find him reviled by those members of society whose paths he crosses. However, although his physiognomy would certainly inspire fear or loathing, the extreme reaction of all who he encounters is surely expressive of some other

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her findings and conclusions according to the precise rules of scientific investigation. The novel has become an experiment, the experiment a novel.

indication of his inhumanity. Parallels can be drawn here with Hoffmann's 'The Sandman': Olympia, the automaton with whom Nathanael becomes deeply involved, is distrusted by society at large despite his protestations. She is seen as "rather weird" (p.302), something altogether outwith the general strain of human civilisation. In *Frankenstein* a comparable situation is adapted to suit the more secularly horrific nature of the narrative: the revulsion inspired by the artificial man is due to an innate sense of his *difference*, his manifestation of the alien, rather than any physical repugnance.

Certainly - considering the detailed summary of the monster's construction - it must be more than physical attributes which fully account for the inhuman 'otherness' which so shocks his antagonists (his body parts are, after all, human ones). Indeed the actual constituent parts of his physical make-up - with the probable exception of his skeletal formation - are pointedly human, a fact which Mary Shelley makes vehemently clear. Hoffmann's earlier artificial humans are rejected on the basis of their precise opposition to this state: both the Talking Turk and Olympia are manifestly imitations, their visual appearance mechanical rather than natural. Is it surely not the case that Frankenstein's artificial human is shunned for his close comparison with human physiognomy rather than his contrast from it? Yet *Frankenstein* does not diverge so greatly from Hoffmann's conception of the artificial human as to advocate that the creature is reviled more as his imitation of the human form becomes more sophisticated. Rather one gathers from the narrative that it is something beyond the physical which incites rebellion against Victor Frankenstein's creature. Just as Olympia is physically inhuman, she is also

spiritually inhuman. She expresses nothing which reveals an inner humanity: no intelligence, no ability to interact with others and no emotive capacity. In Frankenstein's monster - despite the superficial sheen of traditional horror which Mary Shelley conspires to present - it is also an inner vacuum which is most repellent. The creature may well reveal an impressive progression from Hoffmann's stiff-limbed clockwork toys to a fully dynamic human frame, but he also functions in a void, entirely unequipped with any vestige of a sensing, human consciousness.

Logically, in view of the materialist philosophy which courses symbolically through each vein and artery of his newly-created body, it would be likely that the creature's inhumanity stems from the absence of a soul. This, certainly, would reinforce his artificiality: his profane creation by man as opposed to divine creation by God. T.H. Huxley's opinion is illuminating here. Quoting Charles Bonnet, he argues that "it is not to be denied that Supreme Power could create an automaton which should exactly imitate all the external actions of man".<sup>37</sup> Whether this "Supreme Power" is God or science is ambiguous but certainly Victor Frankenstein assumes this mantle, hinting at his own divine power and lofty scientific status when suggesting that "a new species would bless me as its creator and source". However, Huxley's intimation that only the "external actions of man" could be reproduced somewhat undermines Victor's hubristic attitude and reflects the superficial humanity of the soulless creature.

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<sup>37</sup> T.H. Huxley, 'On the Hypothesis That Animals are Automata, and its History [1874]', in *Collected Essays Volume One: Method and Results* (London: Macmillan, 1893), 199-250 (p.247). This essay was first published in 1874.

Such explicit materialism can also be seen in the monster's early life and subsequent education. Samuel Holmes Vasbinder has shown that Mary Shelley made use of the work of the empirical materialist David Hartley, whose *Observations on Man, His Frame, his Duty and His Expectations* (1749/1791) agrees perfectly with the stages of enlightenment through which the creature progresses. Hartley's philosophy (in conjunction with Condillac's to whom Vasbinder also pays close attention), is basically dualistic in nature, and thoroughly opposes the cosmic harmony of romantic thought which finds all natural phenomena inextricably linked. Such dualism has no place for the existence of a soul, and, by its influence on the narrative, further renders the creature a child of materialism devoid of any romantic influence and most certainly without any inward constitution of intellectual, emotional or spiritual humanity.<sup>38</sup>

There are, indeed, hints of the degeneration into materialism which is to come. Victor's temper, for example, "might have become sullen" (p.37) had Elizabeth not been able to "subdue" (p.37) his darker moments while Henry Clerval's spirit remains undaunted, indeed is inspired by Elizabeth's sweet nature:

And Clerval - could aught ill trench on the noble spirit of Clerval - yet he might not have been so perfectly humane, so thoughtful in his generosity - so full of kindness and tenderness amidst his passion for adventurous exploit, had she not unfolded to him the real loveliness of beneficence, and made the doing good the end and aim of his soaring ambition. (pp.37-38)

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<sup>38</sup> See Samuel Holmes Vasbinder, *Scientific Attitudes in Mary Shelley's Frankenstein* (Michigan: UMI Research Press, 1984) especially pp.35-50 and pp.65-82 respectively.

Not only is Victor less inclined to romantic inspiration than Clerval, he is led into “intense application[. . .]in investigating” (p.36), believing the world to be “a secret which [he] desired to divine” (p.36). By comparison, while Victor involves himself in empirical research, Clerval becomes “deeply read in books of chivalry and romance” (p.36) and “composed heroic songs, and began to write many a tale of enchantment and knightly adventure” (p.37). As both Victor and Henry Clerval move into adulthood these childhood characteristics become increasingly polarised. When the two meet some time later in the narrative (after a number of years apart) the separate paths they have taken are clearly defined in a largely symbolic journey down the Rhine. As Victor narrates:

After some days spent in listless indolence, during which I traversed many leagues, I arrived at Strasburgh where I waited two days for Clerval. He came. Alas, how great was the contrast between us! He was alive to every new scene; joyful when he saw the beauties of the setting sun, and more happy when he beheld it rise and recommence a new day. He pointed out to me the shifting colours of the landscape, and the appearance of the sky. “This is what it is to live,” he cried; “now I enjoy existence! But you, my dear Frankenstein, wherefore are you desponding and sorrowful?” In truth, I was occupied by gloomy thoughts, and neither saw the descent of the evening star, nor the golden sunrise reflected in the Rhine. (p.149)

Such discordance with nature not only reflects the growing differences between Henry Clerval and Victor Frankenstein, but also proves how far from the romantic nature of his friend Victor has indeed strayed. David Ketterer opposes this view, arguing that

many of the influences and obsessions which make up what we

understand as the Romantic movement are reflected microscopically in *Frankenstein*. Indeed, *Frankenstein* might be said to present Romanticism in a nutshell.<sup>39</sup>

This, however, is only true of Victor in his early boyhood or in the aftermath of his construction of his artificial man and is certainly not constant throughout the narrative. Rather Victor presents a portrait of change and malleability, moving between romantic and materialist perspectives as he comes closer to realising his dreams of imitating humanity.

The creature parallels this metamorphosis; his animation inspired by the philosophies of romantic science is slowly eroded by the scientific materialism of the cadaverous body parts and base matter which go into the construction of his human form. This alienates the creature from society and transforms him into nothing more than a metaphor for the rampant scientific materialism seen in Victor *Frankenstein* himself.<sup>40</sup> It thus becomes obvious that the processes of electricity that gave the monster life<sup>41</sup> are the agents of a distinctly romantic hypothesis entirely opposed to the severely mechanistic theories of certain materialist philosophers.

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<sup>39</sup> Ketterer, p.17.

<sup>40</sup> The similarities which critics have noticed between Victor *Frankenstein* and Mary Shelley's husband may also play a part here. Percy Shelley may well have seen himself, at times, as an alienated romantic. His father continued to detest his son's wasteful poetic career as well as his dubious moral values. Percy's father-in-law, William Godwin, also deplored Percy and Mary's elopement while Percy remained married to his first wife. From the Villa Diodati it may well have appeared that Shelley - like Byron - was ostracized by his own community.

<sup>41</sup> Electricity plays a similar role in this novel to the role played by mesmerism in Hoffmann's 'Automata' and 'The Sandman'. Disregarding for the moment the properties that electricity is able to provide for its subject (the central bone of contention in *Frankenstein*), both mesmerism and electricity provide the basic ingredient of a fictional creation of artificial man: animation. Without the interference of either of these sciences Hoffmann's automata remain no more than clever clockwork toys and Victor *Frankenstein*'s monster remains a human corpse. Whatever the differences in the narrative extrapolation of these types of science, basically - within the framework of science fiction - they hold the same position: the author uses them to create a credible man-machine, one which is scientifically conceivable and appears to be based upon empirical, factual scientific knowledge.

All of these elements emphasise the soullessness of Victor's creation, but the central point of Mary Shelley's fictional creation of artificial man does not take place in the monster's early life or his abortive attempts at human interaction but at the precise moment of his 'birth' - that vital turning-point between inertia and animation. Victor describes it as follows:

It was on a dreary night of November, that I beheld the accomplishment of my toils. With an anxiety that almost amounted to agony, I collected the instruments of life around me, that I might infuse a spark of being into the lifeless thing that lay at my feet. It was already one in the morning; the rain pattered dismally against the panes, and my candle was nearly burnt out, when, by the glimmer of the half-extinguished light, I saw the dull yellow eyes of the creature open; it breathed hard, and a convulsive motion agitated its limbs. (p.56)

All the evidence, even in the short excerpt here, points towards the use of electrical force in bringing the creature to life. Victor's hope of "infus[ing] a spark of being" into the lifeless body in his workshop and finding his success heralded by "a convulsive motion [which] agitated its limbs" proves, at the very least, Mary Shelley's appropriation of electrical rhetoric. But if the application of electricity is taken for granted what are the theoretical implications as far as the creation of artificial man is concerned?

Again, the conception of the construction can be viewed in terms of scientific materialism. As stated earlier, electrical research was at an advanced stage by the early nineteenth century and, for many scientists, the cosmic supernaturalism of electrical power had been somewhat reduced and electricity had taken its place as merely another form of base matter. The "convulsive motion" of Victor



Frankenstein's description, then, is comparable with the mechanical apparatus which animated Hoffmann's automata. An electrical spark replaces the cogs and wheels of earlier artificial humans just as more complex technologies will - in later scientific fiction - replace the electrical spark. This hypothesis still allows the electrical impulse its role as "the cause of life" (p.47). It does, after all, re-animate the previously lifeless collection of human body parts. However it offers nothing in the way of a spiritual existence, acting only as a catalyst which provides the necessary 'jump start' and then dissipates.

Mary Shelley, though, retains an ambiguity in the narrative that does not allow for one scientific viewpoint to dominate. Victor Frankenstein's "spark" may well be inspired by the hypotheses of romantic science and relay far more than the simple process of activation. Whether or not it does, thereby imbuing the artificial man with a conscious soul is at the centre of the narrative's discussion of the process of creation. Certainly an animative process based on the ideologies of romantic science alters the materialist position which the monster has assumed.

A full understanding of the romantic position concerning the forces of electricity needs to take into account the fact that empirical research, though uncommon in the science of the early romantics (especially Schelling's form of speculation in *naturphilosophie*), was greatly involved in proving their hypotheses. In fact literary romanticism had always enjoyed a more fulfilling partnership with empiricist discoveries than is often assumed, as Ritterbush recognises:

A bald statement that the Romantic poets were opposed to science,

whatever it might mean, would oversimplify their reactions and neglect their indebtedness to the naturalists for beliefs about external nature.<sup>42</sup>

The endeavours of romantic philosophers to include electricity in a system of thought that was built on the beliefs of cosmic harmony, of the solitary force through which all nature was expressed, were aided by the research of such chemists as Humphry Davy, whose experiments proved the existence of many links between base chemical and electrical molecular construction. Such discoveries became extremely important for the romantic scientist when the connection of magnetic polarity and electrical power was established by Oersted's uncovering of electromagnetism in the early 1820s. It is on Davy, however, that one must concentrate in *Frankenstein*. His portrayal in the novel (as the Ingolstadt Professor M. Waldman) is the most positive image of science in the narrative, indicating Mary Shelley's great respect for his work.<sup>43</sup> Davy's association with the vitalist movement (who believed the source of vital power lay within electricity), and his work on apparent harmonies between natural forces, made him revered in romantic circles. What seemed to them to be the over-riding proof of their speculations into the natural correspondence of electric power with other natural forces led them to an almost spiritual confidence in the importance of electricity, whose role as the lynchpin of this theory seemed deserving of such respect. Romanticism, then, seized upon electricity's apparent congruity with those forces which were already believed to be distinct parts of a harmonious whole. This, allied to the enormous power of

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<sup>42</sup> Ritterbush, p.200.

which electrical energy was capable (and here one is reminded of the stroke of lightning which shatters a tree as Victor Frankenstein looks on),<sup>44</sup> gave electricity a position from which it appeared capable of not only providing the animating principle of organic life but also of spiritual life. In the romantic system of cosmic euphony, there could be no dualism, no disparity between mind and body. In giving life - romantic dogma asserts - electricity also gave a soul.

There is an interesting dichotomy in this philosophy between the conception of the artificial man in *Frankenstein* and those found in Hoffmann's short stories. Mesmerism - the guiding principle of animation in both Olympia and the Talking Turk - was heralded just as greatly as electricity by romantic scientists in the early years of the nineteenth century yet Hoffmann did not allow mesmeric influences to provide an inner spiritualism for either of his artificial humans. Unlike Mary Shelley's use of electricity there is no hint that mesmerism is anything more than an animating force, a harbinger of consciousness but not of the soul. It is apparent that while Hoffmann was concerned solely with the animation of distinctly mechanical automata, *Frankenstein* took for granted the form of humanity while concentrating scientific discussion upon the more indefinable concept of inner human consciousness.<sup>45</sup>

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<sup>43</sup> Samuel Holmes Vassinder reveals many similarities when comparing the rhetoric of Waldman to that of Davy's *Elements of Chemistry*.

<sup>44</sup> This incident occurs in the second chapter: "As I stood at the door, on a sudden I beheld a stream of fire issue from an old and beautiful oak[. . .]and so soon as the dazzling light vanished, the oak had disappeared, and nothing remained but a blasted stump. When we visited it the next morning, we found the tree shattered in a singular manner. It was not splintered by the shock, but entirely reduced to thin ribbons of wood. I never beheld anything so utterly destroyed" (p.40).

<sup>45</sup> It is upon such topics which the scientific creation of the artificial human would largely concentrate in the post-*Frankenstein* era, especially as science itself increased in sophistication and was capable of reproducing the physical human form with relative ease.

This dilemma cannot be clarified by the meagre evidence provided at the time of the creature's animation but must be sought in its post-animation relationships, when his forced alienation from his own origins as well as society subdues his generic design and turns him against his own creator, Victor Frankenstein. The creature's rage at this double abandonment (by Victor and society) leads him to exact an equal revenge upon those around him. This aligns him more closely with the romantics than might have been expected, as Morse Peckham reveals:

to impose one's will upon others[. . .]is to treat them as mere instruments for realising the will, to treat them as objects, to treat them, in short, as society treats the alienated romantic.<sup>46</sup>

If the creature treats others as "the alienated romantic" it is only in response to his own similar treatment. This inverts Peckham's statement and places the title of romantic firmly on the artificial human itself. When we recall that Victor Frankenstein has created the creature in his own image, invested it with his own personality and philosophies, and that Victor Frankenstein was himself once of a romantic persuasion, it is no surprise to find this romanticism re-formed in his own creation.

The early sections of the novel make clear Frankenstein's initial romantic disposition but also highlight the beginnings of a more materialistic character which comes to subdue his earlier traits. The monster, in this respect, is very similar to his

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<sup>46</sup> Morse Peckham, *Romanticism: The Culture of the Nineteenth Century* (New York: George Braziller, 1965), pp.27-28.

own creator. Victor Frankenstein is typically romantic in his boyhood. Much like his closest friend, Henry Clerval - who is the strongest symbol of romanticism in the novel - the young Victor Frankenstein has a great respect for, and enjoyment of, the natural world.

As for the constitution rather than the creation of Victor Frankenstein's creature, it is apparent that the narrative expresses the philosophies of romanticism with which electricity was involved. While throughout his reign of terror over Victor's family and friends the monster reveals very little in the way of moral values (of which the soul has traditionally been the guardian),<sup>47</sup> some residual spiritual qualities (from which he has been so long alienated) do once again appear by the close of the novel:

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<sup>47</sup> Although this is certainly true there remain certain elements of romantic philosophy in several of the monster's actions, or, at least, several incidents in which the monster is involved appear to be inspired by the eclectic beliefs of romantic scientists. Two such examples will highlight this: first, Schelling's 'Law of Parallelism' which argues that evolution occurs as one animal grows from another, the new species always moving slightly higher up the evolutionary tree until we reach mankind, whose 'birth' had been the most complex and gestation period the longest. Victor Frankenstein appears to view his creature as the next stage of development. Not only is the gestation lengthy (Victor symbolically toils for months over his structure) but at times he feels threatened by the increased power that such a race would hold over humanity: "a race of devils would be propagated upon the earth, who might make the very existence of the species of man a condition precarious and full of terror" (p.160). Schelling's law - however close to Darwinism it may seem to come - undoubtedly advocates a hierarchy of animal types, within which mankind takes its place as the most superior form of life. With the advent of a new species - which gestates within Victor Frankenstein - mankind becomes subservient to a higher life form.

Second, altitude plays a major role in the novel. Constant reference is made to the height of mountains or the depths of valleys, which both Victor and the monster traverse. Despite the obvious gothic sensibilities of such rhetoric there appears to be more involved in this detail than the creation of atmosphere. Romantic scientists of the early nineteenth century firmly believed that insanity was connected to a lack of oxygen and hence to an increase in altitude. In the novel the monster's move from low to high altitude corresponds to the beginning of his killing spree. The low-lying pastures where he first takes up residence inspire no acts of violence, yet as soon as he has departed for Geneva (higher in the Swiss Alps) mental degeneration sets in, culminating in the killing of Victor's younger brother William, whom the monster strangles immediately after coming down from the height of Mont Blanc. In contrast the monster's brief spell of happiness (when Victor agrees to make him a mate) coincides with his decision to quit the high altitude of the Swiss Alps for some sea-level

‘But soon,’ he [the monster] cried, with sad and solemn enthusiasm, ‘I shall die, and what I now feel be no longer felt. Soon these burning miseries will be extinct. I shall ascend my funeral pile triumphantly, and exult in the agony of the torturing flames. The light of that conflagration will fade away; my ashes will be swept into the sea by the winds. *My spirit will sleep in peace; or if it thinks, it will not surely think thus.* Farewell.’ (p.215. My italics)

The speech acts as an epitaph and, the rhetoric included, is traditionally Christian in value. The monster allows death to remove all his bodily ills before consigning his remains to the sea. This sense of self (although of self-destruction) would be anathema to materialist science which constantly subjugates the subjective in favour of the objective. For the creature, though, there remains a concern over the ‘spirit’ - the soul - which only here, in the final dialogue of the novel, is expressed so openly. Indeed this final line seems far more than a confirmation of the creature’s soul: his belief that ‘if it thinks, it will not surely think thus’ expresses a desire on his part to refute the scientific materialism of which he has been a powerful narrative symbol. The ‘funeral pile’, in this scenario, becomes a purifying fire, destroying (both bodily and psychologically) the extremes of materialist scientific endeavour and allowing, one is encouraged to believe, the romantic spirit to ‘sleep in peace’.

Mary Shelley contrives to produce a narrative which involves both the dominance and subordination of scientific romanticism and materialism. These two distinct ideologies have fought throughout the novel over Victor Frankenstein’s “daemon” (p.73), the unnamed creature who wears, at various points in the narrative, the mantle of both factions. That romanticism comes to be a form of salvation could

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dwelling, as Victor notes: “he suddenly quitted me[. . .]. I saw him descend the mountain with greater

have been anticipated. Nevertheless the text is largely a fictional representation of historical debate. In the process of evoking the conflict of philosophies concerning the monster, Mary Shelley provides a microcosm of the dispute between scientific materialism and romanticism which had been going on since the later part of the eighteenth century. *Frankenstein* may not resolve many of the more problematic issues it raises, but the monster's subjugation by materialism both anticipated the ascendancy which the new science was to enjoy in the nineteenth century and warned its readers that discarding romanticism's humility and respect could only augur disaster.

Further reaching than this, however, is the fictional representation of the construction of artificial humanity in the shape of Victor Frankenstein's monstrous corpse. As a copy of mankind - one created to imitate the human form and condition - the monster is certainly more sophisticated than the automata present in the short fiction of E.T.A. Hoffmann: its physical form is created from actual human body parts, as opposed to various metals and synthetics and it reveals a far greater degree of independent thought than either Olympia or the Talking Turk, reliant as they are on the programmed responses of their mechanical creators. The creature even appears capable of emotive responses, a concept alien to the gears and levers which define Hoffmann's clockwork humans. This aside, though, the monster is still far from a convincing replica of the human - a weakness evident from the relations it enjoys with the human protagonists in the narrative. Not even Victor Frankenstein, horrified by the creature's close proximity to humanity while it remains a

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speed than the flight of an eagle, and quickly lost among the undulations of the sea of ice" (p.143).

bastardisation of that natural form, is able to relate to his creation on a human level. This is in sharp contrast to Hoffmann's creators - Spalanzani and Professor X - who are not subjected to such angst as they realise the artificiality of their creations all too well and never doubt their lack of human qualities.

The apparent maturity of Victor Frankenstein's monster, in terms of its relation to humanity, is largely due to the scientific foundation on which it was built. Shelley did not - like Hoffmann - utilise a practical science readily verifiable as within the limits of scientific expertise and then attempt to 'humanise' her artificial man through more mystical means, again as Hoffmann attempted to do through the mesmeric influences settled upon the central protagonists of his short tales. Rather Mary Shelley took one avenue of scientific investigation - the late eighteenth and early nineteenth century experiments and studies into the nature of electrical charge - and used this not as an entirely factual basis for the construction of man but as an extrapolative foundation through which the theories and philosophies of scientific creation could be explored. In actual fact, while Hoffmann created his human copies by combining two sciences: mechanics and mesmerism, Mary Shelley did so by concentrating on a single scientific field and combining two scientific philosophies: romanticism and materialism. If credibility is one criterion by which the fictional representation of artificial man should be judged, Shelley's electrically-animated creature is the cleverer construction, appearing more sophisticated and less easily decipherable as an artificial construct. Whereas Hoffmann's automata are inhuman on a verifiable scientific basis - their human skin tissue is actually painted metal, for



example<sup>48</sup> - *Frankenstein* allows the issue to be fought in philosophical terms, thus removing the empirical invalidations to which Hoffmann's automata were susceptible.

Where then does Shelley's artificial human fall in Baudrillard's conception of the simulacra? While Hoffmann's automata do not even progress past the stage of dissimulation, Shelley's creature reaches another level of the hierarchy. Baudrillard provides, what he terms, "three orders of simulacra".<sup>49</sup> The first denotes "simulacra that are natural, naturalist, founded on the image, or imitation and counterfeit, that are harmonious, optimistic and that aim for the restitution or the ideal institution of nature made in God's image".<sup>50</sup> Frankenstein's artificial human concurs with much of this. Victor Frankenstein certainly aims to create a creature "made in God's image" and it is most definitely a "natural" construction, built in fact from real human parts. Victor, too, is optimistic but his creature, upon which this definition must concentrate, is not. Nor is he ever harmonious. Indeed many of his attributes are closer to Baudrillard's second order of simulacra, which includes "simulacra that are productive, productivist, founded on energy, force, its materialisation by the machine and in the whole system of production - a Promethean aim of a continuous globalisation and expansion, of an indefinite liberation of energy".<sup>51</sup> This more

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<sup>48</sup> The revelation that something apparently human is actually not often uses this technique to divulge information, either to the viewer, in the case of the science fiction film, or to the reader. A fine example of this can be seen in the Hollywood film *The Terminator* (1984), dir. by James Cameron, scr. by James Cameron and Gale Anne Hurd, where a robot (or cyborg) played by Arnold Schwarzenegger, reveals the metal beneath his skin and, in doing so, reveals to the audience his inhumanity.

<sup>49</sup> Baudrillard, p.121.

<sup>50</sup> Baudrillard, p.121.

<sup>51</sup> Baudrillard, p.121.

obviously encapsulates the essence of Frankenstein's creature, an artificial human of liberated energy and force, determined upon a course of global expansion (in the form of a female creature with whom he will procreate). Shelley's "hideous phantasm", then, falls somewhere between Baudrillard's first and second orders of simulacra, a point from which Hoffmann's automata are excluded.

Not only, then, does Shelley's artificial human appear more sophisticated than Hoffmann's automata; but its construction within the narrative framework of the novel is also instrumental in allowing a greater degree of humanity than either Olympia or the Talking Turk. The vital question, however, remains: what, in scientific terms, constitutes humanity? Shelley suggests it is a philosophical rather than a practically scientific concern yet *Frankenstein* does not provide an answer. The monster is still shunned as an 'alien', although the period from 1820 to 1880, which directly follows Shelley's novel does go some way towards shedding light on what is still, as Victor Frankenstein suggests, "a solitary chamber[. . .][a] workshop of filthy creation" (p.53).

## **An Iron Grasp. . .A Hand of Steel:**

### **Poe, Dickens and the Man-Machine Debate in the Industrial Age**

Science fiction in the period 1820 to 1880, or more specifically science fiction written in the period after Shelley's *Frankenstein* and before L'Isle-Adam's *Tomorrow's Eve* (1818 and 1886 respectively) has no immediately definable quality. The range of themes, motifs, concerns, and views of scientific advancement makes classification a critical impossibility. The only certainty for the literary scholar is that there is very little common ground among the many texts in the SF field. More perplexing, for my own inquiries, is the lack of a specific text that, despite the many different approaches taken by writers of science fiction, can be seen as a typical or exemplary study of the attitude of the age towards the scientific creation of the artificial human. That no such text exists - unlike the romantic period which provided Hoffmann's short fiction and *Frankenstein*, or the post-World War Two era in which Philip K. Dick's *Do Androids Dream of Electric Sheep?* is prominent - is not so much a hindrance to enquiry as an intriguing situation which requires interpretation just as much as those texts which can be seen to reflect the zeitgeist of the age.

Of the varied critical approaches to science fiction between 1820 and 1880, or to the Victorian period in general, there is a consensus which appears to uphold this view. Darko Suvin finds few narratives readily definable as SF before 1870 and, even in the enthusiastic explication of Richard Jefferies' *After London* (1885), his

primary definition of this novel is “anti-Victorian”,<sup>1</sup> suggesting a text which has broken with tradition and is entirely unrepresentative of the age in which it appears. John J. Pierce is more scathing of the quality of science fiction at this time, questioning its ability fully to understand the new challenges which science was presenting to humanity:

Victorian SF[. . .]was an expression of the Victorian world-view; its heroes were motivated by the moral, social and political values of that world view - science and technology were seen only in relation to the same world view, either as a threat to the established order or as a means of its salvation[. . .] Victorian science fiction understood the scale of scientific and technological change, but never had a real feel for the significance of that change at either a social or eschatological level. It never really faced, perhaps never even noticed, any challenge to fundamental human values.<sup>2</sup>

Pierce’s initial comments are important: Victorian science fiction narratives based their modes of expression upon the culture and literature of the Victorian period and, in doing so, disregarded the models of SF narrative laid down by Hoffmann and Shelley. This rejection of narrative technique, which I have previously argued is essential to the creation of an SF narrative, undermines their claim as science fiction and transports many to the genre of fantasy or futuristic utopian fiction. If, then, there is a paucity of credible science fiction in this period, there must be several reasons for such a sea-change in narrative construction that denied writers of fiction

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<sup>1</sup> Darko Suvin, *Victorian Science Fiction in the U.K.: The Discourses of Knowledge and of Power* (Boston: G.K. Hall, 1983), p.377.

<sup>2</sup> John J. Pierce, *Foundations Of Science Fiction: A Study in Imagination and Evolution* (New York: Greenwood Press, 1987), pp.52-65.

the criteria which had been available to Mary Shelley in writing *Frankenstein* in 1816.

Certainly there occurs a definable change in the dominant scientific outlook between the second and the third decades of the nineteenth century. The ground-rules of the science fiction text necessitated an interweaving of the scientific with the mystical to create a conjoining of the factual and the fantastic. This allowed for the cautious extrapolation of contemporary scientific material which appeared credible by comparison with the fantastic even when it was patently impossible within the present scientific milieu. Such a construction provided the SF narrative with an internal logic which engaged the reader imaginatively and removed the threat of incredulity. The period in which Hoffmann and Shelley were working was equally engaged in a struggle between the mystical and the empirical. In this case it was a conflict between romantic and materialist science; the former allied closely to more esoteric, magical beliefs and the latter to the pragmatic and factual.

The late 1820s and 1830s brought some resolution to this debate with romantic visions of scientific investigation giving way to the materialistic preoccupations with experimentation, factuality and practicality. The dualism which had existed now disappeared and many of the ingredients necessary for the construction of an SF narrative were backgrounded by a scientific community and a larger cultural outlook which championed utilitarianism and material advancement. Science, indeed, took on a role much more directly associated with society; generally through its practical applications. The machine - as industrial tool and as mode of transport - was enormously effective upon society and culture. The improvements to

the steam locomotive in the 1830s gave rise to a network of railways which transformed the natural landscape of both town and country while the mechanisation of traditional occupations (such as weaving) considerably altered the working environment for a significant percentage of the population.<sup>3</sup> The machine, as a symbol of empirical science, very quickly became an integral part of Victorian life and as such was no longer the domain of the privileged few (the scientists). Such a demystification of science brought the realm of the scientific from the imaginative into the real: moving it from the literary unconscious to the consciousness of society as a whole. This also had a detrimental effect upon the feasibility of science fiction which relied upon the mythologising of the scientific process in order to produce a framework which allowed for a seamless intermingling of the scientific and the mystical. In short, increased empiricism made the science fiction narrative untenable.

Although the form of the science fiction narrative may not have been a viable fictional outlet, its content was not entirely discarded. Heightened awareness of the machine's place in nineteenth-century culture, allied to a feeling that the pace of industrialisation was perhaps too fast, led literature to set aside the speculative approach of SF for a more practical engagement with the realities of life in an industrial era. As one critic points out:

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<sup>3</sup> Between 1830 and 1848 over 5000 miles of railway track had been laid throughout Britain and locomotives which had originally reached speeds of 12 mph in the 1820s had, in the space of only a few years, increased this to 50 mph. In industry the percentage of the labour force which worked within a mechanical environment had risen to 40% by 1840 while, in the weaving trade, the number of spindles had doubled and the number of power looms quadrupled. For further statistical details see Laurence Lerner, ed., *The Victorians* (London: Methuen, 1978); Walter E. Houghton, *The Victorian Frame of Mind, 1830-1870* (London: Yale University Press, 1987); and Richard D. Altick, *Victorian People and Ideas* (London: J.M. Dent, 1974).

Although most perceptive Victorians did share a sense of satisfaction in the industrial and political pre-eminence of England during the period, they also suffered from an anxious sense of something lost, a sense too of being displaced persons in a world made alien by technological changes which had been exploited too quickly for the adaptive powers of the human psyche.<sup>4</sup>

Fiction attempted not only to describe this alien world but to make sense of it, a process which many Victorians found essential in dealing with their response to industrialisation, as Richard D. Altick suggests: “the faster the rate of change and the more bewildering their orientation became both physically and intellectually, the more some Victorians longed for a fixed order”.<sup>5</sup> Such a search for a form of coherence necessarily led fiction directly to confront those aspects of culture which had most vehemently altered the consciousness of society: urbanisation, the change of working practice, the speed of communications networks, mechanisation. All of these, one could argue, were dominated by science, a fact which G.H. Lewes - an important commentator of the time - was quick to highlight:

Instead of perpetually finding itself, after years of gigantic endeavour, returned to the precise point from which it started, Science finds itself year by year, and almost day by day, advancing step by step, each accumulation of power adding to the momentum of its progress.<sup>6</sup>

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<sup>4</sup> *The Norton Anthology of English Literature*, vol.2, 5th edn., ed. by M.H. Abrams (London: Norton, 1986), p.919.

<sup>5</sup> Altick, p.105.

<sup>6</sup> Paul Turner, *English Literature 1832-1890, Excluding the Novel* (Oxford: Clarendon Press, 1989), pp.9-10. Turner's book does not provide a reference for Lewes' statement and I have been unable to discover the original source.

It was not, however, upon the grand concept of science that fiction concentrated, but upon the single most important symbol of scientific advancement in the years between 1820 and 1880: the machine. As little distinction was drawn between science and technology, it was upon the machine that the physical embodiment of science fell: “Figuratively, machinery was the predominant symbol of the age’s harnessing of nature and by easy extensions it was also a symbol of social and political innovations”.<sup>7</sup> The fictional response to the industrial age, then, continued to voice concerns over the processes of mechanisation, just as science fiction had attempted to do in the period immediately prior to the second impetus of the industrial revolution from the 1820s onward. Vitaly, though, where the science fiction narratives of Hoffmann and Shelley had concentrated upon the creation of the artificial human by scientific means, fiction from the 1820s onward inverted this process. Rather than approaching the difficult problems associated with the *humanity* of an *artificial* construct, narratives determined to look at the *artificialising* of the *human*. This change in methodology, a change brought about by the influences of an increase in empirical thinking generally, reveals the essential dichotomy apparent in the industrial age: it at once further backgrounds the science fictional by refusing to deal in the outwardly speculative yet, at the same time, concerns itself with the same concepts as previous science fiction narratives. It is for this reason that a time in which SF would have seemed sure to prosper was in fact a time when it was disregarded.

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<sup>7</sup> Altick, p.110.



Disregarded, in this context, is an important word. For science fiction - as this thesis portrays it - did not cease to exist:<sup>8</sup> its tenets were dis-regarded rather than discarded, the themes with which it had always been concerned continuing to flourish in other literary traditions while the structure was set aside. These themes, though, are treated in a unique way and nineteenth-century realist fiction comes at the problem of the artificial human from an entirely different perspective than either Hoffmann or Shelley. Fiction in this period is concerned not so much with the 'making real' of the imitation but with the artificialising of the human. Although this continues to address the oppositions of the real and the imitative it does so by inverting previous methods and placing the human at the centre of the debate. Writers in this period, therefore, look more closely at the machine-man than at the man-machine; they are apprehensive of the dehumanising effects of a machine culture, both physiologically and psychologically, and of the constricting role of humanity in a world dominated by mechanism.

This change of attitude and complementary disregard for science fiction was not merely a British phenomenon. In Europe as a whole, and especially in the United States, the SF narrative was equally demoted. Although Britain had led the way in industrialisation in the latter half of the eighteenth century, the United States was

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<sup>8</sup> Science fiction - in forms other than those discussed in this thesis - does appear within the period 1820 to 1880. The majority of these are more readily categorised under utopian or futuristic fiction and include such works as: John Francis Bray, *A Voyage from Utopia* (London: [n. pub.], 1842), rev. edn ed. by M.F. Lloyd-Prichard (London: [n. pub.], 1957); Chrysostom Trueman, *The History of a Voyage to the Moon: With an Account of the Adventurer's Subsequent Discoveries* (London: [n. pub.], 1864); George T. Chesney, *The Battle of Dorking: Reminiscences of a Volunteer* (London: [n. pub.], 1871), repr. (London: Grant Richards, 1914); Samuel Butler, *Erewhon, Or Over the Range* (London: [n. pub.], 1872), rev. edn ed. by Peter Mumford (London: Penguin, 1970); and Edward Maitland, *By and By: An Historical Romance of the Future* (London: [n. pub.], 1873).

largely back in step with the progress made in Britain by the early decades of the nineteenth century. The changes to the rail system in America, where “in 1830, 73 miles [of rail track] had been laid” but by 1840 this had risen to “3,328 miles”,<sup>9</sup> paralleled those taking place within the United Kingdom. In science, too, the US was prominent, and by the second quarter of the nineteenth century “the growth of urbanization and industrialization, the spread of public education, and the growth of a strong desire for self-improvement”<sup>10</sup> had vanquished any hostility to science which the American public might have held. Indeed by the middle of the century America was a highly industrialised nation:

American railroad mileage was almost double the British; stupendous engineering feats had been accomplished[. . .]New York city was well on its way to commercial dominance [and][. . .]the idea that machinery might lead to the economic use of the limited supplies of capital and labour was rapidly gaining ground and the love of gadgetry had taken hold.<sup>11</sup>

American fiction, likewise, reflected its British counterpart’s concentration on realism to the detriment of science fiction. In America too, however, the themes which SF had approached were still pertinent.

Edgar Allan Poe’s short story ‘The Man That Was Used Up’<sup>12</sup> exemplifies this search for content over form. First published in *Burton’s Magazine* in August

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<sup>9</sup> Les Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (New York: Oxford University Press, 1964), p.215.

<sup>10</sup> George H. Daniels, *Science in American Society: A Social History* (New York: Alfred A. Knopf, 1971), p.164.

1839, it tells the story of General A.B.C. Smith whose fine figure, good looks and vocal depth greatly impress the narrator. Upon expressing this admiration however, the narrator is told there is an interesting story behind the General's apparent good health and physique. Yet for the majority of the tale he singly fails to discover what the facts actually are. It is only at the very conclusion that he discovers that General A.B.C. Smith is partly flesh and partly prosthetics, the prosthetics accounting for the largest percentage of his physical appearance. In this sense the General, as the narrator points out, is the man that was used up.

For such an apparently simple tale Poe appears to have regarded it highly. He chose it, indeed, to accompany 'The Murders in the Rue Morgue', one of his most critically acclaimed works, in a short pamphlet which consisted only of these two tales. The critical response to 'The Man That Was Used Up' was not nearly as complementary. Contemporary commentators dismissed it as a humorous skit, as James E. Heath in the *Southern Literary Messenger* revealed, identifying it only as "a specimen of the author's power of humour"<sup>13</sup> which, according to the reviewer in the *Pennsylvania Inquirer*, did in no way "equal its predecessor ['The Murders in the Rue Morgue']".<sup>14</sup> Recent criticism of the tale, which is slight, treats it a little more harshly. Edward H. Davidson sees it only as a "piece of uncomely fooling"<sup>15</sup> and

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<sup>11</sup> J. Potter, 'Industrial America' in *British Essays in American History*, ed. by H.C. Allen and C.P. Hill (London: Edward Arnold, 1957), pp.247-296 (pp.274-275).

<sup>12</sup> First published in *Burton's Gentleman's Magazine*, August 1839, repr. in *The Complete Works*. All references within the text are to this later reprint.

<sup>13</sup> James E. Heath, *Southern Literary Messenger*, January 1840, repr. in *Edgar Allan Poe: The Critical Heritage*, ed. by I.M. Walker (London: Routledge and Kegan Paul, 1986), p.130.

<sup>14</sup> Anon., *The Pennsylvania Enquirer*, July 1843, repr. in Walker, p.133.

<sup>15</sup> Edward H. Davidson, *Poe: A Critical Study* (Cambridge: Belknap Press, 1957), pp.211-212.

A.H. Quinn goes as far as to say that “there may be some profound meaning in this satire[. . .]but it escapes the present writer”.<sup>16</sup>

While this last statement is intended to be ironic, on a literal level it is undoubtedly true. The tale does have meaning, meaning which is greatly enhanced by placing it within the context of the debate over the creation of the artificial human. This is certainly where the tale is most illuminative, responding as it does to the temper of the mechanical age and reconfirming the dissolution of the romantic philosophies which were to be most recently found in Shelley’s *Frankenstein*. Indeed, ‘The Man That Was Used Up’ constructs a disparity between the mechanical General Smith and the erstwhile romantic narrator. In actual fact, the narrator is not a romantic at all. Rather he is utilised as a symbol of the impotence of romanticism in the age of the machine. Joan Tyler Mead has argued that it is the narrator who is ‘used up’<sup>17</sup> and, since he appears as the embodiment of the romantic age, one cannot disagree with this assessment. Certainly the deficiencies of the narrator are constantly highlighted in the narrative, most pertinently when he intervenes in an argument over the title of “a certain poetical drama of Lord Byron’s” (p.267):

‘Man-Fred, I tell you!’ here bawled out Miss Bas-Bleu, as I led Mrs. Pirouette to a seat. ‘Did ever anybody hear the like? It’s Man-Fred, I say, and not at all by any means Man-Friday.’ Here Miss Bas-Bleu beckoned to me in a very peremptory manner; and I was obliged, will I nill I, to leave Mrs. P. for the purpose of deciding a dispute touching the title of a certain poetical drama of Lord Byron’s[. . .]I pronounced, with great promptness, that the true title was Man-Friday, and not by any means Man-Fred. (pp.267-268)

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<sup>16</sup> A.H. Quinn, *Edgar Allan Poe: A Critical Biography* (London: Century, 1942), p.283.

<sup>17</sup> Joan Tyler Mead, ‘Poe’s ‘The Man That Was Used Up’: Another Bugaboo Campaign’, *Studies in Short Fiction*, 23 (3), Summer (1986), 281-286.

In choosing the wrong title, especially in relation to a poet regarded as being in the vanguard of a certain type of romanticism, the narrator confirms his status as a symbol of the loss of romance to the practicalities of a technological world. His place is most evidently not as a spokesperson for the romantic age (hence his error in connection with Byron) but as an example of the death of romanticism in the face of mechanisation (represented by General Smith whom the narrator so admires.)

Furthermore, the choice of that particular piece of literature is no coincidence. In introducing *Manfred*,<sup>18</sup> Poe is doing more than confronting the narrator with his lack of knowledge of romantic literature. In fact he invites comparisons between the Faustian figure of Manfred and General Smith, who seem to share a similarly individualistic sense of morality. Manfred is substantially supernatural, a necromancer and mystic who seems to have powers beyond those of mortal man. General Smith is immortal in a different way, for his prosthetic body parts will not degenerate in the same way as their organic originals. It is in the conclusion of each tale that these similarities coalesce; Manfred refuses to be penitent for his thaumaturgical excesses and Smith will not defer to those arguments which insist he has degraded his own humanity. Each in his own way is exemplary of a tradition: Manfred of the magico-mysticism which was embodied in certain romantic ideologies and Smith of the celebratory aggrandisement of materialist

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<sup>18</sup> Lord Byron, *The Complete Poetical Works*, ed. by James J. McGann, 5 vols (Oxford: Clarendon Press, 1986), 4, pp.51-102.

thought. By emphasising these points of comparison Poe is highlighting the relevance of General Smith, by whom the narrator is obsessed, and the irrelevance of Manfred, who has been so entirely forgotten that even his name is mistaken for another.

It is around General Smith, then, that the narrative revolves. His is the dilemma that concerns Poe and which reflects the concerns of the day. Yet he is an ambiguous character; considered a figure of fun and a buffoon, as is revealed in his rather poorly expressed defence of technology:

‘There is nothing at all like it,’ he would say[. . .]‘there is really no end to the march of invention. The most wonderful - the most ingenious - and let me add, Mr. - Mr. - Thompson, I believe, is your name, - let me add, I say, the most useful - the most truly *useful* mechanical contrivances, are daily springing up like mushrooms, if I may so express myself, or, more figuratively, like - ah - grasshoppers - like grasshoppers, Mr. Thompson - about us and ah - ah - ah - around us!’ (p.263)

This is hardly a stirring speech, constantly repetitive and stuttering in its defence of the progress of mechanical science and not at all representative of the erudition we may expect. However, many of the characters with whom the narrator speaks have an entirely different view of General Smith. In fact they all unanimously agree on his wonderful appearance, witty intellectualism and excellent character, which suggests they have either a different view of mechanistic construction or are as deluded as the narrator. Mrs O’Trump for one believes him to be “quite a hero” (p.266) and a “perfect desperado” (p.266) while another “kind friend” (p.261) is reported to have

said “he was a *remarkable* man - a *very* remarkable man - indeed one of the *most* remarkable men of the age” (pp.261-262). The narrator himself is solely complimentary of the General’s physical stature and intelligence, stating that he “never heard a more fluent talker, or a man of greater general information” (p.262) and describing his appearance in flamboyant hyperbole: “His head of hair would have done honour to a Brutus; - nothing could be more richly flowing, or possess a brighter gloss. It was of a jetty black; -which was also the colour, or more properly the no colour, of his unimaginable whiskers” (p.260). This exuberancy continues for some time, assessing every aspect of the General’s comeliness. Joan Tyler Mead is extremely suspicious of this hero-worship, arguing that,

the narrator enthusiastically praises General Smith’s good looks; but his words are subversive, for beneath the flattery he is actually presenting the hero as an artificial construct[. . .][surely] this ludicrous excess of superlatives must be viewed with suspicion.<sup>19</sup>

Essentially this is correct; after all the narrator is providing this narrative retrospectively, from a position of complete knowledge. However, it is disingenuous to argue, as Mead does, that the narrator was always fully aware of the General’s reliance on mechanisation. Like Nathanael in Hoffmann’s ‘The Sandman’, the narrator is the only character in the narrative who is entirely unaware of the mechanistic nature of many of the General’s body parts. Indeed the majority of the

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<sup>19</sup> Mead, p.282.

narrative is taken up by the narrator's useless attempts to discover the secret of General Smith of which everyone else appears to be aware.<sup>20</sup>

It is, however, at the conclusion of the narrative, when the true nature of General Smith's excellent physique is at last revealed to the narrator, that Poe eventually confronts the problems raised by the man-machine dichotomy that General Smith represents. Unable to unearth any information on General Smith, the narrator determines to go direct to the source. He arrives at General Smith's home greatly frustrated:

As I entered the chamber, I looked about, of course, for the occupant, but did not immediately perceive him. There was a large and exceedingly odd looking bundle of something which lay close by my feet on the floor, and, as I was not in the best humour in the world, I gave it a kick out of the way.

'Hem! ahem! rather civil that, I should say!' said the bundle, in one of the smallest, and altogether the funniest little voices, between a squeak and a whistle, that ever I heard in all the days of my existence.

'Ahem! rather civil that, I should observe.' I fairly shouted with terror, and made off, at a tangent, into the farthest extremity of the room.

'God bless me! my dear fellow,' here again whistled the bundle, 'what - what - what - why, what *is* the matter? I really believe you don't know me at all.' (p.269)

This "odd looking bundle of something" is, of course, General Smith, devoid of all the mechanical contrivances which have replaced those body parts lost in battle.

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<sup>20</sup> The narrator actually lists several places where he attempts to discover the secret surrounding General Smith but is unable to do so. These are: at the church of Rev. Drummump where Miss Tabitha T. says "Bless me, I thought you *knew* all about *him*! This is a wonderfully inventive age!" (p.264); at the Rantipole theatre (pp.265-266); at Mrs. O'Trump's soiree where the hostess tells the narrator that "this is the age of invention, most certainly *the* age, one may say - *the* age *par excellence*" (pp.266-267); and at the home of Mr. Theodore Sinivate who believes Smith to be a "perfect desperado - great pity, pon my honour! - wonderfully inventive age!" (p.268). These encounters take up five pages of a text only thirteen pages in length.



Quickly the General reassembles himself: attaching a leg, an arm, a set of shoulders and a bosom, a wig, a set of teeth, two eyes and a larynx. The accumulation of these specialised machines, all connected by the original head and torso, changes the appearance of the bundle entirely, as the narrator reveals:

I now began very clearly to perceive that the object before me was nothing more nor less than my new acquaintance, Brevet Brigadier General John A. B. C. Smith. The manipulations[. . .]had made, I must confess, a very striking difference in the appearance of the personal man. (p.271)

On the back of this evidence Joan Tyler Mead has asserted that “the General is simply a robot”,<sup>21</sup> which is not a simple statement at all. In fact, it reveals the central problematic surrounding the issue of the artificial human in this period. General Smith is not a robot:<sup>22</sup> he is not artificially created by scientific means, as were the automata in Hoffmann’s short fiction or Victor Frankenstein’s monstrous man in Shelley’s novel. General Smith is essentially human, his physical form - once desecrated - reconstructed by the addition of mechanical apparatus. He is a *mechanised* man, not a *mechanical* one. This returns us to the method by which the scientific creation of humanity is treated in the decades between 1820 and 1880. As ‘The Man That Was Used Up’ exemplifies, literature did not return to the method of

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<sup>21</sup> Mead, p.281.

<sup>22</sup> The definition of ‘robot’, according to the *O.E.D.*, is “one of the mechanical men and women in Capek’s play; hence, a machine (sometimes resembling a human being in appearance) designed to function in place of a living agent, esp. one which carries out a variety of tasks automatically or within a minimal of external impulse” (4, p.7). The play referred to here is Karel Capek’s *R.U.R.* (Rossum’s Universal Robots) published in 1920 and the first text to use the word ‘robot’ in the context of the artificial human.

narrative construction pioneered by Hoffmann and Shelley to engage with this issue, it confronted the man-machine debate from a position embedded in the real rather than the speculative.<sup>23</sup>

As far as discussing the form of the narrative is concerned, this methodology is revealing. What, though, does Poe actually contribute to the question of the mechanisation of the human? The narrator makes his position fairly clear. General Smith is no more than a bundle which he kicks out of the way, an item of little value. Even by the close of the narrative, when he possesses the full facts, this initial reaction does not change. The narrator's final assessment is that the General is "the man that was used up" (p.272). For the narrator, then, the mechanical is no replacement for the organic: General Smith's prosthetic limbs and organs are a degradation of his humanity. He has become less human and more machine; his humanity has been used up. However, earlier in the narrative, the General's mechanical parts were richly praised. Indeed the narrator believes them to be of great artistic merit, to exemplify the ideal:

The bust of the General was unquestionably the finest bust I ever saw.

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<sup>23</sup> Aside from the reasons set down in this chapter as to why science fiction was untenable in the industrial age, one can point to other areas in which changes affected the way in which SF was viewed. Firstly, scientific research was becoming increasingly specialised and therefore increasingly indecipherable for the layperson, among which most writers of fiction would be counted. Thomas Kuhn argued that "electrical research began to require translation for the layman before the end of the eighteenth century, and most other fields of physical science ceased to be generally accessible in the nineteenth" (p.21). Science, by the mid-nineteenth century was largely paradigmatic and scientists engaged in writing scientific papers were able to assume a certain knowledge on the part of their colleagues, leading to an increased technicality which alienated the general reader. Certainly there existed periodical journals which attempted to translate science for a less scientifically-minded readership - *Chambers Edinburgh Journal* (begun in 1832), *Macmillan's Magazine* (1859) and *Nature* (1869) are fine examples - but the closed doors of scientific research did little to further the SF cause.

For your life you could not have found a fault with its wonderful proportion. This rare peculiarity set off to great advantage a pair of shoulders which would have called up a blush of conscious inferiority into the countenance of the marble Apollo. I have a passion for fine shoulders, and may say that I never beheld them in perfection before. The arms altogether were admirably modelled. Nor were the lower limbs less superb. These were, indeed, the *ne plus ultra* of good legs. Every connoisseur in such matters admitted the legs to be good. Their was neither too much flesh, nor too little, - neither rudeness nor fragility. I could not imagine a more graceful curve than that of the *os femoris*, and there was just that due gentle prominence in the rear of the *fibula* which goes to the confirmation of a properly proportioned calf. I wish to God my young and talented friend Chiponchipino, the sculptor, had but seen the legs of Brevet Brigadier General John A.B.C. Smith. (pp.260-261)

More than merely remarking upon the fine appearance of General Smith, the narrator believes him to represent perfection, ironically picking out for particular praise those limbs which we later discover to be mechanical: the arms, legs, and shoulders. Later, too, the General's voice is also admired. Not only is this interesting in the light of the narrator's later *volte face*, but also when the structure of the narrative is recalled. As we have already noted, this tale is written retrospectively: the narrator is fully aware of the mechanical construction of General Smith when compiling the above description. It is to be admired then, considering the view that is held by the close of the tale, that the narrator is honest enough to represent the General entirely as he felt him to be at the time. Actually, the only concession that the narrator makes to *a priori* knowledge, is to stress that "there was something, as it were, remarkable - yes, *remarkable*" (p.259) about General Smith.

Surely, therefore, it is something more psychological than physiological which accounts for the narrator's reversal of opinion. He has, after all, no concerns

over the physical appearance of the mechanical parts. Far more meaningful is the overt reliance upon these mechanisms by General Smith. Without his mechanical aids he is “nondescript” (p.270), a “thing” (p.270), somehow lacking the necessary qualities which define the human. This is made more interesting with the realisation that the General’s head and torso are original, verifying that the brain and the internal organs (most importantly the heart) remain organic rather than mechanistic. They, if little else, come from the realm of the born rather than the made. With the importance that is given to the processes of mind in determining the characteristics of humanity, it seems rather disingenuous of the narrative to so clearly reduce General Smith’s human qualities based upon the inclusion of parts rather more extraneous to human consciousness than those which he still holds. Yet this does happen. The narrator continues to define him as an “object” (p.271), not a concept which troubles him. Indeed it is apparently “a clear case”. Where the narrator finds clarity is in General Smith’s subjugation to science: without the practical applications of science which the machine represents the General is no more than a “bundle of something” and it is this subjugation which is so abhorrent to the narrator. As opposed to lacking humanity, General Smith has had his humanity overpowered, or made subservient to, mechanisation. From this point of origin he is a machine-man rather than a man-machine; not a robot, perhaps closer to a cyborg,<sup>24</sup> for he moves from the human to the mechanical rather than from the scientific to the human.

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<sup>24</sup> Cyborg - the shorthand for cybernetic organism - is a more modern term than ‘robot’. The *O.E.D.* defines it as “a person whose physical tolerances or capabilities are extended beyond the normal

Poe is far from being the only literary figure concerned by the dehumanising effects of science. This was a common response to the industrial age. Dickens, for instance, is as interested as Poe in the artificialising of the human by scientific and technological means. For Dickens, however, this process is not as tangible as we find with General Smith. None of his characters become mechanised in such a physical sense. Rather it is a mechanisation of action and emotion, characterised by repetition and automation. Dickens' figures are symbolically associated with the processes of machinery: the automatic actions of the spindle, the repetitive movements of the clock hands, the segregation of tasks into readily defined and ordered areas, much as the mid-nineteenth-century factory was ordered.

In *Dombey and Son* (1846)<sup>25</sup> the forces of the machine are keenly felt. While the railway had first intruded into public life some two decades before this novel it was not until 1842 that Manchester and London had been connected by rail, or until 1844 that the Great Western Railway had reached Paddington Station. Indeed the year in which *Dombey and Son* was first published has become known as the year of "railway mania",<sup>26</sup> which transformed the nature of transportation in Britain. The novel reflects this transformation, revealing that the arrival of the railway in London was not so much an integration of the machine into society but a colonisation. Witness Camden's first contact with rail travel:

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human limitations by a machine or other external agency that modifies the body's functioning; an integrated man-machine system" (4, p.188).

<sup>25</sup> Charles Dickens, *Dombey and Son* (London: Penguin, 1985). All references within the text are to this edition.

<sup>26</sup> Sally Mitchell et al. (eds.) *Victorian Britain* (London: Garland, 1988), p.xi-xxi.

Everywhere were bridges that led nowhere; thoroughfares that were wholly impassable; Babel towers of chimneys, wanting half their height; temporary wooden houses and enclosures, in the most unlikely situations; carcasses of ragged tenements, and fragments of unfinished walls and arches, and piles of scaffolding, and wilderness of bricks, and giant forms of cranes, and tripods straddling above nothing. There were a hundred thousand shapes and substances of incompleteness, wildly mingled out of their places, upside down, burrowing in the earth, aspiring in the air, mouldering in the water, and unintelligible as any dream. Hot springs and fiery eruptions, the usual attendants upon earthquakes, lent their contributions of confusion to the scene. Boiling water hissed and heaved within dilapidated walls; whence also the glare and roar of flames came issuing forth; and mounds of ashes blocked up rights of way, and wholly changed the law and custom of the neighbourhood. (p.121)

This surreal, Dantean image of the coming of technology leaves little doubt as to the disempowering influence of the machine upon the human, which does not complement Camden but “wholly changes” it. Dickens uses the train as an important symbol in *Dombey and Son*: it is monstrous and destructive, an unthinking, unfeeling machine which creates a new hell in the urban environment. The train is the visible side of mechanisation, the powerful force of science and technology which subsumes everything. The train does not live in harmony with the human, it demands that humanity change to accord with it.

For certain Dickensian characters the same rule applies. Carker, Dombey’s business manager and close confidante, possesses similarly rigid parameters. His single-minded desire to become a gentleman is so immovable that he finds himself in an increasingly worse position as the novel moves towards its end. In pursuing such a goal he becomes machine-like, reproducing the same behaviour again and again, forever unable to react to changing circumstances, or to even perceive the

moral dubiety of his actions. The fate which befell Mr William Huskisson, a Member of Parliament, is illuminating here. Mr Huskisson was, as the *Encyclopedia Britannica* succinctly states, “killed by a locomotive engine while present at the opening of the Liverpool and Manchester railway”<sup>27</sup> on September 15, 1830. A train on which he had been travelling had stopped to take on water, allowing the passengers to disembark. Mr Huskisson walked across an accompanying set of rail lines and was killed by another locomotive - the Stevenson Rocket in fact - travelling along them. The train did not, indeed could not, stop. What is important, of course, in this story is the role of the train. The machine was unable to react to such a sudden alteration in circumstance, it had no conception of the morality of running down a human and even less of the position in society of the man crossing the rail track. The machine was performing a particular task, a task which, despite the intrusion of Huskisson, it would continue to perform.<sup>28</sup> The directors of the railway line were quick to point this out, noting that although they:

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<sup>27</sup> *Encyclopedia Britannica* (London: William Benton, 1969), 11, p.910.

<sup>28</sup> Herman Melville’s short story ‘The Bell-Tower’ (1855) holds very similar ideas on the performance of the machine. In this tale a “great mechanician” (p.197) named Bannadonna constructs a vast bell-tower upon which he “lavished his most daring skill” (p.198). The most impressive aspect of this tower is the clock-bell itself: “under a patient chisel, the latent beauty of its enrichments, before obscured by the cloudings incident to casting, that beauty in its shyest grace, was now revealed. Round and round the bell, twelve figures of gay girls, garlanded, hand-in-hand, danced in a coral ring - the embodied hours” (p.201). The governors and occupants of the nearby city await the unveiling of this bell, and its first sonorous ring, with great anticipation. When they eventually gather, the bell does not strike the hour as expected, and only a “dull, mangled sound” (p.206) emanates from the tower. The city governors, fearing some mishap, enter the tower in search of Bannadonna, only to find him “prostrate and bleeding, at the base of the bell” (p.206). After much investigation it is discovered that Bannadonna met his fate at the hands of the figure created to strike the bell each hour, having become absorbed in correcting a small fault on the surface of the bell directly beneath where the giant figure would strike: “And so, for the interval, he was oblivious of his creature; which, not oblivious of him, and true to its creation, and true to its heedful winding up, left its post precisely at the given moment; along its well-oiled route, slid noiselessly towards its mark; and, aiming at the hand of Una, to ring one clangorous note, dully smote the intervening brain of Bannadonna” (p.211). Like the locomotive engine, the figure - once determined upon its path - performs its task despite the presence of the

Were as sorry as men could be that any accident should have occurred; but as it was evident to all who had seen it that it was not occasioned by any fault of the machinery, it was requisite that they should do all in their power to prevent such a notion from getting into circulation.<sup>29</sup>

From this perspective the locomotive machine has much in common with Carker, and makes it perhaps less surprising for us to learn of his eventual demise beneath the wheels of a similar steam engine:

He [Carker] heard a shout - another - saw the face change from its vindictive passion to a faint sickness and terror - felt the earth tremble - knew in a moment that the rush was come - uttered a shriek - looked round - saw the red eyes, bleared and dim, in the daylight, close upon him - was beaten down, caught up, and whirled away upon a jagged mill, that spun him round and round, and struck him limb from limb, and licked his stream of life up with its fiery heat, and cast his mutilated fragments in the air. (p.875)

Indeed not only is there a similarity of method in the deaths of Huskisson and Carker, but also of the vivid brutality which attests to the power of the train. Compare Carker's death with a personal description of Huskisson's, from an eye-witness account in *The Times*:

He [Huskisson] contrived to move himself a little out of its [the train's] path before it came in contact with him, otherwise it must have gone directly over his head and breast. As it was, the wheel went over his left thigh, squeezing it almost to a jelly, broke the leg, it is said, in two places, laid the muscles bare from the ankle, nearly to the hip, and tore out a large piece of flesh, as it left him.<sup>30</sup>

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mechanician, and despite the great probability that some injury will befall him. (All references to 'The Bell-Tower' from *Billy Budd, Sailor and Other Stories* (London: Penguin, 1967), pp.195-213).

<sup>29</sup> 'Dreadful Accident to Mr. Huskisson', *The Times*, 17 September 1830, p.3.

<sup>30</sup> *The Times*, p.3.



The impression left by this uncensored report is one of the train being ripped from Huskisson's body. For a moment the man and the machine are one. This is strikingly evident in Dickens' portrayal of Carker's similar accident: his life force and the heat of the train's driving force are thrown together in the moment of death. Such a conjunction clearly reflects the parallels that have been drawn between Carker and the locomotive. Both lack morality and adaptability. Both are dangerous and cause disruption. It is fitting that the denouement should tie them so closely together.

*Hard Times* (1854)<sup>31</sup> re-asserts some of these aspects of the mechanisation of humanity. Here, however, the novel concentrates on the regimentation that a machine culture demands, on the rigid parameters within which the machine works, and on the repetitive actions which typify mechanical production. Thomas Gradgrind, the master of the school-house, reflects these forms both in his own mannerisms and in his style of teaching. Our first introduction to him actually takes place in the school-house, where he appears as "a galvanized apparatus[. . .]charged with a grim mechanical substitute for the tender young imaginations that were to be stormed away" (p.10). This becomes readily apparent from the moment of his first question, which is addressed to Sissy Jupe, a newcomer to the school:

'Girl number twenty,' said Mr. Gradgrind, squarely pointing with his square forefinger, 'I don't know that girl. Who is that girl?'  
'Sissy Jupe, sir,' explained number twenty, blushing, standing up, and curtseying. 'Sissy is not a name,' said Mr. Gradgrind. 'Don't call yourself

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<sup>31</sup> Charles Dickens, *Hard Times* (London: Penguin, 1995). All references in the text are to this edition.

Sissy. Call yourself Cecilia.' 'It's father as calls me Sissy, sir,' returned the young girl in a trembling voice, and with another curtsey. 'Then he has no business to do it,' said Mr. Gradgrind. 'Tell him he mustn't. Cecilia Jupe. Let me see. What is your father?' 'He belongs to the horse-riding, if you please, sir.' Mr. Gradgrind frowned, and waved off the objectionable calling with his hand. 'We don't want to know anything about that, here. Your father breaks horses, don't he?' 'If you please, sir, when they can get any to break, they do break horses in the ring, sir.' 'You mustn't tell us about the ring, here. Very well, then. Describe your father as a horsebreaker. He doctors sick horses, I dare say?' 'Oh yes, sir.' 'Very well, then. He is a veterinary surgeon, a farrier and a horsebreaker. Give me your definition of a horse.' (Sissy Jupe thrown into the greatest alarm by this demand.) 'Girl number twenty unable to define a horse!' said Mr. Gradgrind[. . .]. 'Girl number twenty possessed of no facts, in reference to one of the commonest of animals!' (pp.10-11)

For Mr. Gradgrind, his pupils - and indeed everyone else - exist only as figures or as standard types. Hence Sissy is Cecilia or girl number twenty and her father a veterinary surgeon. Gradgrind is both mechanised (as was Carker) and mechanising; he takes on the role of the machine in systematising and regulating the children in his care. The novel, as Kate Flint argues, "investigates the mind-sets of those who persist in seeing these workers as mere useful tools, as 'hands', rather than as fully functioning, complex human beings".<sup>32</sup> This was one area of concern which writers of the period took very seriously. Carlyle, in 'Signs of the Times', wrote:

Were we required to characterise this age of ours by any single epithet, we should be tempted to call it, not an Heroical, Devotional, Philosophical, or Moral Age, but, above all others, the Mechanical Age. It is the age of machinery, in every outward and inward sense of that word; the age which, with its whole undivided might, forwards, teaches and practices the great art of adapting means to ends. Nothing is now done directly, or by hand; all is by rule and calculated contrivance. For the simplest operation, some helps and accompaniments, some cunning abbreviating process is in

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<sup>32</sup> Kate Flint, 'Introduction' in *Hard Times* (London: Penguin, 1995), p.xi.

readiness. Our old modes of exertion are all discredited, and thrown aside. On every hand, the living artisan is driven from his workshop, to make room for a speedier, inanimate one. The shuttle drops from the finger of the weaver, and falls into iron fingers that ply it faster.<sup>33</sup>

Dickens' realisation of the process of regimentation is an amalgamation of Carlyle's position and that to which Flint adheres. It is not simply that, in certain cases, humanity views itself as a mechanical tool or an object of working proficiency. Rather the trappings of mechanisation alter the perspective of the human, intrude upon "the mind-sets", as Flint put it, of human existence and transforms them, just as the railroad transforms the environment.

Gradgrind, then, is more dangerous within this milieu than Carker, for Gradgrind is not only influenced by mechanisation but is influential in expanding the colonising processes of mechanisation to others.<sup>34</sup> While Carker represents the

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<sup>33</sup> Carlyle, pp.441-442.

<sup>34</sup> Nathaniel Hawthorne's 'Rappaccini's Daughter' (1845) provides an interesting comparison to Gradgrind's colonisation effect. In this predominantly gothic fantasy Signor Giacomo Rappaccini, a doctor of some infamy, has raised a daughter whose breath and touch are poisonous to all living creatures. Such strange physical phenomena are the product of chemical engineering employed, unlike Huxley's *Brave New World*, after birth rather than before. Although not an artificial human in the strictest sense, Rappaccini's daughter is a curious amalgam of the naturally human and the unnaturally scientific. Like Dickens' machine-men Beatrice is born rather than made but dehumanised by scientific excess which is biological and chemical rather than mechanical.

The relation of this tale to *Hard Times* comes towards the conclusion of the narrative. Giovanni, who has fallen deeply in love with Beatrice, finds himself becoming equally poisonous from mere proximity to her. In the confines of his own bedroom he breathes upon a spider, only to find that "the spider suddenly ceased its toil; the web vibrated with a terror originating in the body of the small artisan[. . .]. The spider made a convulsive gripe with his limbs, and hung dead across the window" (p.1000). Beatrice's chemical configuration is, by degree, affecting Giovanni's own physical body just as Gradgrind's mechanistic turn of mind effects all those who come into contact with his teaching methods.

With the scientific changes wrought upon Beatrice producing such malign effects it would seem obvious that the tale would represent such interference negatively. However, Beatrice is not aligned with Carker, as may be expected. Nor, though, is she as positive a symbol as Wemmick. Indeed the narrative is ambivalent towards the effect on Beatrice. Although Giovanni feels that a "mist of evil might seem to have gathered over her" (p.1001) he cannot but believe that "the real Beatrice was a heavenly angel" (p.1001). Taking 'Rappaccini's Daughter' into account, therefore, somewhat extends Dickens' portrayals of the machine-man as either evil, subversive, or comic into a

outwardly damaging power of the amoral machine, Gradgrind reflects the more subtle degeneration of human qualities into mechanical ones. His pupils' definition of a horse is exemplary of this very degeneration at work:

'Bitzer,' said Thomas Gradgrind, 'Your definition of a horse.'  
'Quadruped. Graminivorous. Forty teeth, namely twenty-four grinders, four eye-teeth, and twelve incisive. Sheds coat in the spring; in marshy countries, sheds hoofs, too. Hoofs hard, but required to be shod with iron. Age known by marks in the mouth.' This (and much more) Bitzer.  
'Now girl number twenty,' said Mr. Gradgrind. 'You know what a horse is.' (p.12)

Here Gradgrind has reduced the horse to a collection of definable facts. Like the machine the horse has become a standardised object with a limited number of criteria. For Gradgrind (and for the pupils under his tutelage) a horse is only a horse when fitting these criteria: it is defined by a set of finite instructions. Indeed it goes further than this, for the pupils themselves are able only to make judgements based upon the set of instructions fed to them by Mr. Gradgrind. Sissy is unable to answer Gradgrind's question for she has not yet been instructed as to the nature of the horse. Bitzer, on the other hand, has been and is able to fulfil the task for which Gradgrind has previously programmed him. In a sense Gradgrind's pupils are more obviously mechanised than he is himself: their school work is merely the repetition of

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state where the true nature of scientific excess is more difficult to define. In 'Rappaccini's Daughter', Hawthorne looks to that area of the debate where the continued existence of humanity beneath the power of science is questioned. His conclusion, in the darkly gothic tradition which the tale follows, is death: "To Beatrice - so radically had her earthly past been wrought upon by Rappaccini's skill - as poison had been her life, so the powerful antidote was death" (p.1005). Like Frankenstein's creature death seems the only answer, but a death which hints at transcendence and release. (All references to

processable facts and their intelligence limited to what they have been instructed to remember. They too, like Gradgrind, Carker and the steam locomotive, respond within the parameters set for them and react only according to standardised procedures.

Often this mechanisation of the human is not so overt. Rather it occurs by a process of osmosis as the protagonists take on the characteristics of the machine by their close proximity to them. In *Little Dorrit* (1857)<sup>35</sup> the workshop of Doyce and Clennam seems to have little control over its own machines, which endanger the entire building when working in concert:

The little counting-house reserved for his [Clennam's] own occupation, was a room of wood and glass at the end of a long low workshop, filled with benches, and vices, and tools, and straps, and wheels; which, when they were in gear with the steam-engine, went tearing round as though they had a suicide mission to grind the business to dust and tear the factory to pieces. (p.312)

Within this chaotic environment, Clennam himself becomes prey to the steam engine's mechanistic energy, engaging in the duties associated with his career in a fashion similar to the tools and wheels which work in parallel with him. As the narrative states

Alone again, Clennam became a prey to his old doubts in reference to his mother and Little Dorrit, and revolved the old thoughts and suspicions. They were all in his mind, blending themselves with the duties he was mechanically discharging. (p.320)

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'Rappaccini's Daughter' from *Tales and Sketches* (New York: Library of America, 1982), pp.975-1005).

<sup>35</sup> Charles Dickens, *Little Dorrit* (London: Penguin, 1985). All references in the text are to this edition.

Once again it is the sense of unthinking repetition which impresses the reader most about Clennam. His tasks are mechanical by their reliance on monotonous similarity of method, their lack of thought or concentrated intelligence.

It would, though, be too simplistic to assert that Dickens merely views the machine as dangerously subversive to humanity. It may well be the position he adopts in realising Carker's or Gradgrind's character but it is not always the case that science is a malignant force. The mechanisation of the human does not always automatically assume a villainous aspect.

John Wemmick is one of the most sympathetically drawn characters in Dickens' *Great Expectations* (1861)<sup>36</sup> yet he betrays a mechanisation of personality that is as readily definable as that found in Carker or Gradgrind. Our first impression of Wemmick, as the narrator Pip perceives him, reveals a man who is by appearance less than natural:

Casting my eyes on Mr. Wemmick as we went along, to see what he was like in the light of day, I found him to be a dry man, rather short in stature, with a square wooden face, whose expression seemed to have been imperfectly chipped out with a dull-edged chisel. There were some marks in it that might have been dimples, if the material had been softer and the implement finer, but which, as it were, were only dints. The chisel had made three or four attempts at embellishment over his nose, but had given them up without an effort to smooth them off. (p.171)

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<sup>36</sup> Charles Dickens, *Great Expectations* (London: Penguin, 1996). All references in the text are to this edition.

Wemmick, then, is less born than made, a man created rather than organic. This immediate lack of naturalness is expanded until we realise that Wemmick is a figure whose entire existence is regulated to an absurd degree. He is able even to regiment his personality to fit the scenario in which he finds himself so that we see only one side of his character in each of his different residences (either at home at Walworth or at work in Mr. Jaggers' employ). Pip discovers this when he attempts to speak to Wemmick about a personal matter while Wemmick is confined within his office:

'And that,' said I, 'is your deliberate opinion, Mr. Wemmick?'  
'That,' he returned, 'is my deliberate opinion in this office.'  
'Ah!' said I, pressing him, for I thought I saw him near a loophole here;  
'but would that be your opinion at Walworth?'  
'Mr. Pip,' he replied, with gravity, 'Walworth is one place, and this office is another. Much as the Aged is one person, and Mr. Jaggers is another. They must not be confounded together. My Walworth sentiments must be taken at Walworth; none but my official sentiments can be taken in this office.' (p.291)

Pip, of course, decides to visit Wemmick at Walworth in order to obtain the opinion that Wemmick would provide there. This visit greatly enhances our impression of Wemmick as a mechanised human, even as we enter the house across a small moat traversed by a drawbridge:

The bridge was a plank, and it crossed a chasm about four feet wide and two deep. But it was very pleasant to see the pride with which he [Wemmick] hoisted it up and made it fast; smiling as he did so, with a relish and not merely mechanically. (p.206)

Although this would seem to imply some opposition to the assertion that Wemmick is a mechanised figure, it does in fact reinforce it. Wemmick's relish comes from his engagement with the mechanical procedures around which his household operates. The drawbridge is but one example of the regimentation which dictates the procedures of life at Walworth. As Wemmick himself points out, attracting Pip's attention to a "piece of ordinance" (p.206), "At nine o' clock every night, Greenwich time[. . .]the gun fires" (p.206). Such clockwork precision is mirrored in Wemmick's address to his father, whom he does not call by name but refers to him as "Aged Parent" (p.207), a naming process similar to Gradgrind's insistence on calling Sissy's father a veterinary surgeon or his definition of a horse, which reflects exactly the nature of the object referred to, without recourse to any other system of nomenclature. It would, of course, be more probable for Wemmick simply to call his "Aged Parent" 'father' but this does not catalogue him effectively enough for the mechanistic bent of his nature.<sup>37</sup>

Dickens builds a complete picture of Wemmick's mechanisation, from his divisions of personality to the manner in which he attempts to encircle Miss Skiffins' waist with his arm,<sup>38</sup> yet he is never once perceived as a dangerous figure.

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<sup>37</sup> This reading of Wemmick's home life is at odds with traditional criticism which views Walworth as an imaginative space which brings Wemmick relief from the regimentation of his office work. Garrett Stewart exemplifies this reading, suggesting that "Wemmick's moated world of literally garrisoned imagination at Walworth Castle is also a pastoral enclave. Wemmick's fancy has sheared off from the daily round of his existence into a defensive privacy, an emotional schizophrenia that necessitates his rigid sequestering of imagination" (*Dickens and the Trials of Imagination* (Cambridge, Mass.: Harvard University Press, 1974), p.159.) I do not find Wemmick's character to be at all 'schizophrenic' and see Walworth as an integral part of his mechanistic nature.

<sup>38</sup> As Pip narrates: "As Wemmick and Miss Skiffins sat side by side, and as I sat in a shadowy corner, I observed a slow and gradual elongation of Mr. Wemmick's mouth, powerfully suggestive of his



Largely he is more comic than villainous. Such a portrait, then, reveals a disparity in Dickens' portrayal of the machine-man. While Wemmick, Carker and Gradgrind are essentially identical in the sense that all three are personified as mechanistic men, they are very obviously different personalities. Carker is ultimately evil and his mechanisation enhances his propensity for villainy; Gradgrind is subversively dangerous and his mechanically-instigated beliefs determine that this will recur in all those over whom he exerts some influence; Wemmick is harmless and exerts no influence over the narrative of *Great Expectations* and his mechanisation causes distress to no-one.

What this triad of images of the machine-man does prove is that Dickens was aware of the opposing views of the machine held by society in the period from 1820 to 1880. As he reveals through the symbolic image of the locomotive engine - the single most important machine in the Dickens canon - the machine can be dangerously powerful (Carker), influential and demanding (Gradgrind), but also a worthwhile tool for society (Wemmick). These positions reflect the way in which society reacted to the technologising and mechanising of their environment in the nineteenth century.

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slowly and gradually stealing his arm round Miss Skiffins's waist. In course of time I saw his hand appear on the other side of Miss Skiffins; but at that moment Miss Skiffins neatly stopped him with the green glove, unwound his arm again as if it were an article of dress, and with the greatest deliberation laid it on the table before her. Miss Skiffins's composure while she did this was one of the most remarkable sights I have ever seen, and if I could have thought the act consistent with abstraction of mind, I should have deemed that Miss Skiffins performed it mechanically" (pp.297-298).

Despite no science fiction text engaging directly with the production of the artificial human, Jules Verne's *Twenty Thousand Leagues Under The Sea*<sup>39</sup> (1870) does approach the man-machine debate in a similar manner to that of Dickens. Differently from Dickens, though, Verne does not so much provide a mechanisation of the human mind and human action but a symbiosis - almost cyborgian - of a particular man and a particular machine: Captain Nemo and the *Nautilus*. At first the *Nautilus* seems more biological than mechanical, with "its surprising power of locomotion, and the peculiar life with which it seemed endowed" (p.3) but it soon becomes clear that the vessel is mechanical. Professor Aronnax is impressed by its construction and complements Nemo on it, to which the Captain replies "I love it as if it were part of myself" (p.63). This is the first intimation of the close connection between Nemo and his submarine, a connection further enhanced by Professor Aronnax's narrative which relates, at various times, that "the *Nautilus* was nothing but a formidable harpoon, brandished by the hand of its captain" (p.106); "the *Nautilus*, associated with the body and soul of the captain" (p.249); and, "the vessel, of which he was the soul" (p.250). It is not only that Captain Nemo is compared with his machine, the *Nautilus* is also seen as human: "The *Nautilus* defended itself like a human being. Its steel muscles cracked. Sometimes it seemed to stand upright" (p.272).

In this complex and fluid intertwining of the human and machine, *Twenty Thousand Leagues Under The Sea* encapsulates all of Dickens' visions of the fusion

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<sup>39</sup> Jules Verne, *Twenty Thousand Leagues Under The Sea* (London: Everyman, 1996). All references in the text are to this edition.

of man and machine. Like Carker the *Nautilus*, with Nemo at the helm, has great destructive power and is more than a match for any other ocean vessel. Like Gradgrind, Nemo himself, with the *Nautilus* entirely at his command, is the one great influence of the novel and his many demands, on the crew and on the narrator alike, are constantly met. Like Wemmick, too, the *Nautilus*, along with Nemo's marine knowledge, provides Professor Aronnax with the means to research areas of the ocean and of ocean life which are invaluable to his museum work and to the advancement of science

Like the Dickens oeuvre, or Hawthorne's 'Rappaccini's Daughter', Verne reveals an ambivalence about the man-machine debate which clearly reflects the larger societal difficulties concerning the positive and negative effects of increasing mechanisation. Nemo, according to Professor Aronnax, is, on the one hand, "still a man, that his heart still beat for the sufferings of humanity" (p.183) and, on the other, ridden with a lust for power which leads him to cry "I am the law, and I am the judge!" (p.264).

Such a disparity of images and differences of opinion were not consigned exclusively to exploration in the novel. *Chambers Edinburgh Journal* captures the differing opinions in an article entitled 'Machinery: A Dialogue' which appeared in 1839. The dialogue itself describes two discrete factions whose perspectives on the qualities of the machine place them in opposition. The cotton-spinner is representative of one such view:

*A Cotton-Spinner.* - My friends, I tell you that all machines are abominable

things. If we do not bring *them* to an end, they will soon bring *us*. The spinning machine which I manage does more work by itself than a hundred persons could. Only think what a lot of bread there would be here for poor workmen if it were not for such an invention!<sup>40</sup>

Such Luddism<sup>41</sup> is countered by Bonhomme Richard, who does not share his fellow workers anger over the ascendancy of machinery: “No, my friends, I am of quite an opposite opinion. I think that machines are productive of very great good to the country, and even to the workmen themselves”.<sup>42</sup> Richard goes on to explain his position and by the close of the narrative, with typical Victorian neutrality, all of the workers have been persuaded of the great benefits of machinery, joining him in proclaiming “Machines for ever!”<sup>43</sup> While the article as a whole champions the influx of machinery into nineteenth-century culture, it does illuminate the different views held throughout the years from 1820 to 1880 and reveals that there was no simple reaction from society as a whole as to the usefulness or otherwise of an increasingly mechanised way of life.<sup>44</sup> Most interesting in this article, however, is the view of the Carding-machine-maker, who articulates a greater problem than the

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<sup>40</sup> ‘Machinery: A Dialogue’, *Chambers’ Edinburgh Journal*, 399, (1839), 6-7 (p.6).

<sup>41</sup> The Luddites were machine-breakers whose original protests took place in the Midlands and Yorkshire between the years 1811 and 1817, and involved the breaking of frames used to make lace and related products. Malcolm I. Thomis in his book, *The Luddites: Machine-Breaking in Regency England* (Devon: David and Charles, 1970), has argued that “if the historian has taken over the term [Luddism] for all of history’s machine-breakers, so has the layman accepted it for all those who resist mechanisation, automation and the like, and who are the supposed enemies of ‘progress’ where the adoption of labour-saving devices is concerned” (p.12).

<sup>42</sup> ‘Machinery: A Dialogue’, p.6.

<sup>43</sup> ‘Machinery: A Dialogue’, p.7.

<sup>44</sup> While articles such as this one were sympathetic, if not enthusiastic, about the role of the machine in nineteenth century society, there were many literary works which took the opposing view and saw the rise of machine culture as something to be feared. John Ruskin, *The King of the Golden River* (London: [n. pub.], 1851), rev. edn (London: Dent, 1970), Samuel Butler, *Erewhon* (1872), and

unemployment which machinery has brought to his fellow workers: “Ah, machines were not such bad things when it required men’s hands to make them, and when men got bread by the work. But now, what think you of their setting machines to make machines!”<sup>45</sup> It is in this statement that the essence of the literary preoccupation with the man-machine debate in the industrial age lies. The very real fear of fiction writers was that the human would be removed from the machine equation altogether: exactly what the Carding-machine-maker refers to in highlighting the reproductive capabilities of new machinery. For Poe, Dickens, and to a lesser extent Verne, this is really the ultimate question which their narratives ask. How far is the human still involved when mechanistic principles govern humanity’s nature? This, too, upholds the inversion in the man-machine debate which takes place between the work of Hoffmann and Shelley and those writers working in the age of the machine. For the former, their central problematic was whether a human created by scientific (largely mechanistic) means could be seen to have human characteristics. For the latter it is whether anything of the human remains when mankind becomes mechanised.

That they do not explicitly answer these questions is no failing. What they do attempt is to close in on another question which must be engaged before any solution is found. More precisely, both Poe and Dickens, in concert with the science fiction narratives discussed elsewhere in this thesis, focus on the nature of scientifically created humanity and ask whether an artificial human which simulates all the qualities of humanity can still be seen as artificial. If General Smith, Carker,

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James Thomson *The City of Dreadful Night* (London: [n. pub.], 1874), rev. edn (Edinburgh: Canongate, 1994), are good fictional examples.

Gradgrind and Wemmick - despite their mechanical nature - still betray some vestiges of naturality, if they still appear as human figures, is it possible to say that the artificially constructed (the made) is any less 'real' than the naturally gestated (the born)?

Baudrillard's views on simulacra are again instructive. Like Victor Frankenstein's creature, the men-machines found in Poe and Dickens comply with the second order of simulation. There is little doubt that General Smith, Carker, Gradgrind and Wemmick are materialised by the machine and a part of what Baudrillard calls "the whole system of production". General Smith in particular is nothing, or rather only a "thing", without the materials which provide him with a physical body. Similarly, his listing of each skilled mechanist who contributed to his prosthetic make-up reflects the arena of production which has allowed him to reconstruct his human appearance. Gradgrind also works within the productivist marketplace: his role as school-teacher highlighting the dissemination and expansion of mechanical thought in which he is able to indulge. Carker and Wemmick, too, are active in the "system of production". Their careers in large business organisations (for Dombey and Jagers respectively) demand that they represent the standards of energy, force and power for which their employers are known. Nevertheless, this second order of simulation still produces a simulacrum which is identifiable as an artificial construct, not one which calls into question the distinction between the real and the imitation. Baudrillard better represents the nature of the machine-man in a discussion which follows his simulacral hierarchy. Here he discusses the practice in

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<sup>45</sup> 'Machinery: A Dialogue', p.6.

East Germany where factories re-employ all their unemployed workers but do not ask them to produce anything. They merely simulate the workings of a factory: “What is fascinating here is not the opposition between the real factories and the fake factories, but on the contrary the lack of distinction between the two, the fact that all the rest of production has no greater referent or deeper finality than this ‘simulacral’ business. It is this hyperreal indifference that constitutes the real “science-fictional” quality of this episode”.<sup>46</sup> General Smith, Carker, Gradgrind and Wemmick all betray a similarly “hyperreal indifference” in relation to the human and as this chapter has argued, and as Baudrillard agrees, this is very much a theme of the science fiction narrative.

It would, though, be too simplistic to define these men-machines solely in terms of Baudrillard’s simulacral factory. They are similar certainly, and Baudrillard’s example is illuminating but it does not fully explain the unique character of Poe and Dickens’ characters. While all of these protagonists are both human and mechanical, and in that sense do betray a lack of distinction between the real and the artificial, they are also marked out as different. Their distinction from the real is made clear in each narrative; they are ‘alien’ just as Captain Nemo and Frankenstein’s creature are alien. Essentially, then, all of the mechanised humans discussed here go further than Baudrillard’s second order of simulation but do not reach the third. They abide in a vacuum between the two: neither easily identifiable as imitation nor indistinguishable from the real.

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<sup>46</sup> Baudrillard, p.126.

## The Return of the Science Fiction Narrative

All of these texts occur in the period from 1839 to 1860 (from the first publication of Poe's short tale to Dickens' periodical publication of *Great Expectations*). This period coincides with the industrial age, which reached its greatest peak with the opening of the Great Exhibition in 1851, as *The Scotsman* described:

The sight almost pains and certainly dazzles with excess of beauty. And when turning from the survey of mere forms and colours to the contemplation of the moral elements which the spectacle comprises or suggests - seeing in it a representation such as has never been seen before, of the skill and the labour of all the nations of the earth - the mind feels that all of this is not merely mercantile or even secular, and that the rites here offered have scarcely less of the essence of worship and praise, than the more special and formal offerings of other and dimmer temples made with hands.<sup>47</sup>

*The Times*, too, marvelled at the sights on show and were "deeply impressed with the importance of that event".<sup>48</sup> Their correspondent at the Crystal Palace confirmed this:

To see those great iron frames obedient to the impulses of steam, performing nearly all the functions of human labour with more than human power and rapidity, is a spectacle of which, as a nation, we may well be proud. By uniting those slaves to our will we are enabled to send back in a manufactured state, and with profit to ourselves, materials which we have collected from the most distant portions of the globe. By their help we sustain the swarming populations of Lancashire and West Riding, and in their right we take the lead among

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<sup>47</sup> 'Opening of The Great Exhibition', *Scotsman*, 3 May 1851, p.2.

<sup>48</sup> 'The Great Exhibition', *The Times*, 1 May 1851, p.8.



all the nations of the globe as the vanguard in that mechanical development with which, for good purposes or for evil, the tendencies of this age are so strongly impressed.<sup>49</sup>

*Blackwood's Edinburgh Magazine* gained a European perspective on The Great Exhibition in a fantastical article in August 1851. This imaginative piece resurrected Voltaire<sup>50</sup> and extrapolated upon his suspected opinions during a trip to the Crystal Palace:

Reports had reached him [Voltaire] that in a Crystal Palace, not far from the Thames, were to be assembled specimens of the industry of all nations - nothing less than a museum of the works of man. But it was not this only that had excited the curiosity of the philosopher of Ferney. Rumours of a new era of society, of unexampled advancement or development of mankind, had from time to time descended into the territory of the shades, and had kindled a desire to revisit the earth.<sup>51</sup>

Certainly, as Voltaire discovered, the mechanists present in the Crystal Palace shared the hope of “unexampled advancement”:

He proceeded to the department where the machinery is exhibited. Here a professor of mechanics was so courteous as to explain to him the various processes of our cotton manufacture. He explained the power loom, the mule, and I know not what other contrivances beside, and, pleased with his intelligent listener, he launched into the glorious prospects that were opening up to human society through the surprising mechanical inventions that had illustrated our age.<sup>52</sup>

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<sup>49</sup> ‘The Great Exhibition’, *The Times*, 3 May 1851, p.5.

<sup>50</sup> Voltaire (1694-1778) was greatly interested in all forms of science and popularised the work of Newton in his 1738 work, *Eléments de la philosophie de Newton*.

<sup>51</sup> ‘Voltaire in the Crystal Palace’, *Blackwood's Edinburgh Magazine*, 70 (430), August (1851), 142-143 (p.142.)

<sup>52</sup> ‘Voltaire in the Crystal Palace’, p.143.

Not every commentator was so enamoured by the mechanical inventions which characterised the age. Many voices continued to reflect the unease with which mid-nineteenth-century society viewed the machine. Ruskin, a dissenter among all those who glorified the Crystal Palace, was concerned for the durability of art in the face of such excessive praise for technology:

There is assuredly as much ingenuity required to build a screw frigate, or a tubular bridge as a hall of glass;- all these are works characteristic of the age; and all, in their several ways, deserve our highest admiration; but not admiration of the kind that is rendered to poetry or to art. We may cover the German Ocean with frigates, and bridge the Bristol Channel with iron, and roof the county of Middlesex with crystal, and yet not possess one Milton, or Michael Angelo.<sup>53</sup>

Ruskin's pessimistic portrayal of the subjugation of the imagination to scientific empiricism reflects the views prevalent in many of Dickens' characters and provides further evidence of the depersonalisation which the machine was believed to induce.

The late 1860s, however, saw the beginning of the gradual demise of this great period of mechanisation. Britain's position of supremacy in the world - firmly reinforced by the strength of its industrialism - was being challenged by the quickening pace of progress in the United States and Bismarck's Germany. Charles Darwin's *Origin of Species* (1859) undermined the belief that humankind was the pinnacle of organic life, revealing its state of being to be only one small part of a far

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<sup>53</sup> John Ruskin, 'The Opening of the Crystal Palace Considered in Some of its Relations to the Prospects of Art', repr. in *Culture and Society in Britain, 1850-1890*, ed. by J.M. Golby (Oxford: Oxford University Press, 1990), pp.174-177 (p. 175).

grander process of evolution. The 1860s and 1870s, then, did not continue to advance at the same pace as previous decades had done. Rather this was a time to take stock, to accept that changes were taking place, both practically and intellectually, which required serious thought. It was a time to consolidate what had already been achieved as opposed to striding forever forward. Brush notes that

The early 1870s were good years for science. Not spectacular years like 1543 or 1905, when revolutionary theories were published, but a time when scientists could proudly observe the consolidation of major achievements of previous decades.<sup>54</sup>

In literature, too, a sea-change was underway, as realism - like mechanisation - no longer held the monopoly it had enjoyed during the greatest period of industrial expansion. Brush again points out that:

Just as the transition from romanticism to realism can be followed under various names and aspects just before the middle of the nineteenth century, so we can identify a transition from realism to neo-romanticism in the arts and sciences in the late nineteenth century.<sup>55</sup>

This intellectual movement towards what Brush calls neo-romanticism was reinforced by the rise of spiritualism, theosophy and interest in the occult and supernatural, all of which had been backgrounded throughout the mid-nineteenth century as they directly opposed the materialist world-view to which British culture adhered. It was not, of course, that these areas of interest rose from a void, they had

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<sup>54</sup> Stephen G. Brush, *The Temperature of History: Phases of Science and Culture in the Nineteenth Century* (New York: Burt Franklin, 1978), p.77.

always been indulged by certain sections of society. They had, though, been in exile, lacking legitimisation and authority. The public appreciation of such esoteric subjects that occurred from the 1870s onward marked a significant alteration in cultural perspective and was a particular reaction to the pragmatic, mechanistic philosophy which had held sway for so long. Brush again highlights this move: “Other aspects of neo-romanticism were the revival of mysticism and spiritualism in religion (Christian Science, Yoga, Theosophy), and the serious interest taken by respectable scientists in psychic phenomena”.<sup>56</sup> John R. Reed<sup>57</sup> is in agreement, citing the opening of The Society For Psychical Research in 1882 as a watershed, and pointing out the publication of Alfred Russell Wallace’s book *Miracles and Modern Spiritualism* (1874) as an example of the change of attitudes occurring in the late nineteenth century. Reed goes further, too, in an attempt to make sense of such a change:

This developing interest in the uncanny and the modifications it occasioned in a traditional literary convention, indicates a powerful desire during the nineteenth century for some means of escape from a depressingly materialistic existence[. . .]the uncanny was an antidote to relentless materialism, it was a promise of love and fullness of feeling beyond the unfeeling mechanisation of modern society. In this sense it was a form of social protest. At the same time it represented a metaphysical craving for the liberation of the mind from the statistical and measurable habits of the late nineteenth century.<sup>58</sup>

Edward Bulwer-Lytton neatly exemplifies this liberation from obscurity that literary conventions opposed to materialism underwent. More importantly, however, his

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<sup>55</sup> Brush, p.90.

<sup>56</sup> Brush, p.92.

<sup>57</sup> John R. Reed, *Victorian Conventions* (Athens, Ohio: Ohio University Press, 1975)

novel of 1871, *The Coming Race*,<sup>59</sup> proclaims the return of the science fiction narrative: reuniting the mystical and the scientific in the construction of a narrative which closely resembles that of E.T.A. Hoffmann or Mary Shelley. Lytton had certainly served a useful apprenticeship before coming to science fiction; his early novel *Zanoni* (1842)<sup>60</sup> indulged in the esoteric, the mystical and the spiritual and *A Strange Story* (1862)<sup>61</sup> further enhanced his growing interest in the occult and supernatural. Indeed this latter novel's mixture of scientific pragmatism and magical supernaturalism marked a distinct return to the SF theory of the early nineteenth century. These opposites, however, remain too clearly delineated for the novel to be classed as science fiction. Yet in portraying both the processes of theoretical science and experimental mysticism, Lytton reveals a basic knowledge of the necessary SF ingredients and a willingness not to desert the rather controversial occultism so frowned upon by the nineteenth century's industrial society.

It is in *The Coming Race*, however, that Lytton fully exploits the criteria which he had amassed previously. Robert Lee Woolf also perceives the change in direction which the novel takes, although he looks forward to H.G. Wells rather than back to Shelley and Hoffmann:

It [*The Coming Race*][. . .]clearly belongs to the school of science fiction often considered to have been invented by H.G. Wells some twenty years after Bulwer's death, and it anticipates in an uncanny way major scientific advances that would not in fact take place for several generations. The

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<sup>58</sup> Reed, pp. 472-473.

<sup>59</sup> Edward Bulwer-Lytton, *The Coming Race* (Santa Barbara: Woodbridge Press, 1979). All references within the text are to this edition.

<sup>60</sup> Edward Bulwer-Lytton, *Zanoni* (London: Routledge, 1842).

<sup>61</sup> Edward Bulwer-Lytton, *A Strange Story* (London: S. Low, 1862).

portentousness of *Zanoni*, the philosophy of *A Strange Story* have altogether disappeared, and very little indeed is left of the occult machinery that gave them their characteristic mystery. Yet *The Coming Race* is nonetheless at once the climax and the summing up of Bulwer's long love affair with the supernatural.<sup>62</sup>

While it is irrelevant to talk of Lytton's anticipation of scientific discovery, it is interesting to note that Woolf finds "very little" of the occultism that had been his trademark. This would have undoubtedly pleased Lytton for it seems certain that the narrative of *The Coming Race* deliberately disguises the occult forces central to the plot, as the fictional power source "vril" testifies. Vril, as the narrator describes it, is an amalgam of many things, one of which, in a telling comparison with Mary Shelley's *Frankenstein*, is electrical force:

I should call it electricity, except that it comprehends in its manifold branches other forces of nature, to which, in our scientific nomenclature, differing names are assigned, such as magnetism, galvanism, &c. These people consider that in vril they have arrived at the unity in natural energetic agencies, which has been conjectured by many philosophers above ground, and which Faraday thus intimates under the more cautious terms of a correlation:- 'I have long held an opinion,' says that illustrious experimentalist, 'almost amounting to a conviction, in common I believe, with many other lovers of natural knowledge, that the various forms under which the forces of matter are made manifest have one common origin; or, in other words, are so directly related and mutually dependent, that they are convertible, as it were, into one another, and possess equivalents of power in their action.' (p.19)

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<sup>62</sup> Robert Lee Woolf, *Strange Stories and Other Explorations in Victorian Fiction* (Boston: Gambit, 1971), p.323.

Vril juxtaposes the magical and the scientific; within the narrative it appears as a bolt of lightning from the end of a staff yet Lytton stresses only its scientific properties, calling upon Faraday to lend authority to his argument. This provides the most powerful example of Lytton's SF qualities, the subjugation of the marvellous in an attempt to deceive the reader. He certainly appears to have succeeded with Robert Lee Woolf, although Woolf does in fact describe his technique perfectly:

The principle of the saving substance has moved from the simple but dangerous mystic command of herbalism in *Zanoni*; through Margrave's elaborate magic and alchemy, heat, Van Helmont's primal gas, or Phosoxygen, in *A Strange Story*; to vril, the essential substance that meets Faraday's conjecture with respect to the convertibility of the forces of matter.<sup>63</sup>

The movement from "mystic command" through an intermediate stage to an insistence on scientific testimony in the shape of "Faraday's conjecture" neatly encapsulates Lytton's technique and heralds the rebirth of the structure of science fiction narrative.

*The Coming Race* does not, however, completely break from the themes and issues of writers such as Poe, Dickens and Verne. The novel, in fact, has a foot in both camps: the SF narrative of Hoffmann and Shelley and the industrial culture of the mid-nineteenth century. While the narrative technique combines the esoteric and the scientific in a similar way to 'Automata', 'The Sandman', and *Frankenstein*, there are many points throughout the story which reflect Lytton's preoccupation with

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<sup>63</sup> Woolf, p.330.

mid-nineteenth century culture and the age of the machine in particular. Mechanical influences are easily noted. The vril-ya employ an abundance of machines in their own culture (flying machines, elevators, automata, factory engines)<sup>64</sup> which are both menacing and productive, and they themselves are not so much an alien race as a more highly evolved relation of humanity. Darwin's work, which had shocked the scientific community in the early 1850s, is clearly instrumental in this portrait.

Lytton's novel, then, is not simply a return to the science fiction of the early nineteenth century but a movement back towards it. *The Coming Race* does not discard the influences of the machine age in making such a journey, rather the baggage of industrialism is taken with it and its constant presence is a signifier of the importance which the mid-nineteenth century has had upon the fictional explorations of the artificial human.

With this text in place, and in alliance with L'Isle-Adam's *Tomorrow's Eve*, the metamorphosis of SF becomes clear. While science fiction can be seen to have faded into the background in the industrial period, it resurfaces once more towards the end of the nineteenth century. To use a biological metaphor, the period from 1820 to 1880 is a time of gestation for the SF narrative, the cocoon phase in its alteration from caterpillar to butterfly.

As the next chapter will show, this metaphor is not lightly chosen. The mid-nineteenth century was not merely an interruption in the genesis of the scientific creation of artificial man, but a necessary stage in the development of this theme.

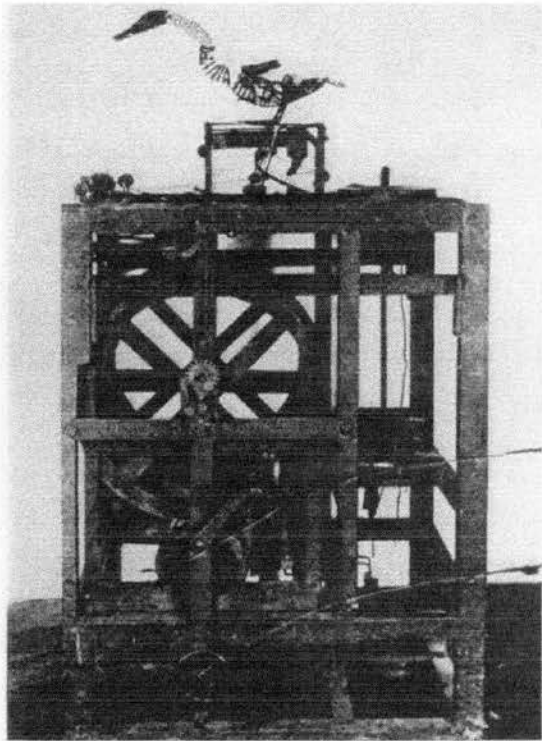
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<sup>64</sup> For example, "there was a huge engine in the wall which was in full play, with wheels and cylinders, and resembling our own steam-engines" (p.11).

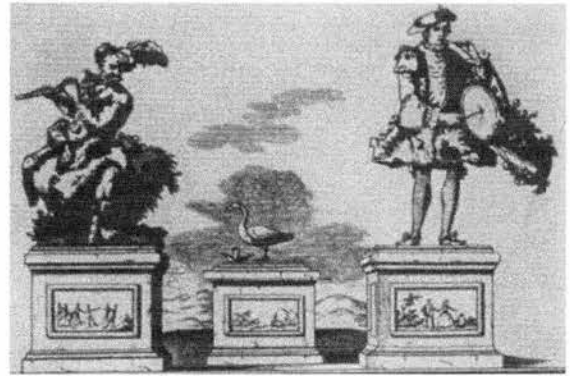


Although not directly concerned with the artificial human or the narrative construction of science fiction literature, the period from 1820 to 1880 still has great relevance in the continuing debate over reality and artificiality.

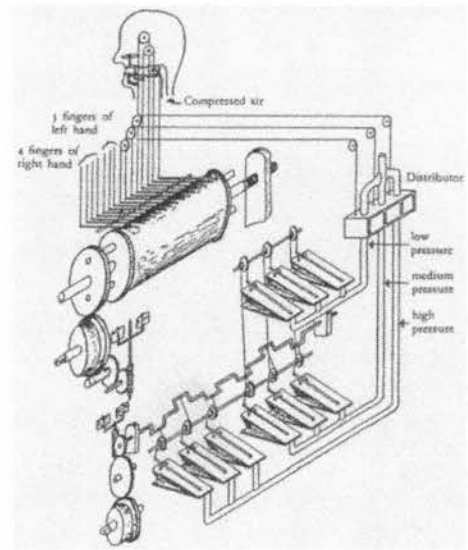
The narratives discussed here do not only provide an alternative method in approaching this debate, nor do they tend towards a separation of the machine-man (the *artificialised* human) from the man-machine (the *artificial* human). They suggest important questions, primarily about the nature of the human in the context of artificiality, which must be addressed and also raise significant issues for the works of science fiction which follow to engage with. Villiers de L'Isle-Adam's *Tomorrow's Eve* reveals this engagement and moves the debate on from the examination of the artificial human in the scientific fiction of Hoffmann and Shelley towards the more human oriented preoccupations of the man/machine dichotomy in the late nineteenth and early twentieth century.



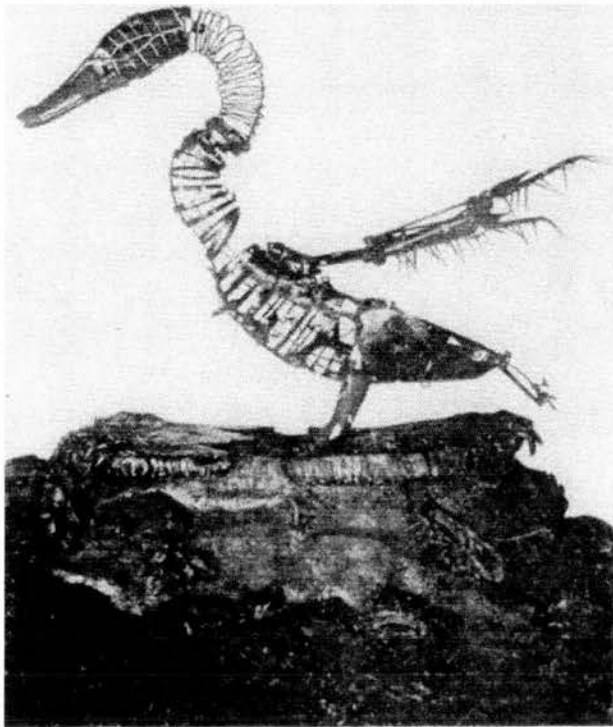
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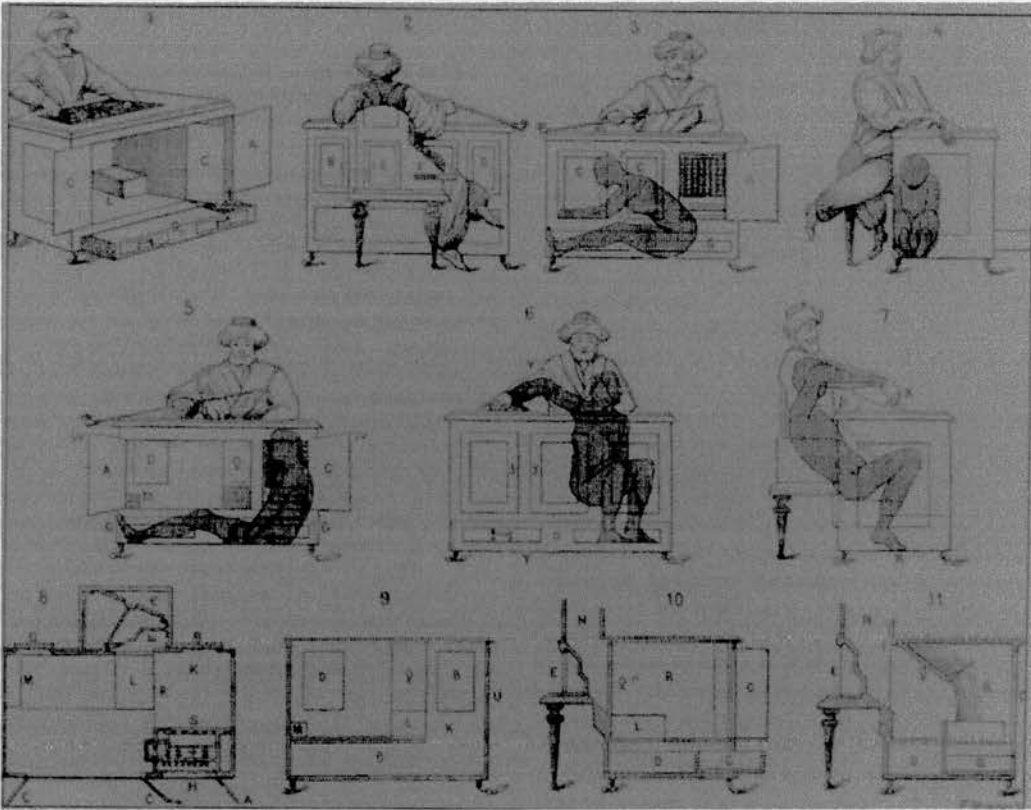


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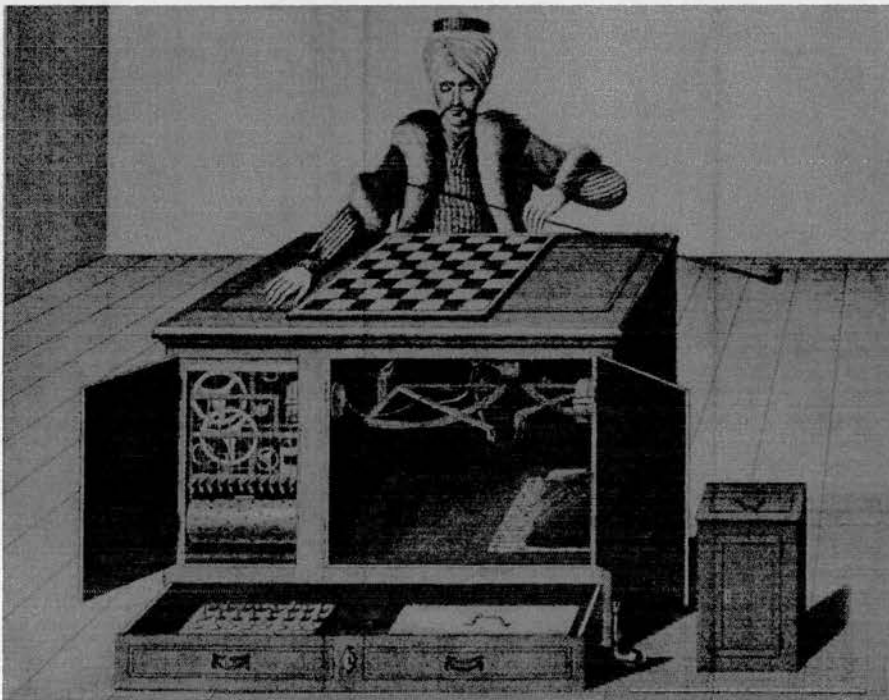
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Figure 1.1: Mechanism of Vaucanson's duck. Figure 1.2: Vaucanson's three automata. Figure 1.3: Diagram of the mechanism for Vaucanson's flute player. Figure 1.4: Detail of Vaucanson's duck with the mechanism hidden by an imitation rock. (Photographs courtesy of Mayr, Chapuis and Droz).

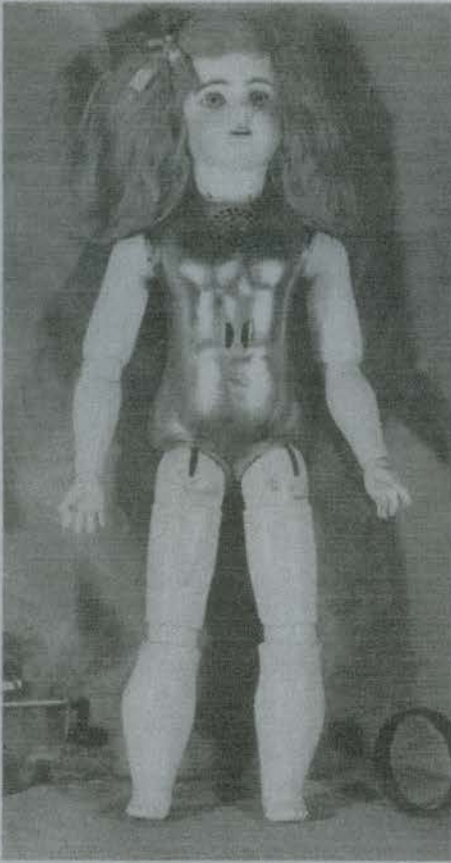


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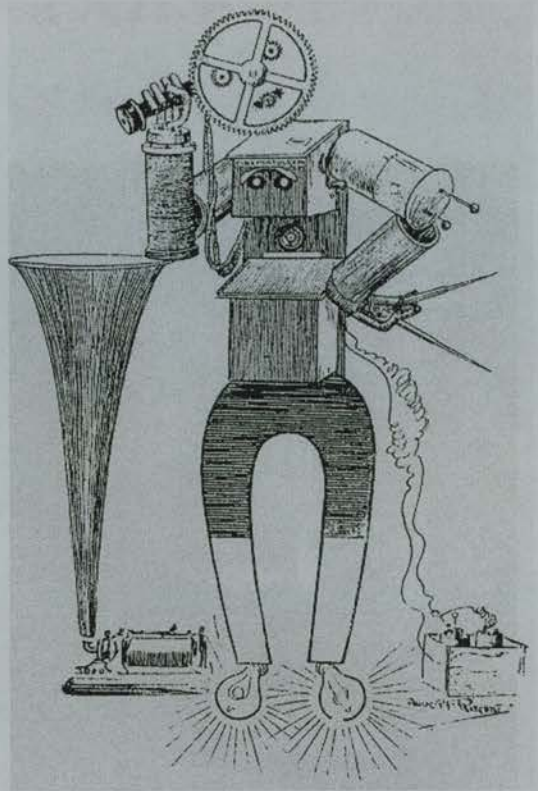
*Figure 2.1:* The internal workings of Von Kempelen's chess-player, revealing how the automaton was moved by human intervention. *Figure 2.2:* The sham machinery inside Von Kempelen's chess table.



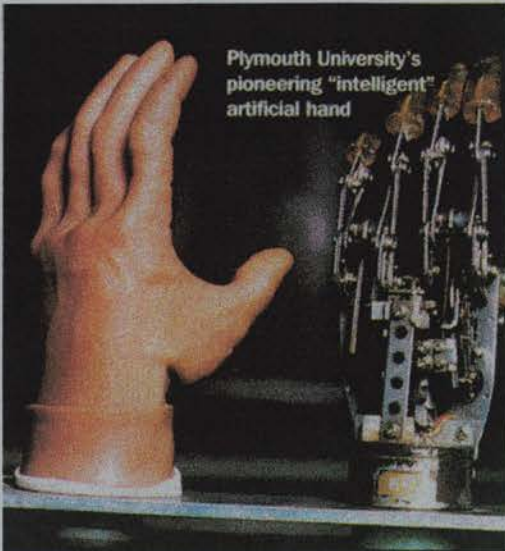
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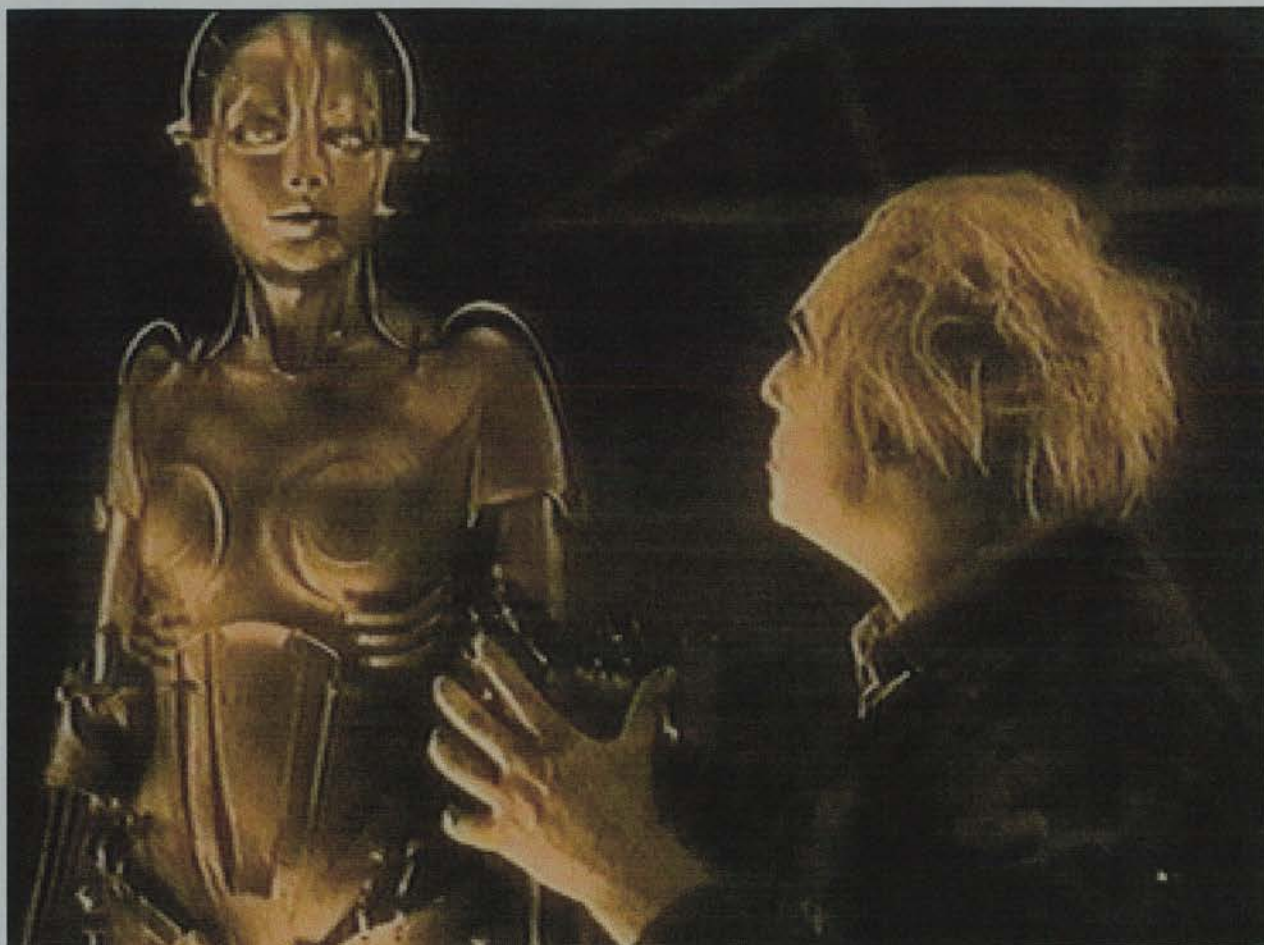


3.2



3.3

*Figure 3.1:* The talking doll made by Thomas Edison in 1890. It could recite the first verses of popular rhymes. *Figure 3.2:* A caricature of Edison from c.1895 which appeared in *Harper's Weekly* (both illustrations courtesy of *Scientific American*). *Figure 3.3:* The newest artificial hand, created by mechatronic researchers at Plymouth University (photograph courtesy of *Focus Magazine*).

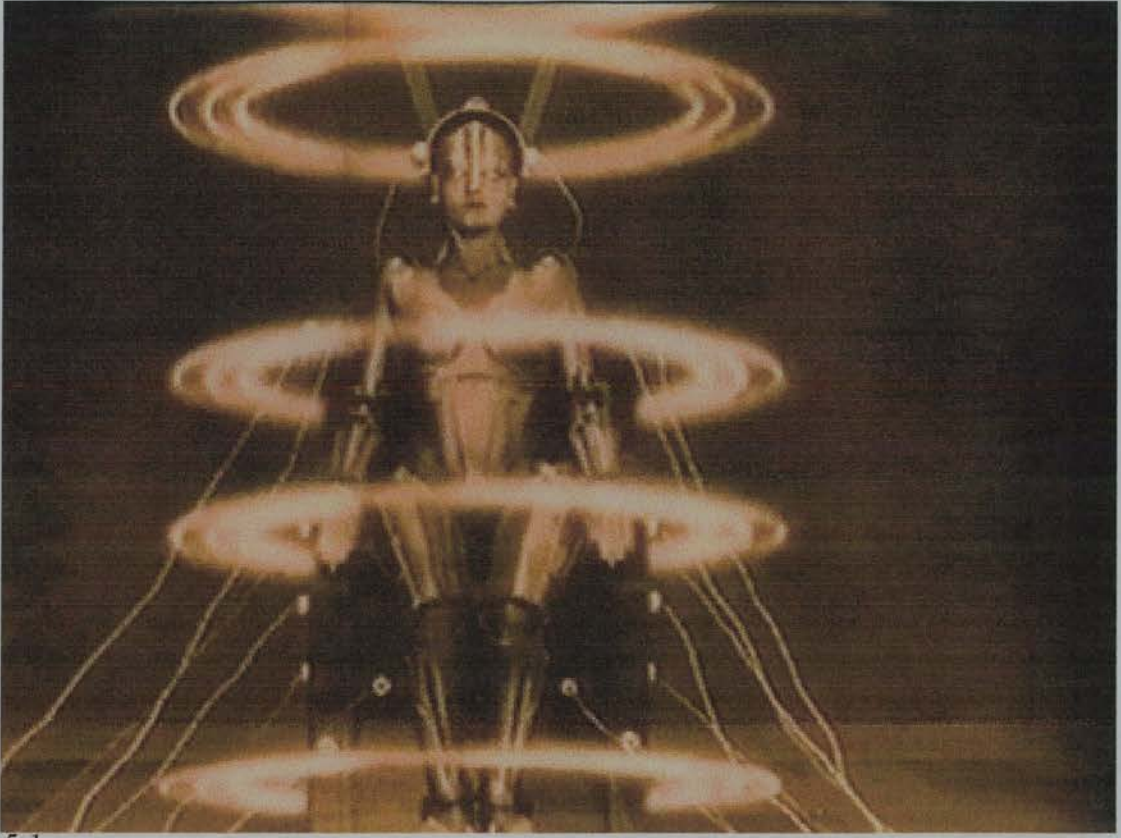


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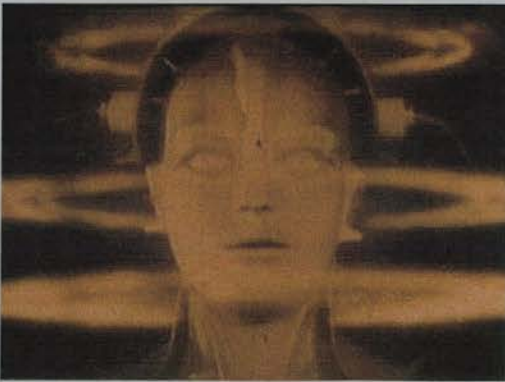
4.2

*Figure 4.1:* Rotwang reveals his prototype robot. *Figure 4.2:* The robot Maria dances exotically before a crowd of male admirers. (Stills courtesy of Metropolis).



5.1

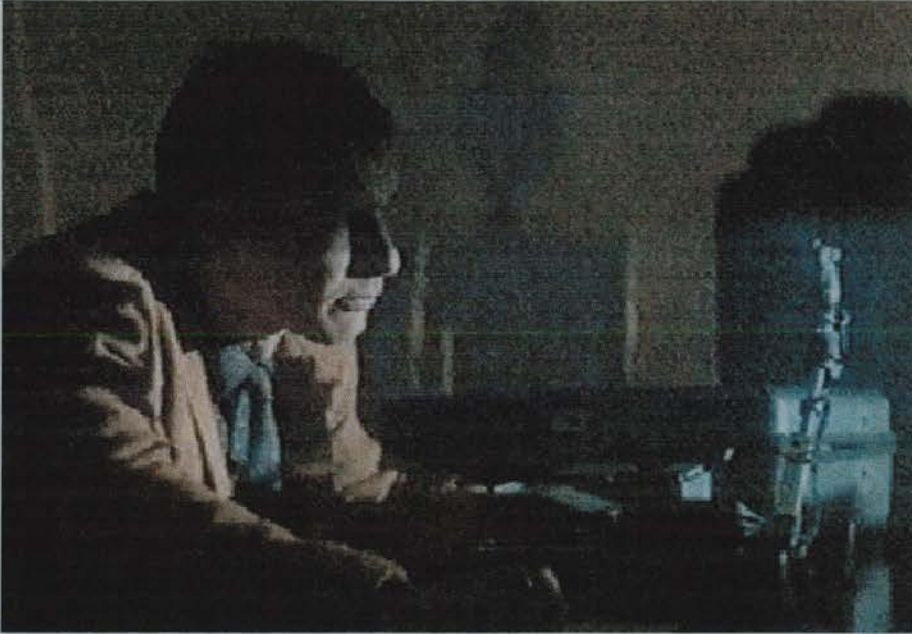
Figure 5.1: Rotwang's robot, encircled by electricity, in the process of animation. Figure 5.2: The beginning of the alteration of the robot from a faceless automaton into the imitation of Maria. Figure 5.3: The conclusion of the alteration process, showing Rotwang's robot in the image of Maria. (All stills courtesy of Metropolis).



5.2



5.3

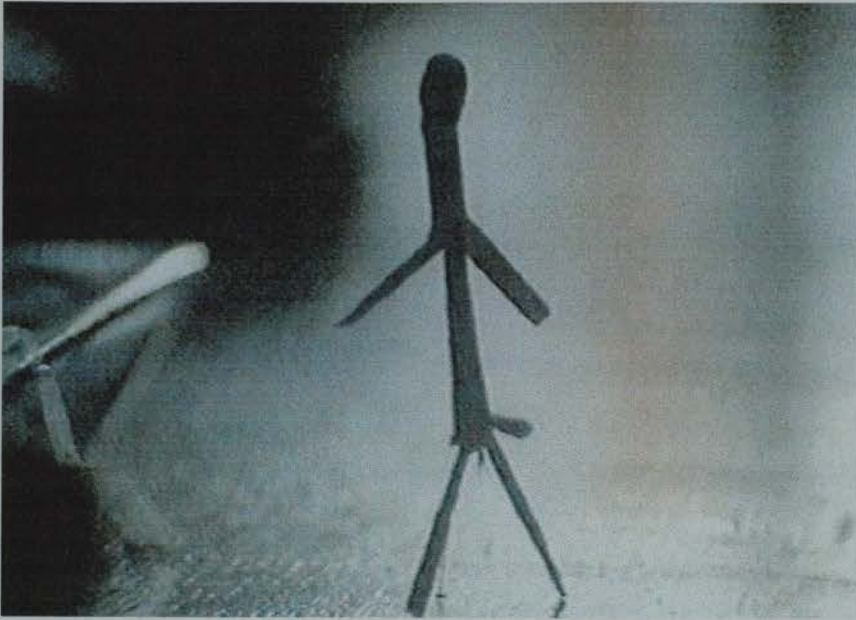


6.1

*Figure 6.1:* Rick Deckard (Harrison Ford) questions Rachel Rosen using the Voigt- Kampff Empathy Test. *Figure 6.2:* The android leader Roy Batty (Rutger Hauer) during the final scenes of the film where he and Rick Deckard play a game of cat-and-mouse along the rooftops. (Both frames courtesy of Warner Bros. Distribution).



6.2



7.1



7.2

*Figure 7.1:* The origami figure made by Garff, which represents Deckard's male machismo. *Figure 7.2:* Roy Batty pushes a nail through his hand in an effort to halt the process of degeneration which spells the end of his four year life-span. *Figure 7.3:* Deckard discovers the paper unicorn which proves that he too is a replicant. (All frames courtesy of Warner Bros. Distribution).



7.3



## Delusive Apparition:

### The Emergence of Simulacra in L'Isle-Adam's *Tomorrow's Eve*

With the appearance of Villiers de L'Isle-Adam's *Tomorrow's Eve*<sup>1</sup> in 1886 the revival of the science fiction narrative, which had begun with Edward Bulwer-Lytton's *The Coming Race* in the early 1870s, took a further significant leap forward. The previous chapter has discussed some of the social reasons for the changing attitudes which allowed for this re-development, but there were, likewise, scientific and literary reasons which brought about the environment within which Villiers came to construct *Tomorrow's Eve*. The 1890s has traditionally been highlighted by critics as the decade of upheaval in literary terms,<sup>2</sup> yet there is evidence to prove that this revolution would find its roots in the two decades before. Certainly the 1880s - when Villiers conceived and wrote his novel - witnessed the first surges against typical nineteenth century conventions. Edward Lauterbach and Eugene Davis argue that "by 1880, writers of English fiction had begun a conspicuous revolt against Victorianism"<sup>3</sup> and the same is true of Europe as a whole. As Jennifer Birkett has shown, "decadence", for her the defining quality of literature in the 1880s and 1890s, "flowed - or festered - throughout Western Europe, but by

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<sup>1</sup> Villiers de L'Isle-Adam, *Tomorrow's Eve*, trans. by Robert Martin Adams (London: University of Illinois Press, 1982). All references within the text are to this edition.

<sup>2</sup> In Murray H. Pittock, *Spectrum of Decadence: The Literature of the 1890s* (London: Routledge, 1993); Derek Jarrett, *The Sleep of Reason: Fantasy and Reality from the Victorian Age to the First World War* (London: Weidenfeld and Nicolson, 1988); Jim Reilly, *Shadowtime: History and Representation in Hardy, Conrad and George Eliot* (London: Routledge, 1993); John Holloway, *The Victorian Sage: Studies in Argument* (London: Macmillan, 1953); and Holbrook Jackson, *The Eighteen Nineties: A Review of Art and Ideas at the Close of the Nineteenth Century* (London: Harvester Press, 1976).

common consent its centre was France, where it reached its apogee in the eighties and nineties".<sup>4</sup> Villiers lived and worked in France and was greatly influenced by the cultural changes which swept Europe during this period, many of which were "influences from across the Channel".<sup>5</sup> French literature, then, like English fiction, reacted against the conventional forms which had predominated in the mid-nineteenth century. Lauterbach and Davis, for example, comment particularly on the role of sexuality: a theme treated only indirectly in Victorian literature but depicted more clearly by many writers from the 1880s onwards and portrayed often as a destructive, sometimes violent force. Villiers fulfils their criteria perfectly: *Tomorrow's Eve* concerns itself most explicitly with sexuality, as this chapter shall discuss in more detail, arguing vehemently, often misogynistically, that it is a dangerously potent force against which masculinity must beware.

Several critics of the period take up the theme of literary revolt, suggesting that literature reveals a certain indecision in accepting any particular role. Fiction, at this time, oscillates between the traditional Victorian realist model and the avant-gardism of modernist writing. But it falls in the midst of these two, neither defending the strict morality of mid-nineteenth century society nor advocating a wholesale shift to a more liberal, free-thinking mode of culture and art.<sup>6</sup> This agrees with Lauterbach and Davis' view of the period as transitional, as one which falls between the

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<sup>3</sup> Edward S. Lauterbach and Eugene W. Davis, *The Transitional Age: British Literature 1880-1920* (New York: Whitston, 1973), p.1.

<sup>4</sup> Jennifer Birkett, *The Sins of the Fathers: Decadence in France, 1870-1914* (London: Quartet, 1986), p.3.

<sup>5</sup> Birkett, p.35.

conventions of nineteenth-century realism and modernist innovation. Interest in esoteric matters, in accordance with the reasons set forward for this alteration in societal concerns in the last chapter, also came much more to the fore in the last two decades of the century. Magic and the occult, especially, were subjects which enjoyed a renewed enthusiasm. Symbolist literature, argues Pittock, promoted this:

Basic early mythic beliefs, such as the idea of an animative universe, with an animating 'force', which could be 'controlled through sympathy and contagion in various kinds of ritual and discipline', were central to Symbolism. Its artists and ideologues opposed the idea of a materialistic account of creation ordered and understood by scientific and empirical thought.<sup>7</sup>

Such neo-romanticism,<sup>8</sup> though, was not the sole property of the Symbolist movement. Scientific fiction, returned fully to the limelight by H.G. Wells' *Scientific Romances*,<sup>9</sup> relied equally upon the discarding - at least to some extent - of the industrial world-view which championed, above all else, the materialistic accounts of the human condition which Pittock discusses. Indeed fiction as a whole had remained interested in magic and the occult (themes inextricably linked to neo-romanticism) throughout the nineteenth century but these subjects had been obscured by the dominance of materialism and its fictional outlet, naturalism. John R. Reed suggests that "occult conventions had been common for some time in the gothic

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<sup>6</sup> Pittock accords with this, arguing that "in the general literary imagination this period [1880-1914] is often seen as an age neither Victorian nor Modern, neither strait-laced and disciplined in the values of patience and purity, nor one of new forms and excited changes"(p.2).

<sup>7</sup> Pittock, p.10.

<sup>8</sup> Neo-romanticism in the arts and sciences heralded a return to some of the values held in the romantic period at the end of the eighteenth and the beginning of the nineteenth centuries. Its main themes were a universal approach to nature and to the workings of the natural world, a freedom of expression and of individuality, a belief in super-nature, the spiritual and the transcendental.

<sup>9</sup> H.G. Wells, *The Scientific Romances of H.G. Wells* (London: Victor Gollancz, 1933)

novel and after”<sup>10</sup> and that “it is often assumed that Victorian culture in England was given over almost exclusively to materialism, and that metaphysical concerns were a peculiarity of the late part of the century”.<sup>11</sup> Reed defends this view by arguing that the supernatural was a subject of continued discussion throughout the nineteenth century, and that the associated topic of the uncanny was

an antidote to relentless materialism[. . .]a promise of love and fullness of feeling beyond the unfeeling mechanisation of modern society. In this sense it was a form of social protest. At the same time it represented a metaphysical craving for the liberation of the mind from the statistical and measurable habits of the late nineteenth century.<sup>12</sup>

Reed does concede, however, that it was towards the end of the nineteenth century that aspects of the occult and the supernatural found their way back to the forefront of fiction, showing a distinct revulsion for the traditions of conventional industrial society:

This developing interest in the uncanny and the modifications it occasioned in a traditional literary convention, indicates a powerful desire during the nineteenth century for some means of escape from a depressingly materialistic existence.<sup>13</sup>

This did not occur in fiction alone. Science too, released somewhat from the confines of empiricism, began to invoke an authority at odds with the factual pragmatism which for so long had held centre stage. Indeed it is a little disingenuous

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<sup>10</sup> Reed, p.448.

<sup>11</sup> Reed, p.452.

<sup>12</sup> Reed, p.473.

<sup>13</sup> Reed, p.472.

to suggest that science had - for the greater part of the nineteenth century - entirely ignored the tenets of neo-romanticism which came to the fore in the 1880s. Rather, the scientific community in the age of the machine could still number among its members those researchers interested in the esoteric or the romantic, but they were viewed as working outwith the regions of scientific investigation which held authority. Their research was denigrated by its failure to conform to the majority view and, as occurred with the magical and the occult in general, became backgrounded by those branches of science which were able to invoke the superior testimony of materialism. By the 1880s (and even before) this hierarchy had been broken down: scientific research opposed to a purely materialist conception of the world began to find a voice, as J.A.V. Chapple, speaking of Matthew Arnold's work in the 1870s, reveals:

It is very inadequate to speak of the 'limited and definite character' of science in an age when, for example, John Tyndall kept recurring to the absolute need for a ranging, boldly speculative imagination in scientific research, fully romantic in its dissatisfaction with the constraints imposed by the sensible material world in which we live.<sup>14</sup>

Chapple is not alone in highlighting the inadequacy of seeing science at the end of the nineteenth century as a one-track profession. Stephen G. Brush is in agreement and he links the rise of neo-romantic science to the larger cultural distaste for materialism:

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<sup>14</sup> J.A.V. Chapple, *Science and Literature in the Nineteenth Century* (London: Macmillan, 1986), p.151.

The disgust for *crass* materialism was due partly to the mechanisation of work and life in general that accompanied the rise of industrialisation in the nineteenth century, together with the loss of faith in traditional religion. Some of this disgust was transferred to *scientific* materialism.<sup>15</sup>

Not only, however, can there be said to have been a general cultural change which then affected the scientific milieu. Science and culture existed in a much more symbiotic relationship; with science providing a guiding principle for society at large just as often as societal shifts began a similar movement in the sciences. Brush exemplifies this process of give and take:

The first law of thermodynamics (conservation of energy), inspired in part by the philosophy of romanticism, provided an organising principle for the science of the realist period. Likewise the second law of thermodynamics (dissipation of energy), which arose from the technical analysis of steam engines, provided a *disorganising* principle which turned out to be highly appropriate for the neoromantic period.<sup>16</sup>

Scientific discovery, then, had as great an influence on the changes which occurred towards the end of the nineteenth century as society had on science. Samuel Hynes<sup>17</sup> is sensitive to this paradox, noting that the discoveries of the x-ray, radio-activity, and the electron suggested that there were forces at work of which the Victorians had been unaware and which may have gone some way towards instigating the return to romantic ideas which the final decades of the nineteenth century witnessed.

Villiers de L'Isle-Adam's *Tomorrow's Eve* appears directly in the midst of this cultural and scientific revolution and was very much a part of it. Villiers himself had an active role in this conflict of cultures, as John Anzalone reveals:

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<sup>15</sup> Brush, p.87.

He [Villiers] was specially drawn to the strains of romanticism that implied revolt and rejection. He found the appropriate vehicle for his lifelong indictment of bourgeois ideology in that complex fusion of occult doctrine, ritual and magic commonly referred to as, simply, the *Tradition*. His works abound in portrayals of supernatural experiences, and his prestige in the secret sciences was such that for the symbolist generation he was reputed and even revered as an occultist master.<sup>18</sup>

In *Tomorrow's Eve* occultism does have a role to play, but so too does contemporary science. The narrative structure, while portraying the classic fusion of mysticism and science which I have argued is essential to science fiction, is representative of the machinations of the late nineteenth century's reaction against materialism. Before the novel begins, in his "Advice to the Reader", Villiers defends his use of Thomas Edison,<sup>19</sup> who was by this time very much the most popularly known scientific researcher in the United States, as the central character of his novel. His argument is based upon the fact that the character is essentially a personification of the myths surrounding Edison rather than the man himself: "The hero of this book is above all "The Sorcerer of Menlo Park," and so forth - and not the engineer, Mr. Edison, our contemporary" (p.3). Such a statement reveals the formulae for the creation of credible science fiction narrative employed by both Hoffmann and Shelley, and, to some extent, Bulwer-Lytton. It amalgamates the esoteric nature of magic and sorcery (the Edison Myth) with the patently pragmatic (Edison as scientific inventor) for,

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<sup>16</sup> Brush, p.29.

<sup>17</sup> Samuel Hynes, *The Edwardian Turn of Mind* (Princeton, N.J.: Princeton University Press, 1968)

<sup>18</sup> John Anzalone, 'Timeless Tomes: Occult Libraries in Villiers' *Iris and Axel*', *L'Esprit Createur*, 28 (1) (1988), 87-94 (pp.87-88).

<sup>19</sup> Thomas Edison (1847-1931).

despite Villiers' claims to the contrary, the Edison of *Tomorrow's Eve* has a great deal in common with the real Thomas Edison.

It is not only, however, in the presentation of Edison as the central character that Villiers adheres to this SF narrative tradition. Similar to Hoffmann's use of sciences which were both materialistic and mystical (machine building and mesmerism respectively) Villiers constructs a narrative which revolves around the interplay of advanced mechanics and psychical phenomena,<sup>20</sup> the former being central to the practicalities of scientific research in the industrial age and the latter conforming to the role of 'new', rather hermetic or neoromantic science of the latter decades of the nineteenth century. Neither is it only the foundations of the narrative that are built with such materials: the scientifically constructed artificial human of *Tomorrow's Eve* is, like Frankenstein's creature or Hoffmann's Talking Turk, a discreet blend of these two forces. Each works in tandem with the other, producing

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<sup>20</sup> Considering that *Tomorrow's Eve* is not as readily available a novel as either *Frankenstein* or those discussed in the previous chapter, it is useful to provide a short plot summary at this point. The novel opens in Thomas Edison's Menlo Park laboratory where the inventor muses over the uses which his inventions could have been put to had they been discovered centuries before. He receives a visit from a distraught friend, Lord Ewald, who is in some distress over the young lady with whom he has fallen in love. It transpires that while she appears to be a goddess (she is compared to the Venus de Milo) she is in fact a rather superficial personality. Despite this, Ewald is unable to break off his attachment to her and instead plans to commit suicide. Edison - indebted to Ewald for saving his career some years before - feels bound to dissuade him from this course of action and reveals to Ewald that he is able to create an artificial human who, in many ways, will be the exact replica of Ewald's flawed mistress, Miss Alicia Clary. There will be one vital difference, however. The artificial Miss Clary will have none of the insufferable character traits of the original. Ewald, after great deliberation, agrees to allow Edison to create such a woman. The remaining two thirds of the novel recount the processes of construction of Hadaly (as the artificial human is called); from her mechanical skeleton, simulated skin, and phonographically inspired voice, to the electrical power source of her movements and the mystical connection to a medium named Sowana. The final result is a man-machine, or rather woman-machine, of a nature that not even Edison is aware. Hadaly has a consciousness that is attributable to the magical ties that bind her to Sowana's spirit, rather than to the artificial intelligence which Edison had provided. Ewald is overawed by this but agrees - at Hadaly's request - to say nothing to Edison, and he quickly repairs to his English estate with the artificial Alicia Clary. On the voyage across the Atlantic, however, the ship succumbs to a fire in which Hadaly is lost. The narrative ends with Edison receiving a telegram from Lord Ewald, destitute at the loss, and once more at the brink of suicide.



an egalitarian relationship in which neither predominates but both are credibly reinforced by the existence of their opposite.

Critics of the novel support these comparisons with Hoffmann and Shelley, although none proceed past a simple thematic relationship of the respective narratives. Pedro Gallardo-Torrano is typical:

If there has ever been a scientific romance in French which may be said to have influenced later fiction on robots, it is undoubtedly Villiers de L'Isle-Adam's *L'Eve Future*. Its similarities with Mary Shelley's *Frankenstein* are undeniable, especially as far as the science is concerned.<sup>21</sup>

This is also about as far as Torrano goes on the subject, pausing only briefly to speculate that, "he [Villiers] surely knew about and had read Hoffmann's 'The Sandman', another landmark in the history of fiction about artificial life creation".<sup>22</sup> Other commentators say more about the construction of the narrative than about its literary antecedents, yet they, like Torrano, are superficial in their criticism, regurgitating basic science fiction themes that do not do justice to the subtlety of Villiers' art. C.D. Dobay Rifelj rather states the obvious in pointing out that *Tomorrow's Eve* "is an attempt to make the fantastic plausible"<sup>23</sup> and, even when recognising the two forces present in the narrative, fails to comprehend their importance:

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<sup>21</sup> Pedro Gallardo-Torrano, 'Frankenstein's French Counterpart: Villiers de L'Isle-Adam's *L'Eve Future*', *Foundation*, 63 (1995), 74-80 (p.74)

<sup>22</sup> Gallardo-Torrano, p.74.

<sup>23</sup> C.D. Dobay Rifelj, 'The Machine-Humaine: Villiers' *L'Eve Future* and the Problem of Personal Identity (Robots and Criteria for Personhood)', *Nineteenth Century French Studies*, 20 (3-4) (1992), 430-451 (p.430)

Both science and the occult, however, are necessary to the novel. In symbolic terms, several of Edison's attributes take on great importance. Edison the great inventor becomes Edison the creator, a new god bringing to life a new Eve. On the other hand, the sorcier [sic], the wizard, is one who has a pact with the devil, and his rivalling of God, like Frankenstein's or Faust's, eventually brings on disaster.<sup>24</sup>

While the character of Edison certainly reflects the application of the forces of science and magic in the narrative, these two opposing methodologies are far more fundamental to the structure of the text than Rifelj suggests. They cannot be so simplified as to reflect, as this quote suggests, the good and evil sides of Edison's research into the creation of the artificial human.

The character of Edison is, for reasons other than these, still vital to the novel. It is all too easy to make comparisons between him and Victor Frankenstein, as Torrano does:

Edison is the prototype of the new hero which modern times and mechanical materialism have begot. His paternalistic tone when he speaks about the gap between the new scientific world and the old superstition-ridden ages clearly echoes the irony with which Victor Frankenstein is received in Ingolstadt when he mentions that he is acquainted with the texts of Agrippa, Albertus Magnus and Paracelsus.<sup>25</sup>

This argument presents us with a problematic dichotomy: Edison is a modern hero working at the end of the nineteenth century yet expounding a similar scientific method to M. Waldman, the Ingolstadt professor who derides Victor Frankenstein at the very beginning of the nineteenth century. With the second great impetus of the

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<sup>24</sup> Rifelj, p.432.

<sup>25</sup> Gallardo-Torrano, p.76.

Industrial Revolution occurring in the mid-nineteenth century, indelibly changing the science and society which Waldman had known, it is surely a mistake to so readily push him and Edison together. It is unlikely that Edison can, at the same time, reflect contemporary science and the science of some seventy years before. Alternatively, of course there is common ground between Thomas Edison and Victor Frankenstein, one of the central points of comparison being exactly that which R.K. Garelick denies: “Nor is Edison really a lone magician-scientist working in secret like Mary Shelley’s Frankenstein. He is more a factory manager directing a team of workers, another collectivity”.<sup>26</sup> The novel does not uphold this view. Edison works entirely alone throughout the novel, even sending his workforce home early when he initially conceives of the plan to gift Lord Ewald his artificial human. Garelick appears to fall into the trap of regarding the fictional Edison as the real Edison, transposing the team-working methods of one onto the other, despite the lack of evidence to support this. Conroy is one of the few critics to recognise that such a blending of fact and fiction is a possibility:

His [Villiers] choice of Thomas Edison as protagonist is another attempt to confuse the reader. Edison was of course a historical person (1847-1931), still living and working at the time of the novel’s publication. Thus, despite Villiers’ avowal that his character is ‘at least passably distinct from reality’, one may well confuse him with the person and take as true the most extraordinary actions of the character.<sup>27</sup>

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<sup>26</sup> R.K. Garelick, ‘Material Girls: Dance, Decadence and the Robotics of Pleasure in *L’Eve Future*’, *Nineteenth Century French Studies*, 21 (3-4) (1993), 461-478 (p.472)

<sup>27</sup> W.T. Conroy, *Villiers de L’Isle Adam* (Boston: G.K. Hall, 1978), p.114.

While this suggests that the inclusion of Edison was no more than another ruse in the continual game to trick the reader into complying with the fantastical propositions of the narrative, it does at least highlight the real significance of using Edison as a character in the novel, and that is, as Conroy says, that he is a real historical figure, which neither Hoffmann's nor Shelley's protagonists were.<sup>28</sup>

This is of singular importance to a novel which concerns itself with the scientific creation of the artificial human for, immediately, indeed even before we begin the novel proper, we are invited by Villiers to think in terms of real and imitation. Edison, as is clear from the "Advice to the Reader" if it were not patently obvious already, is a scientist working contemporaneously with the publication of the novel. He is, in essence, a real figure. This, however, is not the Edison that Villiers hopes to reconstruct. Rather he will create a figure based upon the myths surrounding Edison, those beliefs and half-truths which have made their way into the public consciousness. Simply, Villiers will create - or re-create - an artificial Edison, utilising those aspects of his character which have been disseminated as true but are likely to be lies. However straightforward Villiers attempts to make this in his preface, it is an extremely complex set of criteria upon which to fashion the central protagonist.

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<sup>28</sup> Although they were not based on any particular scientist, both Spalanzani and Professor X (in Hoffmann's tales) are compared with Franz Anton Mesmer. This could well be the prototype for Villiers' use of Edison as, in Hoffmann, the conjunction of the fictional characters with a 'real' person is a vital tool in bringing a particular branch of scientific research to the forefront of the narrative. Shelley, too, in highlighting Humphry Davy and Paracelsus (through Victor Frankenstein and his teachers) brings some historical precedent to her fiction and imbues Victor Frankenstein with the methods and ideologies of different scientific perspectives.

With the difficulty of this task in mind it is no harsh criticism to say that the Edison we find in the novel is an amalgam of both the real and the unreal. First, let us discover how far the historical Edison has infiltrated the narrative. From a factual point of view, when *Tomorrow's Eve* was published in 1886, Edison was 38 years old and already famous, as Ronald W. Clark points out in his biography of Edison: "between 1880 and 1890 Edison crossed that real but unidentifiable frontier which divides the famous from the celebrities".<sup>29</sup> It would not, therefore, be disingenuous to say that by 1886 Edison was well on his way to becoming the world's best known scientific inventor. Considering the nature of his inventions to this date, this is not at all surprising. Edison had invented the phonograph almost a decade before (circa. 1877), sensationally revealing it to the assembled staff of a famous scientific journal, as Thomas P. Hughes reports:

He [Edison] sketched his concept of a recording and reproducing device in the Summer of 1877. His skilled mechanist, John Kreusi, built the first model. Kreusi, after hearing the phonograph reproduce Edison reciting 'Mary had a little lamb', could only respond, 'Mein Gott im [sic] Himmel'. When Edison took it to the offices of the widely read technical journal, the *Scientific American*, his friend the editor had to stop the demonstration because the size of the crowd that had assembled threatened to collapse the office floor.<sup>30</sup>

With the burgeoning reputation, as well as increased financial capacity, that Edison now held, he moved his entire operation to Menlo Park, New Jersey in 1876, where he remained until 1886. It is the Menlo Park facilities upon which Villiers loosely

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<sup>29</sup> Ronald W. Clark, *Edison: The Man Who Made The Future* (London: Macdonald and Jane's, 1977), p.149.

<sup>30</sup> Thomas P. Hughes, *Thomas Edison: Professional Inventor* (London: HMSO, 1976), pp.12-13.

bases his fictional laboratory,<sup>31</sup> and it was also here that Edison and his team of inventors successfully created the electric light bulb that was to make his reputation and fortune. Thomas P. Hughes again captures the excitement of those times:

Life in the laboratory was exhilarating during the first five years when attention was directed to electrical inventions. The Edison assistants, some mechanics, others electrical technicians, and a few with formal scientific training, knew that they were caught up in a great adventure.<sup>32</sup>

And of the impact the electric light bulb had on the general public, Hughes reveals that, “special trains from New York and elsewhere brought the prominent and the plain to view four houses illuminated, streets lit, and the laboratory glowing”.<sup>33</sup> Such a feeling of intense interest in everything that Edison put his mind to is no more than one would expect of a man who had recorded his first patent at the age of twenty-one, earned and lost several fortunes during his long career, invented the first instrument to record and reproduce the human voice, first brought electric light into the homes of millions, made the world’s first movie (with sound and picture), and continued to work at least sixteen hours a day almost to the point of his death at the age of 84 in 1931.

Edison exemplified all the qualities of the heroic figure as seen through the eyes of the nineteenth-century viewer. He was renowned as:

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<sup>31</sup> Although Villiers does not say this explicitly there is enough evidence in the novel to make such a judgement. Firstly, Villiers refers to Edison as the Wizard of Menlo Park and, secondly, the fictional laboratory is set in large grounds where Edison also keeps a house. This is exactly how the real Menlo Park facilities were situated. Thirdly, the laboratory in the novel is some way from the city (as Miss Clary must get a train from New York to arrive there). Menlo Park itself is a small settlement in rural New Jersey, some distance from New York city.

<sup>32</sup> Hughes, pp.18-19.

<sup>33</sup> Hughes, p.30.

A plain-speaking man of inventive genius who, through self-education and discipline, applied his talents to the solution of practical problems of substance and intrinsic interest.<sup>34</sup>

Practicality was almost a rallying cry for Edison. He had little time for the erudite theorising of some branches of scientific investigation, preferring to work by trial and error, by experimentation at all costs, to achieve results. Clark reinforces this opinion of Edison's character:

Preoccupation with development of a specific invention to meet a specific need was a feature of Edison's entire working life, and with it there went a contempt, barely concealed at times, for the man who dealt in theories rather than their practical application.<sup>35</sup>

Pragmatism of the highest order, and distrust of intellectual science, may have been the most prominent character traits of the real Thomas Edison but the Edison of *Tomorrow's Eve* does not solely reflect such a personality.<sup>36</sup> In the novel we see

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<sup>34</sup> Hughes, p.3

<sup>35</sup> Clark, p.65.

<sup>36</sup> While *Tomorrow's Eve* was the only science fiction novel of the time to use Thomas Edison as a character, he was also the inspiration for another figure central to science fiction. In H.G. Wells' *The Time Machine* (1895) the time traveller can be seen as a convincing portrait of Edison the man as opposed to Edison the myth. Among the multitude of critical works which discuss Wells' novel there are many which apply themselves to the character and personae of the time traveller, mostly agreeing that he is a typical nineteenth century scientist, troubled by the future world of the Eloi and the Morlock because of his inability to throw off the shackles of his own time. Widely regarded, then, as the everyman inventor of late Victorian England, no critic has yet pointed out a particular influence. It is clear, however, that Wells bases the time traveller very decidedly on Thomas Edison. Looking particularly at the genesis of *The Time Machine*, from 'The Chronic Argonauts' to the completed novel comparisons can be drawn between the mystical wizardry of Dr. Nebogipfel and the 'Wizard of Menlo Park' appellation given to Edison in the 1880s. The local reaction to Nebogipfel's arrival in a small Welsh village, for example, is almost identical to that received by Edison on decamping to his Menlo Park laboratory. The time traveller, too, is reflective of Edison's character: indulging in hyperbolic rhetoric, revealing a penchant for showmanship, and remaining practical about his vocation. There are other clues in Wells' narrative which reinforce this view and reveal that Wells certainly had Edison in mind when writing the novel. In an early version one of the characters can

more of the public conception of Edison, somewhat akin to the local reaction encountered when Edison moved to the quiet Menlo Park area. As Clark reports,

By the simple inhabitants of the region[. . .]he was regarded with a kind of uncanny fascination, somewhat similar to that inspired by Dr. Faustus of old, and no feat, however startling, would have been considered too great for his occult attainments.<sup>37</sup>

This is the Edison myth that was the inspiration behind Villiers' conception of his fictional protagonist: the gifted scientist with supernatural powers of intellect, sublime in character and the holder of the mystical truths of the natural world. Link this to another story that affected Edison's public personae; that, on the day of his marriage to Mary Stillwell, the inventor was to be found not at the celebrations taking place in his house but in his laboratory, continuing the research into the electric light bulb which had been interrupted by his wedding vows. This myth was so widely known that it even became the subject of several cartoon caricatures of Edison, depicting him holding a light bulb aloft while dressed in a morning suit as assorted guests and his new wife continue the party nearby. Undoubtedly humorous, this aspect of the Edison mythology has a more important significance: for it reveals an unstinting, very personal dedication to his work that was a facet of the real Edison's character, but more than this, is suggestive of the solitary investigator,

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only reply "Gott in Himmel" when the time machine is revealed to him, much as John Kreusi did on first hearing Edison's voice on the phonograph. In the same version three characters named Blank, Dash and Chose appear, reminiscent of the nicknames Edison gave to his first two children - Dot and Dash - which were inspired by his work on the telegraph. There are many more points of comparison but these would be best served by a separate piece of criticism rather than in this context.

<sup>37</sup> Clark, p.73.



uninterested in the social world, who will stop at nothing to see their dreams and theories become reality.<sup>38</sup>

*Tomorrow's Eve*, then, provides evidence of both these Edisons: the practical, dedicated inventor of genius and the more mystical, solipsistic figure of the Edison myth. The laboratory, for example, in which Edison works is of the latter order: "the laboratory seemed, positively, a place of magic; within it, the natural world could only be the extraordinary" (p.53), as is the description of Edison's character we are given by Lord Ewald, who finds him almost ethereal: "Edison was like an inhabitant of the distant kingdom of electricity" (p.53). Likewise, Edison's initial description of Hadaly, the artificial human, is very much in line with the hubris evinced by Victor Frankenstein or Professor X, and does not at all reflect the pragmatism of the real man:

Miss Alicia Clary will appear before you, not simply transfigured, not just made the most enchanting of companions, nor merely limited to the most sublime level of spirituality, but actually endowed with a sort of immortality. In a word, the present gorgeous little fool will no longer be a woman, but an angel; no longer a mistress but a lover; no longer reality, but an IDEAL. (pp.53-54)

Even more explicitly, Lord Ewald, while being given a tour of Edison's secret laboratory, cut deep into the rock below his workshops, believes his work to be akin to magic: "'Really,' cried Lord Ewald, looking once more around him, 'it seems to me that I've come into the world of Flamel, Paracelsus, or Raymond Lull, the

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<sup>38</sup> I am indebted to the following books for information, factual and anecdotal, on Thomas Edison: Hughes, *Thomas Edison*; Clark, *Edison*; Nina Morgan, *Thomas Edison* (Hove: Wayland, 1991); and Keith Ellis, *Thomas Edison: Genius of Electricity* (London: Priory Press, 1974).

magicians and alchemists of the Middle Ages” (p.62). This sense of Edison as a supernatural figure is set off by an abundance of references to the historical man. We hear him speaking in paternalistic fashion on the telephone to his two children, Dot and Dash:

- Dash, he said, you will admit a visitor to the pavilion tonight, Lord Ewald. Greet him as you would me[. . .]. He is at home here.
- Very well, father! said the same voice, which this time, thanks to a remote switching mechanism, seemed to arrive from the center of an enormous magnesium reflector.
- I expect that he'll dine with me tonight. Don't wait up for me. And be good children. Good night, now. (p.17)

and conversing in an authoritative manner with a colleague in the New York branch of his business:

- All right, what is it? What do you want? the phonograph called into the telephone; it spoke in the slightly impatient voice of Edison.
- Is that you, Martin?  
A vigorous voice replied, as from the center of the room, though not a soul was to be seen.
- Yes, I'm here, Mr. Edison; I'm calling from New York, at your Broadway office. I'm forwarding a dispatch received here for you, just two minutes ago. (p.16)

The beginning of the novel, too, reveals the pragmatic, secular nature of Edison. He is described as “so little of an idle dreamer” (p.7) and is said to have a “simplicity of welcome” (p.8) which reveals immediately his “good sense and originality” (p.9). All of these facts are reported to us while Edison sits musing in his laboratory, denouncing the fact that he was born so late in the history of the human race and had no chance to use his gifts to record the luminary figures of antiquity:

What a latecomer I am in the ranks of humanity! Why wasn't I one of the first-born of the species? [. . .]. Plenty of great words would be recorded now, ne varieteur - (sic) - word for word, that is, on the surface of my cylinders, since the prodigious development of the machine now allows us to receive, at the present moment, sound waves reaching us from a vast distance. And these words would be engraved on my cylinders, with the tone, the phrasing, the manner of delivery, and even the mannerisms of pronunciation that the speakers possessed. (p.9)

This again reinforces Edison's practicality, his continual efforts to provide useful inventions which are not merely examples of scientific ingenuity but also beneficial and productive.

Overall, therefore, before we are even introduced to the artificial human which Edison has created, Villiers has determined that the issues of reality and artificiality are at the forefront of the novel. In highlighting the fact that the central character - the creator in a sense - is himself a construction, the question of whether Edison is a copy or merely a fiction becomes important? Is the Edison we find in the novel, in traditional science fiction fashion, an extrapolation of known facts, or a fantasy? With two disparate versions of Edison to work from, this is a very complex problem.<sup>39</sup>

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<sup>39</sup> It is possible to look at the fictional figure of Edison in a manner similar to the way in which the artificial human is defined. Taking Baudrillard's criteria for the simulacra, Edison can be compared with the different phases of the image which first defines the concept of simulation. Baudrillard lists four: "it is the reflection of a profound reality; it marks and denatures a profound reality; it masks the *absence* of a profound reality; it has no relation to reality whatsoever: it is its own pure simulacrum" (p.6). These four states are also glossed: "In the first case, the image is a *good* appearance - representation is of the sacramental order. In the second, it is an *evil* appearance - it is of the order of maleficence. In the third, it plays at being an appearance - it is of the order of sorcery. In the fourth, it is no longer of the order of appearances, but of simulation" (p.6). Using Baudrillard's criteria, Edison is both a good and a sorcerous image in the narrative. His character certainly conforms to the first level of this hierarchy by reflecting the historical Edison, the Edison that is a "reality", and also to the third level, for he is, at the same time, a fictional figure created by Villiers to play a particular role in

Edison's artificial human confronts these same issues and introduces a further level of difficulty in differentiating the real from the imitative. Hadaly's *raison d'être* is to replicate Miss Alicia Clary, the frivolous and rather superficial woman with whom Lord Ewald is in love, but with significant changes. Indeed, as it transpires, Hadaly will copy only the physical aspects of Miss Clary (her looks, her shape, her voice and so on) while retaining a distinct personality. When Hadaly first enters the narrative she is little more than a shell, a canvas upon which Miss Clary's endowments will be painted afresh. The novel describes her first appearance: "standing on this dais, a sort of BEING appeared, its form suggestive of nothing so much as the *unknown*" (p.57). Edison explains to Lord Ewald that she is not yet complete:

'I tell you, Edison resumed, that this metal which walks, speaks, answers, and obeys is not the covering of any *person* in the ordinary sense of the word[. . .]. No, *nobody*, he went on. So far Miss Hadaly is nothing at all *from the outside* but a magneto-electric entity. She is a being in Limbo, a mere potentiality. (p.59)

Hadaly is as yet unborn, a foetal being without the stamp of personality or definable physical feature. She is but a mechanism powered by electricity, which, in contrast with Mary Shelley's *Frankenstein*, is not a soul-providing, somewhat mystical force, but merely another source of animation in its simplest form, a sophisticated version of the gears and wheels which allowed Hoffmann's Olympia to walk, talk and dance. Edison, though, is quick to show Lord Ewald how effective her physical appearance

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the novel. In this sense, Edison does indeed "play at being an appearance" for he does not exist beyond the confines of the text and merely appears to denote a particular reality beyond that.

will be. He presents him with the artificial arm which is a prototype of the limb with which Hadaly will be fitted. Lord Ewald marvels at its realism:

‘Oh, it’s better than real!’ Edison said simply. ‘Flesh fades and grows old. This is a combination of exquisite substances, elaborated by chemistry; it’s a direct rebuke to the complacency of Nature. . . This *copy*, let’s say, of Nature - if I may use the empirical word - will bury the original without itself ceasing to appear alive and young. Before growing old, it will perish in a thunderclap.’ (p.60)

What is apparent here, and becomes more so as the narrative proceeds, is the sophistication of Edison’s android. The prosthetic limb which impresses Ewald is markedly more realistic than the arms and legs of General Smith in Poe’s ‘The Man That Was Used Up’. Those were made of cork, Edison’s is complete with synthetic flesh.<sup>40</sup> While in Hoffmann’s ‘The Sandman’ and ‘The Automata’ every character (with the exception of Nathanael and Ferdinand who are under the influence of a mesmeric power) is aware of the artificiality of the scientifically constructed humans, and in Shelley’s *Frankenstein* the monster is feared because of its alien quality, in *Tomorrow’s Eve* the android is so sophisticated as to be indiscernible from the human which it is attempting to emulate. This is a significant difference in the genesis of the artificially created human.

Part of the reason for this is the nature and use of electricity. Dethroned from its predominantly romantic position as the force of life, and perhaps the physical

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<sup>40</sup> This method of creating a life-like artificial human is widely used in recent science fiction films. *Terminator* (1984), dir. by James Cameron, scr. by James Cameron and Gale Anne Hurd, and *Terminator II* (1991), dir. by James Cameron, scr. by James Cameron, construct a cyborg which is mechanical but covered by organic skin tissue and *Blade Runner* (1982), dir. by Ridley Scott, scr. by Hampton Fancher and David Peoples, does likewise. Examples of this technique, in fact are commonplace: see also *Aliens* (1979), dir. by Ridley Scott, scr. by Dan O’Bannon, and *Robocop*.

embodiment of the soul, electricity becomes, here, a practical power rather than a spiritual one, a response in keeping with contemporary views on electricity, which treated it as a mundane tool, as this short letter in *Nature* reveals: “would any of your readers aid me in carrying out this idea: To make the works of a small striking clock strike the hours on a large bell by an electrical connection”.<sup>41</sup> Edison is in agreement with this reduction of the mystical power of electricity: “This is the arm of an Android of my making, animated for the first time by this vital, surprising agent that we call Electricity, which gives it, as you see, all the soft and melting qualities, all the illusion of life!” (p.61). While still an animating principle, electricity gives only the *illusion* of life. As an animator, however, it is far superior to raw mechanics, possessing “soft and melting qualities” as opposed to the stiff, jerking movements provided by machinery.<sup>42</sup> This fluidity compares far more favourably with the movements of the human frame, which mechanics had been able to reproduce only in a stilted fashion. Edison makes this very point himself, in a lengthy critique of early automata-makers:

Poor fellows, for lack of the proper technical skills, they produced nothing but ridiculous monsters. Albertus Magnus, Vaucanson, Maelzel, Horner, and all that crowd were barely competent makers of scarecrows. Their automata deserve to be exhibited in the most hideous of wax museums. [. . .]Just call to mind that succession of jerky extravagant movements, reminiscent of Nuremberg dolls! The absurdity of their shapes and colours! Their animation, as of wigmaker’s dummies! That noise of the key in the mechanism! The sensation of vacancy! In a word, everything in these abominable masquerades produces in us a sense of horror and shame. (p.61)

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<sup>41</sup> Anon., ‘Electricity and Clocks’, *Nature*, 35, (1886), p.173.

<sup>42</sup> As exemplified by Hoffmann’s Olympia and the Talking Turk.

Damning as this indictment is, in comparison with Hadaly, these earlier artificial humans were indeed nothing but “abominable masquerades”. Edison, using recent technological developments, is able to produce an extremely advanced piece of machinery. Mechanics, after all, had, by the end of the century, made dramatic improvements to the quality of life, improvements which could be seen by all:

In marked contrast with the past, the present age is one of pronounced material development[. . .]. Farmers, mechanics, and laborers live now more comfortably than did the middle classes of feudal times; the duration of human life has been materially lengthened, and all portions of society recognise the importance of further progress, and the advantage of organisation and invention in securing it. This era of material progress may be said to have commenced with the final perfecting of the steam-engine, which, together with the various attendant machines, takes the place of hand and animal labour, and which has increased and cheapened the production of the necessaries and luxuries of life; and it has pushed the inventor and the engineer to the front rank in modern society.<sup>43</sup>

As one of these inventors, Edison defends the progress of mechanical science and denigrates the crude experiments of those who did not have his skill or knowledge. Having made his point clear, Edison is more than happy to reveal this advanced technical superiority to Lord Ewald.

Ewald quickly discovers that the phonograph - which Edison himself invented in 1877<sup>44</sup> - plays a major part in the android’s construction. Two

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<sup>43</sup> ‘Progress of Mechanical Science’ in *Science*, 8, (186) (1886), 182-184 (p.182).

<sup>44</sup> The phonograph of 1877 was rather crude but within a year Edison had greatly improved upon the first prototypes. Indeed he planned to produce a collection of small dolls, each of which would include a small phonographic disk, thereby allowing them to speak a few words. It is interesting that Villiers uses the same concept for Hadaly’s speech. Edison returned to the phonograph in the last

phonographic disks, made of gold, furnish the voice and, by extension, the intelligence of Hadaly. Ewald questions Edison over this, demanding to know how they work. Again it is by a process of electricity, as “an electric spark sets them in motion, as the spark of life sets ours in motion” (p.79). Although this suggests that electricity has a greater power than mere animation, Edison is quick to reduce it again, warning that “the electrical apparatus of Hadaly is no more her *self* than the skeleton of your friend is her personality” (p.78). Nevertheless, Hadaly is animated by an electro-magnetic motor,<sup>45</sup> controlled by two discs of glass:

It is by means of these little discs of hardened glass[. . .]that the current distributed through the electrical network is modulated, so that motion can be communicated or inhibited in any one of the limbs or in the entire person. This is the basic electro-magnetic motor, which I have miniaturized while at the same time multiplying its power; *all* the various inductors of the mechanisms are connected with it. (p.130)

Movement, once inspired by electrical impulses, is manufactured by a collection of steel wires, all controlled by a central cylinder upon which is imprinted the infinite

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years of the 1880s (having worked on electricity for many of the intervening years) and improved upon the designs of the 1870s yet again.

<sup>45</sup> The application of electricity to the machine was no new idea when Villiers incorporated it into Hadaly’s construction. A report of a paper given to the Physical Society in 1886 (the year of the novel’s publication) reveals that research had been ongoing: “Dr. Frohlich gave a short report on the results of his investigations, lasting for years, into the theory of the dynamo-electric machines, which he had developed with special reference to the practical requirements of technics, and had quite recently published in a separate work. He communicated and explained the concluding formulae he had found for the various systems of machines, in respect of their magnetism, as also of their intensity and polar tensions. He likewise gave the formulae for the performances of the dynamo machine as transmitters of energy” (Anon., *Nature*, 33, (1886), p.552). A book review from the same year reinforces this: “*Electrical Transmission of Energy, and its Transformation, Subdivision, and Distribution: A Practical Handbook*, by Gisbert Kapp, C.E. (Whittaker and Co.), containing a fair investigation of the theory of electromotors, and abundant particulars as to the machines and methods in actual use.” (Anon., *The Athenaeum*, 3076 (1886), p.471.)



variations of human nature. This cylinder is compared to a barrel organ but seems more like a primitive computer:

All the interactions of these steel wires are controlled; each one of them is under the direction of the central electric current which prescribes their individual flexions according to the pattern printed on the central Cylinder. You will be surprised at the *identity* of the charm which these programs can diffuse through the various attitudes of the body. (p.139)

Villiers has taken inspiration for this programmable cylinder from the work of Charles Babbage<sup>46</sup> earlier in the nineteenth century. Babbage's research is seen today as the first investigations into computer viability and Babbage himself is viewed as an early pioneer of computer technology.<sup>47</sup> It was in the 1820s that Babbage first contrived to build what he called the Difference Engine, and his career has been charted by Anthony Hyman:

From 1823 to 1833 he had worked systematically on the Government-sponsored project to construct a Difference Engine - and come within an ace of complete success. From 1834 to 1848 he had worked on plans and feasibility studies for the new versatile Engines, and achieved everything that he had set out to do and more. In 1848 and 1849 he had completed plans for a simplified Difference Engine which could certainly have been constructed at the time if finance had been forthcoming.<sup>48</sup>

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<sup>46</sup> Interestingly, from an anecdotal point of view, Babbage was present at the opening of the Liverpool to Manchester railway line, on the day when William Huskisson was killed by Stephenson's Rocket. See Chapter Three.

<sup>47</sup> Anthony Hyman argues that "since the development of the stored-program computer, Babbage's engines have been widely acknowledged and modern pioneers have paid generous tribute to his achievements" (*Charles Babbage: Pioneer of the Computer* (Oxford: Oxford University Press, 1982), p.255.)

<sup>48</sup> Hyman, p.241.

These engines are remarkably similar to Villiers conception of Hadaly's central cylinder, especially with regard to its programming, a novel idea in the nineteenth century when machines were largely operated and controlled by outside influence and very rarely had the capacity to work alone. Ada Lovelace, a colleague of Babbage's, and probably the first computer programmer, worked very closely with Babbage on his engines. Her articles on the subject, as Hyman says, "gave a unique insight not only into some simple mathematical calculations possible with the engine *and how to go about programming it*, but also into Babbage's general views on its powers" [my italics].<sup>49</sup> This aside, electricity was still vital to the android's realism. It powers almost all the machines which animate her physical frame: the disks which allow her to talk, the movements of the iron and steel joints in her limbs, her internal organs, the expressiveness of her face. The electrical force acts, symbolically, as a large and unlimited battery from which Hadaly is brought to life. Electricity is the uniting medium between all the sciences which have gone into the production of the android's being. Edison makes this clear in answering Ewald's question about the metal which shields all of Hadaly's internal workings:

The armor? said Edison. I explained that before. It is the plastic scaffolding on which will be overlaid, penetrating it and *penetrated itself by the unity of the electric fluid*, the fleshly incarnation of your ideal friend. [my italics] (p.79)

Edison is constantly forced to explain the myriad machinations of the android's construction and, from this perspective, Ewald is a very worthy character; constantly

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<sup>49</sup> Hyman, p.196.

questioning Edison's creative process and intelligently arguing his corner. It is in reaction to this demand for answers that Edison changes tactics and begins to defend the realism of his android by more direct comparison with the human female.

Edison begins this defence by relating the harrowing story of a friend who, happily married, became besotted by a dancer, and unable to resist her charms, began to chart a path of decadence and debauchery which led ultimately to his death. As we listen to Edison's story and begin to comprehend the relevance of it, the altered perspective which he brings to his vindication of Hadaly's realism becomes more interesting. In actual fact this definite change of argumentative position is largely reflective of the change encountered in the discussion of the artificial human throughout the nineteenth century. While Edison had begun by exalting science's ability to copy or to recreate human forms and appearances - as Hoffmann and Shelley had done in a somewhat cruder form - he now begins to advance the android's position by reducing that of the human. In arguing that the human is predominantly a construction, an artificial structure, Edison (and Villiers) comes close to the propositions set down by Poe, Dickens and other realist writers during the industrial period, who posited that mankind was increasingly a mechanical being rather than a natural one.

Villiers' approach, though, is not to view the human as the machine but rather to show that the appearance of humanity is a concocted one, one that is made rather than born. To do this he takes the example of Miss Evelyn Habal, the dancer with whom his friend, Edward Anderson, is absorbed:

Certain elegants among her friends had told me (and on their honor!) that this creature was unquestionably the prettiest and most voluptuous little kitten for whom they had ever nourished a secret itch on the face of this earth. Unfortunately (for you see how I am) I didn't recognise in them any authority to express, even in the most tentative form, the opinions that they put before me so positively. Having observed myself the destruction that knowledge of this girl had wrought in Anderson, I frankly mistrusted the round-eyed gaze of these enthusiasts. And so with the aid of a bit of dialectical analysis (that is, not forgetting the sort of man I had known Anderson to be before his disaster, and recalling the strange impressions he had left with me when he talked of his love), I began, let's say, to feel such a remarkable difference between what everyone told me of Miss Evelyn Habal and what SHE MUST HAVE BEEN IN REALITY, that the crowd of her admirers and enthusiasts began to seem like a melancholy collection of ninnies. (p.109)

Immediately the narrative alerts us to the fact that there must be, if Edison is correct, a vital difference between Miss Habal's appearance and her reality. After more thought and research, Edison comes to the conclusion that all the charm which Miss Habal supposedly held is merely illusory, an artificial augmentation to her real character:

It simply *had to be* that they were all dupes of an illusion, pushed to extraordinary lengths, no doubt, but a simple illusion after all. In a word, all the various attractions of this curious creature had been *patched onto* the intrinsic paltriness of her individuality. That, then, was the ravishing deceit, beneath which this absolute nullity of any quality whatever was dissimulated, and this was the fraud that could deceive the first superficial glance of a passer-by. As for the more lasting illusion of Anderson, not only was it nothing unusual, it was actually inevitable. (p.110)

Edison argues that those qualities which seemed to make Miss Habal the very quintessence of beauty, of humanity at its most artistic, are no more than fakery, an elaborate construction of an artificial nature. Miss Habal, essentially, is similar to

Poe's General Smith, little more than "a bundle of something" which imitates the real without possessing it. This argument is proven to be true in a shocking fashion: Edison shows Ewald two films, the first of a "transparent vision [dancing] a popular Mexican dance" (p.117):

Well now, my lord, cried Edison, isn't this a ravishing little girl? Just look at that! All things considered, the passion of my friend Edward Anderson was not inconceivable. What hips! What beautiful blonde hair; really, it's like burnt gold! And that complexion, so pale and yet so warm! Now the curious long eyes! And those little rosy fingernails where the dawn seems to have wept tears of dew, they glitter so brilliantly. And those delicate blue veins, do you see how they glow in the excitement of the dance? The youthful freshness of arms and neck, do you see it? Her pearly smile, her rich red mouth? Those elegant brows of arched gold? (p.117)

The second is markedly different:

A second heliochromic band quickly replaced the first and began running as quick as light before the reflector. On the screen appeared a little bloodless creature, vaguely female of gender, with dwarfish limbs, hollow cheeks, toothless jaws with practically no lips, and almost bald skull, with dim and squinting eyes, flabby lids, and wrinkled features, all dark and skinny. (p.118)<sup>50</sup>

The significance of this, of course, is that they are both films of Miss Habal.<sup>51</sup> The second, as Edison tells Ewald, is the "true one[. . .]the person who was hiding beneath the appearance of the other" (p.118). He concludes:

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<sup>50</sup> There is an astonishing similarity between the description of Miss Habal here and of Victor Frankenstein's "hideous phantasm" in Shelley's novel. It is interesting to note that for Villiers the vile nature of Miss Habal is the real, while for Shelley the monstrous deformities of Victor's creation reflect the artificial. Again this neatly exemplifies the inversion of the images prevalent in the man-machine debate throughout the nineteenth century.

<sup>51</sup> One could certainly criticise *Tomorrow's Eve* as an entirely misogynistic novel when discussing the portrayal of Miss Habal, and, indeed, the female in general. Without doubt Villiers reduces the female character to nothing more than petty affectation. It is not, however, the subject of this thesis and,

When I had assembled these proofs that my unhappy friend had never held in his arms anything but a sad phantom, and that underneath all her paraphernalia the hybrid creature of his passion was as false as his love itself - to the point, in fact, of being nothing but the *Artificial giving an illusion of life*. (p.122)

There is a very distinct relation here between the image of the artificial dancing girl and Fritz Lang's *Metropolis*. The erotic dance of Maria, an artificial construct created by Rotwang, may well have been inspired by Villiers' description (see illustrations on p.154). Certainly the "ravishing little girl" which Edison first shows Ewald has many of the feminine qualities which Lang foregrounds in his film. The dance form, indeed, is an often used device in humanising the artificial. Hoffmann's Olympia is first introduced to society at a ball where her dancing is much admired by Nathanael and Fritz Lang instructs his own robot to dance in an effort to conceal her artificiality. Such a method of disguising the imitative is a result of the predominant view of mechanism, which charges the machine with a lack of fluidity and suppleness. The dance, in contrast, is reflective of an artful athleticism and undermines the claim that any mechanical copy of humanity must be stiff and disjointed. Edison, of course, inverts this argument, linking artificiality to the athletic dancer as opposed to the mechanoid. Indeed, it is largely towards this point that Edison's argument has been heading. Taking a lead from the industrial response to the man-machine debate (in the shape of Poe and Dickens) Edison has, quite convincingly, shown that the human is often as artificial as the android. Edison does

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while related to the material here, is tangential to the general thrust of the argument and is probably best served by a separate piece of criticism.

not see the human as the machine, as did realist writers, but he does agree with them in highlighting the artificiality of the human, doing so by concentrating on the “craft called ‘make-up’” (p.118) which changes Miss Habal from a bloodless dwarf into a creature of beauty.

In drawing the human closer to the android, by bridging the gap between the real and the imitation, Edison gives Hadaly the weaponry with which to defend her status:

Well then, I thought, if the Artificial, when assimilated to or even amalgamated with human nature, can produce such catastrophes; and since, consequently, any woman of the destructive sort is more or less an Android, either morally or physically - in that case, one artifice for another, why not have the Android herself? (p.123)

Such an argument certainly calls into question the nature of humanity itself. Always, the one thing which had remained unique to the human was its ‘humanity’, whatever that elusive quality might be: the soul, animation, consciousness? If, however, the human is also artificial, why is it not possible to see the android as human, a different type of humanity, perhaps, but equally entitled to enjoy that status. There remains, nevertheless, one central difference: the android is synthetic not organic, it is mechanical not biological. This alone, perhaps, separates the human from its artificial counterpart.

There is, though, another aspect of the android’s character which is at odds with its human capabilities. Hadaly is more than just a concordance of mechanical parts, she also exhibits a mysticism which is at odds with her scientific nature.

Edison is at least partly aware of this, as he makes clear to Ewald at the conclusion of his long diegesis on Hadaly's construction:

Note if you will, my lord[. . .]that hitherto I've only given you explanations, more or less conclusive, for certain preliminary physical problems presented by Hadaly. But I warned you that various other phenomena of an altogether different and superior order would manifest themselves in her - and it was there and only there that she became EXTRAORDINARY! (p.157)

Ewald needs this clarified:

-You're not speaking of electric current, are you?  
-No, my lord; it is another sort of current which is now acting on the Android at this very moment. One experiences its actions without being able to analyse it. (p.157)

What Edison is "speaking of" is a psychic influence, perpetrated by Sowana, a spirit medium whom Edison is caring for in his laboratory, and who has been present in the narrative from the beginning without ever revealing, to the reader at least, her nature.<sup>52</sup> Psychic phenomenon works within the narrative in a similar way in which mesmerism had worked in Hoffmann's short tales: providing not so much an opposing force to science, for it is a science itself, but an alternative window of perception from which to view the artificially created human. Sowana attempts to explain to Lord Ewald the role this phenomenon plays in the creation of Hadaly:

I am envoy to you from these limitless regions whose pale frontiers man

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<sup>52</sup> This represents yet another point of comparison between *Tomorrow's Eve* and *Metropolis*. Rotwang, like Sowana, exerts a psychic, or perhaps mesmeric, influence upon Maria in order to entice her to his laboratory whereupon he makes his artificial human in her likeness.



can contemplate only in certain reveries and dreams[. . .]. I called myself into existence in the thought of him who created me, so that while he thought he was acting of his own accord, he was also deeply, darkly indebted to me. Thus, making use of his craft to introduce myself into this world of sense, I made use of every last object that seemed to me in any way capable of drawing you out of it. (p.198)

As discussed earlier in this chapter the inclusion of psychical incidents does not remove the narrative to the genre of the fantastic, more so it reinforces the science fiction. This is certainly the case here, for psychical research was a topic of great scientific interest in the 1880s. The Society for Psychical Research had been founded in 1882, although many of its original members had been working in the field for some time. Henry Sidgwick and Frederick Myers, its founders, had met at Cambridge in 1859, where they had begun their long association with such phenomena. The aims of the Society for Psychical Research were very straightforward, their general remit being “an examination of the nature and extent of any influence which may be exerted by one mind upon another, apart from any generally recognised mode of perception”.<sup>53</sup> These examinations, too, were to be carried out under the strictest conditions:

The aim of the Society will be to approach these various problems without prejudice or prepossession of any kind, and in the same spirit of exact and unimpassioned enquiry which has enabled science to solve so many problems, once not less obscure nor less hotly debated.<sup>54</sup>

This may seem more of a defence of the Society’s practice than a guideline, which would not be at all surprising. Much like the mesmerism of Hoffmann’s short

stories, psychical research came under immense criticism from the scientific community, many of whose members believed an interest in the spiritual was no proper foundation for scientific inquiry. This clash of beliefs, indeed, had come to a fulcrum some years before the Society for Psychical Research was formed. In 1876 Henry Slade, a purported spiritual medium, was put on trial for fraud. His main accuser was Edwin Ray Lankester, a zoologist. As Richard Milner has shown:

The Slade trial was to become one of the strangest courtroom cases in Victorian England. Some saw it as a public arena where science could score a devastating triumph over superstition.[. . .]But what made the trial unique was that the two greatest naturalists of the century ranged themselves on opposite sides. The “arch-materialist” Darwin gave aid and comfort to the prosecution, and his old friend Wallace, a sincere spiritualist, was to be the defense’s star witness - making it one of the most bizarre and dramatic episodes in the history of science.<sup>55</sup>

Psychical research, then, was not fighting a lonely battle. Several leading scientists were sympathetic to its claims, and many were later to become members of the new Society for Psychical Research. Certain scientific journals, too, had some sympathy and respect for the work being done by psychical researchers. *Science*, for example, was impressed by a paper given by Mrs. Henry Sidgwick in 1886:

Mrs. Sidgwick’s paper was candid and able, and dealt with evidence, not theories. It is one more example of the good work being done by the Society for psychical research [sic] in determining just what basis there is for the multitude of current beliefs concerning certain classes of psychical and semi-psychical phenomena.<sup>56</sup>

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<sup>53</sup> W.H. Salter, *The Society for Psychical Research: An Outline of its History* (London: Society for Psychical Research, undated), p.13.

<sup>54</sup> Salter, p.13.

<sup>55</sup> Richard Milner, ‘Charles Darwin and Associates, Ghostbusters’, *Scientific American*, October 1996, 72-77 (p.72).

It could certainly be argued that Hadaly is, *completely*, the creation of science, an entirely scientifically created artificial human, despite the fact that the forms of science utilised in this creation were, historically, at odds with each other. This again makes Villiers' android unique. While in Hoffmann's tales mesmerism affected not the artificial humans but the central protagonists in *Tomorrow's Eve* it is the android who is animated by both spiritualism and mechanism, not, say, Lord Ewald who is fooled into thinking Hadaly realistically human by the force of some psychic phenomena working upon his judgement.

The facts in the trial of Henry Slade, though, are revealing in the light of the claims made for psychic ability in the novel and, together with the cases investigated by the Society for Psychical Research, make it clear that *Tomorrow's Eve* is reliant not upon fantasy but upon scientifically investigated fact. Slade, it is reported, "had come to London 'to prove the truth of communication with the dead.' Slade claimed that his wife's spirit wrote him messages on slates".<sup>57</sup> He certainly appears to have convinced many of the truth of this assertion, as witnesses for the prosecution exemplify. Alexander Duffield, a chemist, told the court that "there could be established a sort of post office in connection with the other place",<sup>58</sup> while Alfred Russell Wallace considered Slade "to be an honest gentleman, 'as incapable of an imposture[. . .]as any earnest inquirer after truth in the department of Natural

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<sup>56</sup> 'Mrs. Sidgwick and the Mediums', *Science*, 7, (176) (1886), 554-555 (p.555).

<sup>57</sup> *Science*, p.74.

<sup>58</sup> *Science*, p.75.

Science””.<sup>59</sup> Despite such character witnesses, Slade was found guilty and sentenced to hard labour, a verdict later overturned on a technicality of law. This near escape, though, did not deter him from his spiritualism and, having fled to Germany:

Within a short time, Slade had convinced his landlord, a local conjurer, the chief of police and several prominent German scientists (including the physicist Johann Zollner of the University of Leipzig) that he was in contact with spirits and various paranormal forces.<sup>60</sup>

Slade is no anomaly among the cases of psychic phenomena which the Society for Psychical Research investigated throughout the last two decades of the nineteenth century. The “mysterious rappings evoked by Kate and Margaret Fox in New York”<sup>61</sup> inspired the first seances and the work of mediums; Doris Fisher, another American, manifested many personalities, one with “undoubted telepathic abilities” and another who claimed to be “a guardian spirit”.<sup>62</sup> The list could continue indefinitely.

Sowana, the spirit infecting Hadaly, is definitely from a source similar to these examples of spiritual influence. The connections are revealed in her attempt to explain the nature of her appearance to Lord Ewald:

This living ether is a region without limits or restrictions within which the privileged traveller, as long as he remains there, feels able to project within the intimacy of his temporal being the shadowy harbingers and dark anticipations of the creature he will someday become. An affinity is thus established between his soul and these beings, still in the future

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<sup>59</sup> *Science*, p.75.

<sup>60</sup> *Science*, p.76.

<sup>61</sup> Seymour H. Mauskopf and Michael R. McVaugh, *The Elusive Science: Origins of Experimental Psychical Research* (London: John Hopkins University Press, 1980), p.2.

<sup>62</sup> Mauskopf, p.16.

for him, of the occult regions bordering on that of the senses. The path joining these two kingdoms leads through that domain of the Spirit which Reason - laughing and exulting in those heavy chains of hers, which triumph here but for an hour - calls, in hollow disdain, MERE IMAGINATION. (p.195)

Sowana clearly understands that science, what she calls “reason”, cannot view the spiritualists’ claims with any degree of objectivity. Instead they find them laughable and treat them with “hollow disdain”. But this does not stop her attempting to convince Ewald of the authenticity of her presence, as she attempts to convey the nature of the spiritualist plane and its allegiance with the natural world. This allegiance seems to be upheld by an “affinity”, between the soul of a “creature” from the earthly kingdom and the spirit itself. This is certainly representative of the mediums which psychical research investigates - such as Henry Slade - and places Sowana within the category of paranormal phenomena. Edison, always thoroughly scientific, capitulates with the view that there is a force other than known science at work within his android. He admits as much to Ewald in stressing the ambiguous criteria by which Hadaly functions:

For, I must make this point very clear to you, *not everything about this creature is an illusion!* It is really an unknown creature, it is actually the Ideal, in real truth it is Hadaly who has appeared to you, though behind those veils of electric machinery, beneath this silver armor which imitates a human woman. You must always recall that, though I know Mrs. Anderson, *I swear to you on my soul THAT I DO NOT KNOW SOWANA.* (p.211)

Edison does attempt to rationalise Sowana’s existence, however, by concocting a theory in which the spiritualist force is merely one of the unknown effects of

electrical force, or at least is in some way related to it: “why shouldn’t I hypothesise a third sort of current, a mixed current, which combines the electrical and the nervous energies” (p.213). Understanding that this is a rather weak argument, Edison eventually desists, admitting that he has no real conception of Sowana’s being, from a scientific viewpoint, which will clarify the nature of Hadaly. He can say only that:

I have furnished the physical basis for her illusions, a Soul which is unknown to me has passed over my work and, incorporating itself there forever, has laid her hand on the slightest details of those superb and inspiring scenes, imposing on them, believe me, an art so subtle that it surpasses, in all truth, the reach of human imagination. Within this new work of art a creature from beyond the reach of Humanity has insinuated herself and now lurks there at the heart of the mystery, a power unimagined before our time. (p.216)

Edison’s comparison of the spirit Sowana with the soul, and the appearance of this force in Hadaly, raises parallels with Mary Shelley’s *Frankenstein*. Shelley fought with the nature of her artificial human without ever coming to any definite conclusion over the existence of a soul. Here Villiers enters the same debate. Does the presence of Sowana - who so affects the actions of the android - imply the existence of a soul, or merely of a principle unknown to nineteenth century science? Edison clearly believes it to be the former:

I can conclude that it has not resulted in an empty or lifeless imitation. A soul has been added to it, or so we may say, giving its own qualities to the voice, the gestures, the intonations, the smile, the very pallor of the living woman who was your love. (p.216)

Certainly seeing the spirit Sowana as a soul would not be out of step with the beliefs of psychic researchers at this time. William James, the founder of the American branch of the Society for Psychical Research, accords with Edison's view:

The theory of the Soul is the theory of popular philosophy and of scholasticism, which is only popular philosophy made systematic. It declares that the principle of individuality within us must be *substantial*, for psychic phenomena are activities, and there can be no activity without a concrete agent. This substantial agent cannot be the brain but must be something *immaterial*; for its activity, thought, is both immaterial, and takes cognizance of immaterial things, and of material things in general and intelligible, as well as in particular and sensible ways - all which powers are incompatible with the nature of matter, of which the brain is composed. Thought moreover is simple, whilst the activities of the brain are compounded of the elementary activities of each of its parts. Furthermore, thought is spontaneous or free, whilst all material activity is determined *ab extra*; and the will can turn itself against all corporeal goods and appetites, which would be impossible were it a corporeal function. For these objective reasons the principle of psychic life must be both immaterial and simple as well as substantial, must be what is called *a Soul*.<sup>63</sup>

Henry Myers is in accordance with James, as Alan Gould reveals: "Myers is also inclined to regard cases of 'travelling clairvoyance' or 'telepathic clairvoyance' as evidence that our bodies are animated by a separable spiritual principle or soul".<sup>64</sup> While it would be less complex to simply believe that Villiers intended to give Hadaly a soul by including Sowana, and thereby construct an android which was entirely human, William James does not rest with the conclusions he came to above.

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<sup>63</sup> William James, *Principles of Psychology* (London: Macmillan, 1890) repr. in Gardner Murphy and Robert D. Ballou (eds.) *William James on Psychical Research* (London: Chatto and Windus, 1961), pp.242-243.

<sup>64</sup> Alan Gould, *The Founders of Psychical Research* (London: Routledge and Kegan Paul, 1968), p.303.

Although initially defending Edison's view of the spiritualist principle as being representative of the existence of a soul, he also calls it into question:

One great use of the Soul has always been to account for, and at the same time to guarantee, the closed individuality of each personal consciousness. The thoughts of one Soul must unite into one self, it was supposed, and must be eternally insulated from those of every other Soul. But we have already begun to see that, although unity is the rule of each man's consciousness, yet in some individuals, at least, thoughts may split away from the others and form separate selves. As for insulation, it would be rash, in view of the phenomena of thought-transference, mesmeric influence, and spirit-control, which are being alleged nowadays on better authority than ever before, to be too sure about that point either.<sup>65</sup>

Ironically the very phenomena which, for some, did most to defend the existence of a human soul are also, according to James, the same phenomena which make its presence dubious. Here, the very processes - "thought transference" and "spirit control" - which most clearly define *Sowana* are those which threaten the perceived view of the soul as the harbinger of individual consciousness. *Tomorrow's Eve*, therefore, does little to disentangle the problems with which Mary Shelley wrestled in *Frankenstein*. Still, the presence of the soul is a matter of argument and perspective: in *Frankenstein* it was between the romantic and the materialist positions of electricity, in Villiers' account (with electricity seen only as an aspect of natural rather than supernatural forces) it is between the defenders and sceptics of psychical events, as well as between the beliefs of those who already accept such phenomena.

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<sup>65</sup> Murphy and Ballou, p.249.



Whether Hadaly does have a soul and is thereby human, or is infused by a being or force outwith the rationale of contemporary scientific thought, is not a question that is fully answered by Villiers. The narrative does suggest, however, that the android is of a different nature altogether, neither a mere automaton nor reflective of the human. The nature of this alien being is as much a mystery to Edison as it is to the reader, as he says to Ewald, “well, in fact, I hardly know myself” (p.148). It is possible, though, to go some way towards defining this ‘otherness’.

Defining Hadaly within the context of Baudrillard’s hierarchical categories of simulacra, it is readily apparent that Edison’s original conception of the android corresponds with the first order. Just as Victor Frankenstein founded his creature on a natural image of humanity so too does Edison - at least in the first half of the novel - see Hadaly as a harmonious and optimistic figure who would become “the ideal institution of nature made in God’s image”. Again like Mary Shelley’s novel, however, the completed artificial human does not correspond to such a utopian ideal. Rather, Hadaly is more fully described by Baudrillard’s second order, just as Frankenstein’s creature had been. Where these two differ is in the extent to which this second order provides a complete definition of their nature. Whereas Mary Shelley’s “hideous phantasm’ was aligned with some of Baudrillard’s criteria, L’Isle-Adam’s Hadaly reflects them all. Villiers’ android is founded on the energy of electrical force, which does not merely provide initial animation but controls the inner system of Hadaly’s complex physical form. She is productivist, too, and highlights a “continuous globalisation and expansion” within the “whole system of

production". Edison admits this himself when he hints to Ewald that Hadaly could well be the first in a long line of similarly produced androids, the first of "thousands and thousands of completely innocent facsimiles" (p.164). Of course, Victor Frankenstein's creature also complies with these criteria, even though the means to reproduction are procreative rather than imitative. Hadaly, nevertheless, goes further still: while Frankenstein's creature is created in an environment of investigation and hubristic optimism, Villiers' android is brought to life not only through the Promethean character of Edison but also by Lord Ewald's desire. His inability to distance himself from Miss Alicia Clary is the result of his strong sexual desire for her, despite the pretensions of her character which he cannot abide. Desire plays a large part in all of the artificial constructions in the novel. Not only is Ewald a slave to his desires but the dancer which Edison reveals to Ewald has all of her power invested in her ability to induce desire in those watching her. Indeed it is desire which brings about the demise of Miss Habal's lover and which Edison proves to be of an artificial nature, created from make-up and other physical accoutrements. Both Hadaly and the dancer, then, are objects of desire and, more than this, are artificial objects of desire. "Desire", as Baudrillard reveals, is a vital component of the second order of simulation, related to the "utopias" which this order encapsulates.<sup>66</sup> It is this aspect of Hadaly's creation which so enthrals Ewald. His compliance with Edison's attempts to recreate Miss Alicia Clary comes about solely in response to the fulfilment of desire (both sexual and social) which he hopes the artificial human will ultimately bring.

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<sup>66</sup> Baudrillard, p.121.

Hadaly, therefore, is defined more certainly by Baudrillard's second order of simulacra than any of the artificial humans previously encountered. She stands not as a reproduction or imitation but as a "simulacrum", revealing an apparent connection with the human by appearing in that form but actually reflecting a different type altogether. Despite the presence of Sowana, and perhaps that of the soul, Edison's android is not 'real', not human. Rather Hadaly is the most sophisticated simulation of the human that science fiction has produced to date. Whereas Hoffmann's Olympia and the Talking Turk do not even reach the stage of simulation, but are mere imitations, and Mary Shelley's creature sits uneasily between Baudrillard's first two orders, Villiers' android - created upon the same principles as these previous artificial humans but utilising the more advanced sciences of the late nineteenth century - is less easily recognisable as an imitation of the human. Indeed, in *Tomorrow's Eve* it is only by looking beneath the surface of the image that we discover the human is being simulated rather than recreated. By, in a sense, delving beneath Hadaly's armour, to find the machinery below.

Of course this machinery is not only the wide range of mechanical parts which provide Hoffmann's automata with some form of human movement. Hadaly's machinery, those aspects of her nature which set her apart as a simulation of the human, include the existence of the spiritual Sowana as well as the many gears and levers beneath her synthetic skin. Hadaly is a simulacrum because, courtesy of these differences, she has no human template. Miss Alicia Clary may provide an origin for her form but not for her consciousness. This works without the real, without any human original with which it can compare.

Such a construction reveals a subtle irony; while Hadaly is certainly superficially more human due to the influence of Sowana she is also more alien. Sowana gives the android the gloss of humanity but, especially when set against Baudrillard's theories, it also distances her from the human. It is still possible to recognise that Edison's android is different, a form of 'other'. Beneath the veneer of humanity Hadaly is still artificial, her mechanical and mystical existence is still apparent.

By the time, however, we reach the replicants of Philip K. Dick's *Do Androids Dream of Electric Sheep?*, this is no longer a possibility. Uncovering their inner workings we find only our own structure reflected back. This organicism disallows a ready rejection of a mechanistic 'otherness' and presents new problems, not only in determining the nature of the android but in redefining what it means to be human.

**A Weird and Convoluted Type:**  
**Man and Machine at the Edge of Chaos in**  
***Dick's Do Androids Dream of Electric Sheep?***

The androids of Philip K. Dick's *Do Androids Dream of Electric Sheep?* descend directly from the artificial human in L'Isle-Adam's *Tomorrow's Eve*. It is not, however, a simple progression from one to the other, for there are many examples of automata, robots, cyborgs and machine-men in the fiction written during the eighty years which separate these two texts. During the modernist period in particular, mechanical consciousness is often regarded as a malign force: a symbol of death (both physical and mental) and a dangerous enemy of democracy. While this may not be a literary attitude which we would find at all surprising in the aftermath of the Great War (1914-1918), which dramatically reinforced the destructive capacity of the machine and of science in general,<sup>1</sup> there are substantial signs that such a pessimistic view of the artificial human is also prevalent in fiction written prior to these significant dates. Oscar Wilde's rhythmical verse 'The Harlot's House'<sup>2</sup> - which was written just prior to L'Isle-Adam's novel - presents a very negative portrait. The dancers which the narrator sees through a veiled window are at first

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<sup>1</sup> The widespread use of many forms of science and of machines, from a simple rifle through the various chemical weaponry (mustard gas, etc...) to larger land mines and thrown grenades (either from the human hand or the cannon) which wreaked havoc on the human participants of the Great War, brought vividly home the fact that human technology had a greater destructive capacity than had previously been thought possible. This was, of course, only to grow more apparent in the Second World War with the discovery of atomic fusion and the atom bombs which were dropped upon the Japanese cities of Hiroshima and Nagasaki.

<sup>2</sup> Oscar Wilde, 'The Harlot's House', *The Complete Works of Oscar Wilde* (London: Hamlyn, 1963), pp.694-695 . This edition is used throughout.

“like strange mechanical grotesques” (stanza 3) and later - in a dance reminiscent once more of Lang’s *Metropolis* - “like wire-pulled automatons” which go “sliding through the slow quadrille” (stanza 5). Unlike Lang or even L’Isle-Adam, Wilde highlights the inhuman, mechanistic stiffness of the dancers rather than the fluid beauty exemplified by Maria. More than just grotesque, the automata residing in the Harlot’s House are horrific, associated with the living dead of Romero’s zombie films rather than the glorification of Adam’s divine creation:

Sometimes a horrible marionette  
Came out, and smoked its cigarette  
Upon the steps like a live thing.

Then turning to my love I said,  
‘The dead are dancing with the dead,  
The dust is whirling with the dust.’

(stanzas 8 and 9)

Wilde’s entire vision of the automaton is one of soullessness, of vacuity, infertility and death. The tone, however, is dismissive rather than fearful, derogatory as opposed to portentous.

E.M. Forster’s ‘The Machine Stops’,<sup>3</sup> written just before the advent of the Great War, is a far darker narrative than Wilde’s. This dystopian tale<sup>4</sup> depicts a world of subterranean human existence controlled by a vast machine acting as the self-appointed ‘brain’ of the human race. Forster is influenced both by Villiers’

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<sup>3</sup> In E.M. Forster, *Collected Short Stories* (London: Penguin, 1954), pp.109-146. This edition is used throughout.

approach to the artificial human and by the method of Poe and Dickens. The narrative at one level dehumanises the central characters while, at another, it humanises the machine. Kuno, who distrusts the control which the machine exerts, compares its creation to the creation of man, telling Vashti that she talks “as if a god had made the machine” (p.110). Vashti goes further than this, worshipping the machine as if it were divine:

Sitting up in bed, she took it [the Book of the Machine] reverently in her hands. She glanced around the glowing room as if someone might be watching her. Then, half ashamed, half joyful, she murmured ‘O Machine! O Machine!’ and raised the volume to her lips. Thrice she kissed it, thrice inclined her head, thrice she felt the delirium of acquiescence. (p.114)

Both god and creation of god, the machine is the only frame of reference for the humans who come under its influence. Even the shadowy Committee of the Machine, which should ostensibly be a human decision-making body, is not represented by any figurehead, giving the impression that it is merely another part of the Machine’s wide influence. The most vivid personification of the Machine, however, occurs when Kuno makes a forbidden trip to the earth’s surface. Believing him to be on the verge of escaping, the Machine takes action:

Out of the shaft - it is too horrible. A worm, a long white worm, had crawled out of the shaft and was gliding over the moonlit grass. I screamed. I did everything that I should not have done, I stamped upon the creature instead of flying from it, and it at once curled round the ankle. Then we fought. The worm let me run all over the dell, but

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<sup>4</sup> Forster himself says that the story was written as “a reaction to one of the earlier heavens of H.G. Wells” (‘Introduction’, *Collected Short Stories*, p.6).

edged up my leg as I ran[. . .]Then my feet were wound together, I fell, I was dragged away from the dear ferns and the living hills, and past the great metal stopper. (p.133)

No longer a system of mechanical parts, the Machine is organically defined, linked to the biological world rather than the synthetic. While the Machine is awarded an animal existence, the human protagonists are viewed as increasingly mechanistic: any sense of community is long forgotten, sexual relationships are mere “carnal acts” (p.131) and immoral actions are “unmechanical” (p.119).

T. S. Eliot’s ‘The Waste Land’<sup>5</sup> similarly reflects the dehumanisation of mankind. The population of London is a degenerate “human engine[. . .]like a taxi throbbing” (ll.216-217) and the “typist home at tea” (l.222) treats a brief sexual liaison as the carnal act which Forster describes. Bereft of emotion she is “hardly aware of her departed lover” (l.250), only “glad its over” (l.252), returning to pacing her room alone and smoothing her hair “with automatic hand” (l.255). Eliot’s vision of the machine-man is of spiritual and imaginative death, of hopelessness and infertility. Indeed the citizens of Eliot’s London are undeniably automata. The image of each man fixing “his eyes before his feet” (l.65) as he trudges to work is a direct transposition of the opening scene of *Metropolis*, of production-line economics of the type which Henry Ford was introducing to his own manufacturing industry.

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<sup>5</sup> T.S. Eliot, ‘The Waste Land’, *The Complete Poems and Plays of T.S. Eliot* (London: Faber, 1969), pp.59-80. This edition will be used throughout.



Huxley's *Brave New World*<sup>6</sup> uses the symbol of Ford's production methods to denote the year zero of his alternative reality. In the year A.F. 632 (632 years after the inception of the Model T motor car) humanity is constructed on a regulated basis which produces "standard men and women; in uniform batches" (p.23). Every member of the human race has had all their characteristics determined by such processes: intelligence, strength, beauty, even sexual orientation. Huxley's Fordians are more complex, then, than mere automata. 'Artificial' humans in a logical sense, for their humanity is artificially designed, they are of a different nature to the scientifically created artificial humans of previous science fiction narratives. Although a product of sophisticated technological procedures, they are formed biologically through the natural process of gestation.<sup>7</sup> Huxley provides an amalgam of the mid-nineteenth century machine-man and the SF android: his future humans are both crafted and natural.

Within the confines of the narrative world, however, the inhabitants of *Brave New World* are not the alienated individuals that we may expect them to be. While Olympia, Frankenstein's creature and Hadyly are all 'other', set apart from society by their difference, the entire society of *Brave New World* is 'other'. A lack of individuality, a reduced sense of the subjective self is not an 'alien' state of affairs but the norm. Indeed the opposite applies; individual freedom is mocked and feared.

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<sup>6</sup> Aldous Huxley, *Brave New World* (London: Harper Collins, 1977). This edition of the text will be used throughout.

<sup>7</sup> Comparisons could be made between *Brave New World* and *Frankenstein*. Both Huxley's artificial humans and Shelley's creature are organic and consist of human bones, organs, etc.. Nevertheless, Victor Frankenstein's creation is still brought to life by a scientific process, not a natural one and experiences none of the processes which go into the creation of a human adult (childhood, learning, etc...) as do Huxley's.

The savage - one of a few characters not genetically altered prior to birth - is the outsider, the symbol of difference. His lack of a mechanised, created character sets him apart from society and ultimately drives him to suicide. Huxley's novel reveals the arbitrariness of human characteristics and calls into question the whole definition of the 'human'. The savage is 'inhuman', the monster, a "hideous phantasm" from the same mould as Frankenstein's creature. Nevertheless the novel does not ennoble the engineered humans. The symbols of death and infertility which Wilde and Eliot use are still apparent. The foetus laboratory is "pallid", "corpse-coloured" and "frozen" (p.19) while the conveyor belts full of embryos creep forward "with their load of future men and women" (p.47).<sup>8</sup>

Similarities can be seen between Huxley's novel and Wells' earlier scientific romance, *The Island of Doctor Moreau*<sup>9</sup> (1896). Although Moreau's work is conducted on animals, his engineering of their physical and mental states can be profitably compared to the chemical alterations which take place in the foetal laboratories in *Brave New World* and to the hypnotic effects which influence the young children during their sleeping hours. For the most part, too, the ambivalence of the world After Ford is foreseen by Wells' narrator, Prendick, who does not entirely condemn the Beast Men created by Moreau's extremist vivisection. For the majority of the novel, Wells does appear to take the same position on the unnatural humanity of the Beast Men as early modernist writers were to do with the artificial human. Prendick describes them as "unnatural" (p.35) or "diabolic" (p.35) and the

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<sup>8</sup> This image is again similar to the opening scenes of Fritz Lang's *Metropolis* (1926) where we witness the slow movements of thousands of workers into and out of the industrial factories.

references to their bestiality are commonplace. Moreau himself is a Frankensteinian figure in a particularly Frankensteinian pursuit, endlessly torturing living material to satisfy his hubristic ideal of creation. He succeeds only in creating “grotesque caricatures of humanity” (p.57) which “may once have been animals” (p.67) but are now “trying to think” (p.67). Prendick slowly changes his attitude, however, and begins to feel more compassion than revulsion for the Beast Men. He begins to agree more with Montgomery who “had come to regard them as almost human beings” (p.81), especially when set against some of the human characters he encounters on his sea voyages: “He hardly met the finest type of mankind in that seafaring village of Spanish mongrels. The man aboard ship, he told me, seemed at first just as strange to him as the beast Men seemed to me” (p.81). Indeed by the conclusion of the narrative, human society has been tainted forever for Prendick by his association with the Beast Men. Like Gulliver, Prendick could not persuade himself “that the men and women I met were not also another, still passably human, Beast people, animals half-wrought into the outward image of human souls” (p.128).

The ambiguities of *Brave New World* and *The Island of Doctor Moreau*, where the notions of humanity and artificiality are not easily defined or definable, moves the debate on the nature of the artificial human closer to Philip K. Dick’s late twentieth century appraisal of the real and the unreal. Karel Capek’s *R.U.R.*,<sup>10</sup> however, which represents the first use of the word ‘robot’ and concentrates

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<sup>9</sup> H.G. Wells, *The Island of Doctor Moreau* (London: Everyman, 1994). All references in the text are to this edition.

<sup>10</sup> Karel Capek and Josef Capek, *R.U.R. and The Insect Play* (London: Oxford University Press, 1969). This edition, which includes a play written by Karel Capek with his brother, will be used throughout.

specifically on the scientific creation of the artificial human as defined by Hoffmann, Mary Shelley and L'Isle-Adam, is another important text in contextualising *Do Androids Dream of Electric Sheep?*

Capek's play, first published in Czech but translated into English only a few years later, is more widely recognised by critics for its contribution to the English language of the word 'robot' than for its literary content. Many works of science fiction criticism, for example, take care to mention Capek's coining of the term but very few delve into the intricacies of his work. The play itself tells the story of Rossum's Universal Robots (hence the acronymic title), a company who transport their mass-produced robots all over the world. A scientist working for Rossum's alters the formulae used in the creation of the robots in an attempt to give them a soul and the effect of this is to cause a robot revolt which annihilates humanity. Having conquered the human race, however, the robots find themselves facing extinction, unable to recreate the formulae which brings them into existence. The one surviving human is set the task of re-discovering this secret, a job he is singularly unable to do. The final scene of the play, though, suggests that his attempts may be superfluous. Helena and Primus, two robots who appear somewhat different from their fellows are symbolised as a modern Adam and Eve, whose destiny it is to begin the procreation of a new species.

The constitution of the robots is primarily organic, as a short history of their creation intimates:

It was in the year 1922 that old Rossum the great physiologist, who was then

quite a young scientist, betook himself to this distant island for the purpose of studying the ocean fauna, full stop. On this occasion he attempted by chemical synthesis to imitate the living matter known as protoplasm, until he suddenly discovered a substance which behaved exactly like living matter, although its chemical composition was different. (p.5)

This, however, is as far as Capek goes in describing the process of robot construction, leaving the operation shrouded in mystery. The mysticism common to science fiction concerned with the creation of artificial man is also present here, although it is of a gentler, less specific form. Old Rossum makes his discovery on a “distant”, and unnamed, “island” and the “substance” at the centre of his search for life is come across almost by accident while researching something else. Domain adds to this aura of esotericism by pointing out that “the manufacture of artificial people is a secret process” (p.3) open only to a select few, an elect somewhat akin to the secret society tradition. Secrecy and mysticism are not the only comparisons that can be made between *R.U.R.* and previous narratives of science fiction. Indeed, Capek’s vision of the robot-making business might be seen as an extension of Edison’s remarks upon Hadaly: that she is merely the first prototype, the original in a long line of artificial humans which will be mass-produced. Young Rossum brings this to fruition, creating simple “worker” robots which are exported world-wide. Rossum’s Universal Robots is the very essence of Edison’s dream, a production line which creates “a thousand Robots at one operation” (p.15) where, in a statement once more influenced by Henry Ford’s mechanised production technique, “all the parts are put together, like motor cars” (p.15).

Capek also investigates the existence, or otherwise, of the soul, always a contentious element in the creation of the artificial human. At the beginning of the play the robots are exact replicas of the human frames on which they are based, but the physical comparison is not paralleled by their mental capacity. The human characters are able to instruct and order their every move. When the formula which creates them is altered, however, and the emergence of a soul is the consequence of this, the Robots lose their unquestioning subservience and become dangerous foes. This portrayal of the artificial human is one wholly negative and at odds with the practical, useful function which the robots served in their previous incarnation. It is not until they are humanised, or at least take on human characteristics, that the robots become malign. The inanimate machine, suggests Capek, is not the danger. Nor indeed is the thinking machine. It is the humanised machine, the machine which disguises its difference from the human, or which reveals the difficulty in determining the oppositions between the real and the imitation, which is most menacing. Radius, one of the robots who revolts against his human masters, is examined by a scientist, Dr. Gall. He concludes, "I don't believe the rascal is a Robot at all now" (p.47) and admits that this metamorphosis is his fault:

I changed the character of the robots. I changed the way of making them. Just a few details[. . .]. I did it in secret[. . .]by myself. I was transforming them into human beings. I gave them a twist. In certain respects they're already above us. They're stronger than we are[. . .]They've ceased to be machines. They're already aware of their superiority, and they hate us. They hate all that is human. (p.70)

Even the Robots find this new role difficult to come to terms with. As Radius explains to Alquist towards the end of the play:

We were machines, Sir. But terror and pain have turned us into souls. There is something struggling with us [sic]. There are moments when something enters into us. Thoughts come upon us which are not of us. We feel what we did not use to feel. (p.95)

Despite symbolising the robots as the most dangerous artificial humans encountered in the narratives of the nineteenth century,<sup>11</sup> R.U.R.'s conclusion is optimistic. Primus and Helena are a new Adam and Eve, the devastated world of human civilisation an Edenic paradise. The humanising process which has concerned both man and machine becomes a hopeful symbol of regeneration and renewal. For this to be the case, however, both Primus and Helena are relieved of the original sin of their fellows. They appear not as altered robots, but of a different constitution. Neither mechanical nor human, they are an 'other', a new, evolved and sophisticated form. Whether this evolution is a product of their humanity or their artificiality is unknown, and does not appear to matter. The distinction between the natural and the designed is hidden and, as Capek infers, of no consequence.

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<sup>11</sup> Both Hoffmann's automata and Shelley's creature do cause harm to certain individuals. However, there is no sense in any of these narratives that the danger is a general one. Always it is directed to specific human figures: Nathanael, Ferdinand, and the family of Victor Frankenstein. While Frankenstein's creature especially can be viewed as a dark, destructive force he is reviled more for his artificial nature (as I have argued) than for any basic malevolence toward humanity. The novel defends this view, with even the creature himself proclaiming that he wished ill only on the family of his creator rather than on the population at large.

### **Philip K. Dick's *Do Androids Dream of Electric Sheep?***

Written and published in 1968, some three to four decades after Huxley's dystopian and Capek's ultimately utopian vision of the future, Philip K. Dick's *Do Androids Dream of Electric Sheep?*<sup>12</sup> concurs with many of the images of the artificial human put forward in the early twentieth century. The Nexus-6 androids (renamed replicants in the film *Blade Runner*,<sup>13</sup> to which I will also make reference) represent a great danger to the human population and in particular to Rick Deckard, bounty hunter and the novel's central protagonist. Like Capek's robots these artificial beings are in many ways superior to their human counterparts: with greater physical strength and the capacity for a much more refined intelligence. Like Capek's robots they are emotionally immature and somewhat fearful of their own nature, a concept which is central to their characterisation within the novel. *Electric Sheep* does not only engage with the scientifically created artificial human. Many of the human characters have cause to question their own mode of existence and differentiate between the real and the imitation. In this way the novel enters the debate from the

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<sup>12</sup> Philip K. Dick, *Do Androids Dream of Electric Sheep?* (London: Harper Collins, 1972). This version will be used throughout and will hereafter be abbreviated as *Electric Sheep*.

<sup>13</sup> *Blade Runner*, an adaptation of Philip K. Dick's novel, was written by Hampton Fancher and David Peoples and directed by Ridley Scott. The original version of this film was released in 1982, though I will concentrate on Scott's 'Director's Cut' which was released some years later.



same premise as many nineteenth century realist writers, and from this point of view the novel encapsulates the many and varied avenues of approach into the debate and attempts to conjoin the scientific creation of the artificial human with the scientific dehumanisation of mankind, which stand as the two most important positions from which to view the man-machine dichotomy. It makes a great deal of practical sense, then, that *Electric Sheep* is the final text to be discussed in this thesis as it goes some way towards illuminating those questions which the previous chapters have not always fully answered.

From a narrative standpoint *Electric Sheep* is somewhat different to Hoffmann's tales, Mary Shelley's *Frankenstein* and L'Isle-Adam's *Tomorrow's Eve*. Unlike these other narratives it does not display the balance of science and mysticism which characterises the science fiction text. There is no obvious esoteric background to the central plot such as Hoffmann's mesmerism, Shelley's gothicism and romantic science, or L'Isle-Adam's psychical influences. Instead Dick employs another technique, one common to utopian fiction,<sup>14</sup> which sets his tale in a shadowy future largely different from our own present but containing enough cultural references for us to be aware that it is our future he is presenting. Hence the world of the novel is set in a large metropolis which is itself a piece of twentieth century history. This city remains stagnant, preserved almost exactly as it would have looked in the late 1960s, although in a state of immense disrepair. An early description captures this sense of familiarity and difference:

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<sup>14</sup> See, for example, the narrative techniques employed in Huxley, *Brave New World*; Edward Bellamy, *Looking Backward, 2000-1887*, ed. by John L. Thomas (Cambridge, Mass.: Belknap Press,

In a giant, empty, decaying building which had once housed thousands, a single TV set hawked its wares to an uninhabited room.

This ownerless ruin had, before World War Terminus, been tended and maintained. Here had been the suburbs of San Francisco, a short ride by monorail rapid transit; the entire peninsula had chattered like a bird tree with life and opinions and complaints, and now the watchful owners had either died or migrated to a colony world. Mostly the former; it had been a costly war despite the valiant predictions of the Pentagon and its smug scientific vassel, the Rand Corporation. (p.16)

Through passages such as this Dick conjures a world where the fiction is more readily acceptable because of the inclusion of factual, historical material. However illogical or fantastic the speculative aspects of the novel may appear they are always anchored by real images, instantly recognisable to the reader.

This technique is not so far removed from the combination of science and magic which pervades previous science fiction narratives. Indeed other aspects of the novel prove that Dick was conscious of the SF method. Mercerism, *Electric Sheep's* religion, is a case in point. John Isidore is the first to use the "empathy box" (p.21) through which Wilbur Mercer appears:

The visual image congealed; he saw at once a famous landscape, the old, brown, barren ascent, with tufts of dried-out bonelike weeds poking slantedly into a dim and sunless sky. One single figure, more or less human in form, toiled its way up the hillside, an elderly man wearing a dull, featureless robe, covering as meagre as if it had been snatched from the hostile emptiness of the sky. The man, Wilbur Mercer, plodded ahead, and, as he clutched the handles, John Isidore gradually experienced a waning of the living room in which he stood[. . .]He had crossed over in the usual perplexing fashion; physical merging - accompanied by mental and spiritual identification - with

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1967); and, Samuel Butler, *Erewhon; Or, Over the Range*, ed. by Peter Mudford (London: Penguin, 1970) All of these texts have been referred to in this, or in previous, chapters.

This fusion with Mercer is the only type of religious experience left to humanity; a spiritual, almost transcendental, form of active meditation. By comparison with the rest of the narrative, which is grounded in the earthly existence of mankind or the scientific complexity of android creation, Mercerism is a magical, fantastic system of belief which provides an aura of other-worldliness and of esotericism. The mysticism of Mercerism makes the production of the android not only more credible scientifically but also more commonplace generally: if the transference of the human physical body into that of a iconic divine figure is credible within the logical structures of the narrative - which Mercerism is - then the construction of an artificial human upon strict scientific principles is not about to be considered within the realm of fantasy. There are other considerations here, of course. By 1968 - the year in which the novel was written - the human robot was far more scientifically viable than when Hoffmann and Shelley were writing. The progress of scientific research, then, goes some way towards providing the credibility of Dick's androids without recourse to the subtle manipulations of narrative which I have described here.

*Electric Sheep*, therefore, does not concord directly with the techniques of science fiction as laid down by Hoffmann and Shelley and resurrected fully by L'Isle-Adam. Dick may not combine magic and science in the novel, but Mercerism provides a fictional substitute for the former, while the latter is as apparent as it

was in any of the previous narratives. Just as the novel is set in a world which merges the familiar and the alien, so too does Mercerism merge with technology.

There is a similar blurring of boundaries between the human figures and the androids which critics have found problematic. Nigel Wheale notes that the novel “explicitly plays with confusions between human personality and artificial or machine-derived intelligence”<sup>15</sup> but, after invoking a grand list of similar artificial figures to those found in *Electric Sheep*, he comes to no conclusion:

In all periods ‘human-Things’ have been imagined as entities which test or define the contemporary sense of human value: the incubus or succubus in Christian tradition, the Golem in Jewish folklore, Prospero’s Ariel and Caliban (and perhaps even Miranda too?), E.T.A. Hoffmann’s Sandman, and of course Mary Shelley’s Frankenstein. Philip K. Dick’s androids are no exception; they belong to their period, the late 1960s, in the way that they are defined in relation to authentic human emotionality and sanity. But as soon as we have written the glib phrase, we are brought up short, in exactly the manner which the novel provokes: what *is* an authentic human psyche?<sup>16</sup>

Wheale admits his own difficulty in addressing the nature of the artificial human but by coming to a conclusion which is no more than a reiteration of the original question, his criticism does not take us very far. Joseph W. Slade, in a discussion of *Blade Runner*, seems even more confused:

The replicants strive to forge bonds of community among themselves, but are largely incapable of achieving them, partly because they are literally only

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<sup>15</sup> Nigel Wheale, ‘Recognising a ‘human-Thing’: Cyborgs, Robots and Replicants in Philip K. Dick’s *Do Androids Dream of Electric Sheep?* and Ridley Scott’s *Blade Runner*’, *Critical Survey*, 3 (3) (1991), 297-304 (p.298).

<sup>16</sup> Wheale, p.298.

four years old. Humans develop their consciousness outside their mother's womb, learning and experiencing over two decades until maturity, a process which in theory at least renders them both individualised and socialised. The consciousness of the replicants, by contrast, is implanted.<sup>17</sup>

This is contradictory: how is it possible for the androids to be both four years old and yet have an implanted adult consciousness? Neither of these critics seem aware of the importance of artificiality, concentrating only on the human-like qualities of the androids and their attempts to emulate human behaviour. It is no surprise that there is a problem in differentiating the real from the imitation for not only are the androids more human than previous automata but the humans are also more mechanical. Both Wheale and Slade recognise that, regardless of their apparent humanity, the androids are different; Wheale calls them "entities" and Slade looks at them "by contrast", both sentiments highlighting the androids' separateness from the real. Nevertheless, both these critics are correct in highlighting the androids' sophisticated imitation of the human. If, then, the androids are both the same and different - at least on a superficial level - there must be some clue within their nature to reveal this disparity? The answer, of course, lies with science: the androids are primarily organic, their physical make-up, movements and reactions all similar to the human. They remain, though, a creation of man, and of man's scientific knowledge, rather than a natural biological addition to the human race. It is this vital difference which marks them as 'alien', as long, of course, as mankind itself remains natural. In *Electric Sheep*, though, natural man is a disingenuous term and it is through the

comparison of the human and the android in the future world that Dick problematises the issue of reality and artificiality. By themselves artificial, the androids, when set in a frame of reference against an entropic, dehumanised mankind, are less alien and more human.

The scientific construction of Dick's artificial men and women is still central to their acceptance as a credible alternative to natural humanity. How they are constructed, and on what scientific principles, must be understood before their own nature can be clarified. Our first piece of information comes early in the novel, when Rick Deckard is given the job of executing a group of androids at large in San Francisco.<sup>18</sup> These artificial humans are:

those new, extra-clever andys that the Rosen Association is turning out [. . .]. Did you read over the company's brochure and the spec sheets? The Nexus-6 brain unit they're using now is capable of selecting within a field of two trillion constituents, or ten million separate neural pathways. (p.26)

Deckard discovers more information for himself:

The Nexus-6 android types, Rick reflected, surpassed several classes of human specials in terms of intelligence. In other words, androids equipped with the new Nexus-6 brain unit had from a sort of rough, pragmatic, non-nonsense standpoint evolved beyond a major - but inferior - segment of mankind. For better or worse. The servant had in some cases become more

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<sup>17</sup> Joseph W. Slade, 'Romanticizing Cybernetics in Ridley Scott's *Blade Runner*', *Literature and Film Quarterly*, 18 (1) (1990), 11-18 (p.16).

<sup>18</sup> In *Blade Runner*, Ridley Scott's sympathetic treatment of the androids can be inferred from the very beginning of the film. The narrative which scrolls across the screen tells the audience the role of the Blade Runners: to kill renegade androids which have returned to earth. "This was not", it continues, "called execution. It was called retirement."

adroit than its master. But new scales of achievement, for example the Voigt-Kampff Empathy Test, had emerged as criteria by which to judge. (p.27)

The Empathy Test is designed to elicit emotional responses to particular questions,<sup>19</sup> responses which a human would provide automatically but which an android would not. The android, of course, is emotionally immature, primarily because, as Slade has shown, they do not have the two decades of learning in which to acquire any emotional “empathy”. In testing Rachael Rosen, who, it becomes clear, is a Nexus-6 android herself, Deckard realises that this scientific test is not entirely fool-proof:

The Nexus-6. He had come up against it. Rachael, he realized; she must be a Nexus-6. I'm seeing one of them for the first time. And they damn near did it; they came awfully damn close to undermining the Voigt-Kampff scale, the only method we have of detecting them. (pp.49-50)

The reason for Rachael's ability to come “awfully damn close” to fooling the empathy test is that she is implanted with “false memories” (p.49) and, as Eldon Rosen proudly states, “we programmed her completely” (p.49). Rachael, indeed, does not know that she is an android, so realistic is her construction.

What scientific discoveries, though, does Dick take a lead from in the creation of his androids? Despite the novel opening with a “merry little surge of

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<sup>19</sup> These questions generally revolve around the abuse of animals. In Dick's future world all animals are sacred, due to the extinction of many of them after World War Terminus. When testing Rachel Rosen, Rick Deckard asks, for example, what she would do if, “You have a little boy and he shows

electricity” (p.7) it is obvious from an early stage that the electrical force important in *Frankenstein* or *Tomorrow’s Eve*, or even in *Metropolis*, is no longer the guiding force here. The symbolism of the novel’s opening phrase can be linked more clearly to the turning on of a computer, as the real power of the android lies in memory: in the gaining, storing and knowledge of, information. Although Information Theory as a recognised scientific field did not come into being until 1948, when Claude Shannon coined the phrase in a ground-breaking article, it is seen to be as important an aspect of mechanical development as the industrial revolution. Kevin Kelly, in his recent book on biological machines, suggests that:

There could not have been an industrial revolution without a parallel (though hidden) information revolution at the same time, launched by the massive spread of the automatic feedback system. If a fire-eating machine, such as Watt’s engine, lacked self-control, it would have taken every working hand the machine displaced to babysit its energy. So information, and not coal itself, turned the power of machines useful and therefore desirable.<sup>20</sup>

It was not until the Second World War that the importance of information was fully recognised. In his book on Alan Turing - an important figure in the history of the computer - Andrew Hodges sets the criteria for the rise of Information Theory:

People easily understood powerful guns, fast ships, impenetrable tanks, which extended human limbs. By now the secret of radar was out, and it could be understood how its manifold applications extended human eyesight to the longer wavelengths of the electromagnetic spectrum. But rapidly

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you his butterfly collection, including the killing jar” (p.41) or “You are given a calf-skin wallet on your birthday” (pp.40-41).

<sup>20</sup> Kevin Kelly, *Out of Control: The New Biology of Machines* (London: Fourth Estate, 1994), pp.148-149.



developing[. . .]was a new kind of machinery, a new kind of science, in which it was not the physics and the chemistry that mattered, but the logical structure of information, communication, and control[. . .]. Against the distant thunder of the east, there was the first glimpses of a post-war science. This first half-serious, half-joking talk of 'thinking machines' reflected both the immensely wider horizon that the war had opened to science, and the fact that an end at last seemed possible.<sup>21</sup>

The thinking machines of *Electric Sheep* arise in part from this post-war science. The androids, as well as many of the other forms of artificial creature in the novel, are cybernetic organisms: part-machine, part-organic material. Rick Deckard's sheep is artificial but "the fleece at least was genuine" (p.13) and the cat which John Isidore is transporting to the Van Ness Pet Hospital may also be an imitation but appears "organically ill" (p.57). Likewise in *Blade Runner* the androids bleed when shot and Roy Baty oozes a white substance from his hand when he attempts to fix its mechanism. Similar to L'Isle-Adam's Hadaly, who is also a cyborg, Dick's artificial humans are inspired by the actual contemporary science which was investigating ways in which the human and the machine could be conjoined in such a fashion. Norbert Wiener,<sup>22</sup> one of the leading figures of the cybernetic movement, argues that feedback is vital to the growth of cybernetic organisms because:

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<sup>21</sup> Andrew Hodges, *Alan Turing: The Enigma* (London: Burnett Books, 1983), p.252.

<sup>22</sup> Norbert Wiener was the co-author of a scientific paper which appeared in *Philosophy Of Science* in 1943 and discussed many of the topics which would later be central to the cybernetic movement. During the war he, along with other scientists from many different fields, began to investigate cybernetic possibilities in greater detail. Steve Joshua Heims, a historian of cybernetics, wrote "A group of men who had, during the war years, formed a network based on common scientific interests included several mathematicians (Norbert Wiener, John Von Neumann), engineers (Julian Bigelow, Claude Shannon), neurobiologists (Rafael Lorente de No, Arturo Rosenblueth), a neuropsychiatrist (Warren McCulloch), and a polymathic genius (Walter Pitts). Some members of this group had proposed that their concepts, useful in engineering and biology, had more general significance, perhaps could even could provide tools for a transdisciplinary synthesis that might be of particular interest to researchers in the human sciences. For lack of a better collective name we shall refer to this

Feedback[. . .]is a very general characteristic of forms of behaviour. In its simplest form, the feedback principle means that behaviour is scanned for its result, and that the success or failure of this result modifies future behaviour. It is known to serve the function of rendering the behaviour of an individual or machine relatively independent.<sup>23</sup>

Dick's androids go through this very process, monitoring their responses and recognising that alterations are necessary if they fail to produce the correct human behaviour pattern. Roy Baty, the leader of the android group, exemplifies the feedback system during an explanation of a trap he has set to capture Rick Deckard:

'I've compensated for his cephalic emanations,' Roy explained. 'Their sum won't trip anything; it'll take an additional human. Person.' Scowling, he glanced at Isidore, aware of what he had said.  
'You're androids,' Isidore said. But he didn't care; it made no difference to him. 'I see why they want to kill you,' he said. . .  
'When I used the word "human",' Roy Baty said to Pris, 'I used the wrong word.' (p.124)

Roy Baty uses the word "human" automatically but this error does not pass him by. He immediately recognises that his choice of vocabulary is unsuitable and corrects it. Pris, another android, makes a similar error in her first meeting with Isidore. Their conversation turns to Buster Friendly, the ever-present TV host, whom Isidore

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group as the cyberneticians, although they would never have used this term themselves (each one was still identified with a traditional discipline) and the word *cybernetics* for the new science was not introduced until 1947" (Steve Joshua Heims, *Constructing a Social Science for Postwar America: The Cybernetics Group, 1946-1953* (Cambridge, Mass.: MIT Press, 1991), p.11). Wiener is still the first name associated with the science of cybernetics, mainly on the basis of his first two books on the subject: *Cybernetics* in 1948 and *The Human Use of Human Beings* in 1950.

watches constantly. The narrative continues, “‘Who-’ the girl began and then broke off; she bit her lip as if savagely angry. Evidently at herself” (p.52). Once more the android’s feedback mechanism comes into play, quickly noting that ignorance of Buster Friendly would be extremely unlikely considering his fame among the human population. It is the understanding of this error which makes Pris so angry with herself. While at first, then, the androids of Dick’s making seem little different from L’Isle-Adam’s Hadaly, created some eighty years before, they are, on closer inspection, inspired by twentieth century scientific discoveries as opposed to those of the late nineteenth century. The increased knowledge of contemporary scientists lends Dick’s androids an increased sophistication when compared with Hadaly, or indeed with any of the other artificial humans we have encountered. The feedback mechanisms of cybernetics allow Pris, Roy Baty and their fellow cyborgs a consciousness which was not previously available, or at least not available through scientific means. Hadaly, of course, requires the intervention of a ‘spirit’ drawn from the more mystical beliefs of psychical research to instil some form of adaptive intelligence within her. The androids here require no such esoteric involvement; science is able to provide a way around problems which were once insuperable without the loss of credulity. Dick’s use of the cybernetic feedback mechanism well exemplifies this.

This is not the only way in which cybernetics influences *Electric Sheep*. The main thrust of the post-war cyberneticians was the creation of the thinking machine,

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<sup>23</sup> Norbert Wiener, *The Human Use of Human Beings: Cybernetics and Society* (Cambridge, Mass.: Riverside Press, 1950), pp.68-69.

the artificial construction of a mechanical model which would replicate, very simply perhaps, the tasks of the human brain. Although the scientists involved would not have used such terminology they were undoubtedly talking of the computer. Alan Turing was very much involved in the cybernetic movement. Indeed, in his biography of Turing, Andrew Hodges states that Turing was in agreement with Wiener who:

had published a book called *Cybernetics*, defining this word to mean 'Control and Communication in the Animal and the Machine.' It meant the description of the world in which information and logic, rather than energy or material constitution, was what mattered.<sup>24</sup>

Turing himself had investigated the processes of "information and logic" during the Second World War when he had been seconded to the government's team of code-breakers. He was fascinated by the apparent anomaly of encoding machines where "a machine like the Delilah key generator [an encoding device] could be perfectly deterministic at one level, while producing something apparently 'random' at another".<sup>25</sup> This odd mixture of determinism and free-will succinctly appraises the nature of the androids in Dick's novel. While their brains, and thereby all their responses, have been programmed, as Deckard's secretary points out to him, "the Nexus-6 brain unit[. . .]is capable of selecting within a field of two trillion constituents", their use of this intelligence is self-governed. On the one hand the androids are entirely determined by the computers which drive them, on the other

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<sup>24</sup> Hodges, p.403.

they are able to appropriate this intelligence to their own ends. If we compare Dick's androids once more to *Tomorrow's Eve*, where there is also a suggestion that L'Isle-Adam has produced a very early form of the computer, we can see that Hadaly has a limited and determined number of responses to given stimuli. It is only through the spirit Sowana that any free-will is invested in the robot. The androids of *Electric Sheep* are, therefore, a significant leap forward, computer technology allowing them both a deterministic state and a random state which, in fictional form, becomes free thought.

A more ready comparison can be made between the androids we find in Dick's novel and the robots represented in Isaac Asimov's short stories. In tales such as 'Robbie', 'Reason', 'Liar!' and 'Runaround' - all published during the years of the second world war - the robots' actions are determined entirely by what Asimov calls "the three fundamental laws of Robotics".<sup>26</sup> 'Reason', for example, relates the story of a robot who has forcefully taken over the controls of a spacecraft designed to fire an energy beam at the earth. The craft enters an electron storm which threatens to disable the beam. The robot, however, keeps the beam stable, to the great surprise of the captive human crew:

Look, Mike, he follows the instructions of the Master by means of dials, instruments, and graphs. That's all *we* ever followed. As a matter of fact, it accounts for his refusal to obey us. Obedience is the Second Law. No

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<sup>25</sup> Hodges, p.378.

<sup>26</sup> Isaac Asimov, *Robot Visions* (London: Gollancz, 1991), p.14. The three laws, as stated by Asimov in this collection of stories, are "1. A robot may not injure a human being, or, through inaction, allow a human being to come to harm. 2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law. 3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law" (pp.14-15).

harm to humans is the first. How can he keep humans from harm, whether he knows it or not? Why, by keeping the energy beam stable. He *knows* he can keep it more stable than we can, since he insists he's the superior being, so he *must* keep us out of the control room. It's inevitable if you consider the Laws of Robotics.<sup>27</sup>

By comparison, we learn at the beginning of *Electric Sheep* that "Holden [another bounty hunter][. . .]is in Mount Zion Hospital with a laser track through his spine" (p.25) courtesy of one of the renegade androids. Soon after, Rick Deckard encounters this android, who having failed to shoot him, decides that "I'll have to break your pencil neck" (p.73). The contrast with Asimov could not be more evident. While the programming of Asimov's robots entirely determines their actions (and this programming is also computerised, Asimov himself stating that a "robot = machine + computer")<sup>28</sup> Dick's androids have no such restrictions and make choices according to their own free-will.

Alan Turing goes further than allowing the thinking machine a form of free-will. In an interview in the late 1940s he states:

I believe that in about fifty years time it will be possible to programme computers, with a storage capacity of about 10 to the power 9, to make them play the imitation game so well that an average interrogator will not have more than a 70 per cent chance of making the right identification after five minutes of questioning.<sup>29</sup>

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<sup>27</sup> Asimov, pp.77-78.

<sup>28</sup> Asimov, p.9.

<sup>29</sup> Hodges, p.417.

This may have been a bold statement at the time but by comparison to the world of Dick's novel it does not go nearly far enough. Deckard - the "interrogator" - finds his Voigt-Kampff Test is very nearly redundant against the imitative skill of the Nexus-6 android. His chances of "identification" seem far less than the 70 per cent which Turing foresaw, and the "five minutes of questioning" becomes, at least in *Blade Runner*, one hundred questions, cross-referenced. Turing's prophecy, though, is startling when set against *Electric Sheep* and further reinforces the argument which suggests that Dick had the views of early cyberneticians and computer theorists very firmly in mind when creating his androids.

Such a detailed knowledge is certainly helpful in fully understanding the background to, and the nature of, the Nexus-6 androids, as well as proving that the lack of mysticism in *Electric Sheep* is, in part, due to the scientific possibilities open to Dick in the creation of the artificial human. What it does not answer, however, are the remaining, and pivotal, questions of the narrative: what it means to be human, how far man and machine are separated from each other, and how the science which Dick invokes influences both these questions and the structure of the narrative in general?

The last of these queries should be answered first, for we have not yet discovered the single, most vital branch of scientific theory which can be seen to govern both the characters of the novel and the construction of the plot. While Information Theory, cybernetics and early computer technologies are all of value when discussing the android, they appear rather incohesive, rather more a product of critical pioneering than of constructive commentary. This is not the case. Each one

of these subjects is bound to the narrative of *Electric Sheep* by a scientific theory which overrides all three: entropy.<sup>30</sup>

Of Information Theory, David Ruelle states that it is “concerned[. . .]with measuring amounts of randomness”<sup>31</sup> and that Claude Shannon - who “single-handedly created *information theory*”<sup>32</sup> - admitted that:

The definition of information was modelled after that of entropy, the latter measuring the amount of randomness present in a system. Why should information be measured by randomness? Simply because by choosing one message in a class of possible messages you dispel the randomness present in that class.<sup>33</sup>

Likewise, in the field of cybernetics, Norbert Wiener believes that “it is this study of messages, and in particular of the effective messages of control, which constitutes the science of cybernetics”.<sup>34</sup> He goes further, equating messages with information and hence with entropy:

It was during the last century, indeed, that another notion came into being, related to energy but much more important than energy in the problems of communication and information. This notion is that of entropy[. . .]we have seen that this entropy is not conserved. It can increase spontaneously, but in a closed system it cannot decrease. . .we have seen that communication

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<sup>30</sup> Entropy was originally introduced into classical thermodynamics to “provide a quantitative basis for the common observation that naturally occurring processes have a particular direction. Subsequently, in statistical thermodynamics, entropy was shown to be a measure of the number of microstates a system could assume. Finally, in communication theory, entropy is a measure of information” (*McGraw-Hill Encyclopedia of Science and Technology*, 6, p.378). Those scientists associated with the theory of entropy are Lord Kelvin (who made the theory his second law of thermodynamics) and Rudolf Clausius (who coined the term entropy).

<sup>31</sup> David Ruelle, *Chance and Chaos* (London: Penguin, 1993), p.6.

<sup>32</sup> Ruelle, p.131.

<sup>33</sup> Ruelle, pp.132-133.

<sup>34</sup> Wiener, *Human Use*, pp.8-9.



is based on a notion allied to entropy, known as the amount of information [. . .] just as entropy tends to increase spontaneously in a closed system, so information tends to decrease; just as entropy is a measure of disorder, so information is a measure of order.<sup>35</sup>

In the field of computer studies, Alan Turing also acknowledges the random state of systems affected by entropy, a fact which he contrasts with historical scientific belief:

It used to be supposed in Science that if everything was known about the Universe at any particular moment then we can predict what it will be through all the future. This idea was really due to the great success of astronomical prediction. More modern science however has come to the conclusion that when we are dealing with atoms and electrons we are quite unable to know the exact state of them.<sup>36</sup>

We can see, then, that every one of the branches of science which Dick makes use of in constructing his androids defers to the forces of entropy. In cybernetics, Information Theory, and the quest for the thinking machine, the second law of thermodynamics is an essential component of their construction.

In Dick's fiction, too, entropy is an important concept. One of the more perceptive critics of his work, Stanislaw Lem, argues that:

Essentially it is always one and the same world that figures in [Dick's novels] - a world of elementally unleashed entropy, of decay that not only, as in our reality, attacks the harmonious arrangements of matter, but also even consumes the order of elapsing time. Dick has thus amplified,

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<sup>35</sup> Wiener, *Human Use*, pp.128-129.

<sup>36</sup> Hodges, p.63.

rendered monumental and at the same time monstrous, certain fundamental properties of the actual world, giving them dramatic acceleration and impetus. All the technological innovations, the magnificent inventions, and the newly mastered human capabilities[. . .]ultimately come to nothing in the struggle against the inexorably rising floodwaters of Chaos.<sup>37</sup>

While this is certainly correct, Dick very rarely uses words such as entropy or chaos in his novels. In *Electric Sheep*, these “inexorably rising floodwaters” are described by John Isidore, the only character who seems at all concerned by the entropic state of the world. In conversation with Pris, he warns her of the state of decay of the apartment building in which they are both living:

This building, except for my apartment, is completely kipple-ized[. . .]. Kipple is useless objects, like junk mail or match folders after you use the last match or gum wrappers of yesterday's homeopape. When nobody's around, kipple reproduces itself. For instance, if you go to bed leaving any kipple around your apartment, when you wake up the next morning there's twice as much of it. It always gets more and more[. . .]. There's the First Law of Kipple[. . .]. Kipple drives out nonkipple[. . .]. No-one can win against kipple[. . .]except temporarily and maybe in one spot, like in my apartment I've sort of created a stasis between the pressure of kipple and nonkipple, for the time being. But eventually I'll die or go away, and then the kipple will again take over. It's a universal principle operating through the universe; the entire universe is moving toward a final state of total, absolute kippleization. (p.53)

Isidore's “kipple” is entropy, however poorly explained, and his explication of the “kippleization” of the universe also holds true for the world of the novel. In fact, the narrative of *Electric Sheep*, inclusive of all the characters within it, is no

more than a large closed system, ever at the mercy of the chaotic subterfuge of the entropic process.<sup>38</sup>

Rick Deckard is the most dynamic figure in this progressive chaos and in this context can be seen as an anti-Promethean figure, destroying rather than creating. As he points out himself, "In a way[. . .]I'm part of the form-destroying process of entropy. The Rosen Association creates and I unmake" (p.77). Deckard views himself as a harbinger of entropy for the androids, yet, as the integrity of the novel demands, they are destined for destruction anyway. Entropy, after all, does not make choices; it is all-consuming. The androids, like the humans, are each an individual closed system, within which the increase of entropy cannot be denied. Being partly mechanical, of course, their change from order to disorder (what humans call growing old, or death) is far quicker. In *Blade Runner* the androids returned to earth to discover their remaining life-span and to persuade their creator to extend it. Time, though, is running out too quickly for Roy Baty and the entropy of his system is visually recreated in the cramping of his fingers and the uselessness of his hand as his cybernetic body begins to return to a chaotic state.

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<sup>37</sup> Stanislaw Lem, 'Philip K. Dick: A Visionary Among the Charlatans' in *Microworlds: Writings on Science Fiction and Fantasy*, ed. by Franz Rottensteiner (San Diego: Harcourt, 1986), pp. 106-135 (p.117).

<sup>38</sup> The narrative is, in fact, the fictionalisation of a large closed system which includes many smaller closed sub-systems. The alternative police department - staffed primarily with androids - is entirely unknown to Deckard and works as a system of its own. The humans and the androids are, of course, each an individual closed system, both of whom are in a state of increased entropy: the androids because they are mechanical constructs with a finite life-span and the humans because the effects of World War Terminus have plagued them with further chaos in the form of diseases both of the body and the mind. John Isidore, a central character, is an example of the increased entropy of humanity. There is also the spiritual system of Wilbur Mercer, which seems more of an open system at first, but is later discovered to be no more than fakery. This uncovering of the falsity of Mercer's world highlights yet again the entropy of each of the systems of the novel, as even Mercer's mountainside is no more than a painted movie set and Mercer himself a paid actor.

Similarly the human protagonists are at the mercy of an ever-increasing entropy. The chaotic form of human existence, represented both generally and on a personal level, is Dick's most fascinating creation. As the human becomes more and more random, or rather, less and less human, the gap between the artificial and the natural gets ever smaller. John Isidore is symbolic of this reduction of difference, a human who has been denied the chance to free himself from the closed system of the city by the mental disease which blocks his emigration to the Mars colonies. As the narrative states:

He had been a special now for over a year, and not merely in regard to the distorted genes which he carried. Worse still, he had failed to pass the minimum mental faculties test, which made him in popular parlance a chickenhead. (p.19)

The sense of alienation which Isidore feels, with "the contempt of three planets" (p.19) heaped upon him, makes him regard the androids as kinsmen, both of them set apart from the human race by the nature of their biological make-up: the androids' constructed and Isidore's destructed. Upon discovering that Roy, Irmgard and Pris are androids, Isidore says "But what does it matter to me? I mean, I'm a special; they don't treat me very well either, like for instance I can't emigrate" (p.124). Isidore feels a sense of belonging when in the company of the androids, a sense of sameness. Yet this similarity arises from his own difference to the rest of the human race. It resides in his own entropic state. The android leader, Roy Baty, recognises this and abhors Isidore for further highlighting the gap between

humanity and his own kind. When Pris tells Isidore he is a credit to his race, Roy remarks that:

‘If her were an android[. . .]he would turn us in about ten tomorrow morning. He’d take off for his job and that would be it. I’m overwhelmed with admiration.’ His tone could not be deciphered; at least Isidore could not crack it. ‘And we imagined this would be a friendless world, a planet of hostile faces, all turned against us.’ He barked out a laugh. ‘I’m not at all worried,’ Irmgard said. ‘You ought to be scared to the soles of your feet,’ Roy said. (p.125)

Roy’s fear comes from his understanding of Isidore’s compassion for the androids: a sympathy borne out of closeness, out of the reflection of himself which the androids mirror for him. For Roy this is a death sentence, a final acknowledgement of his own alien nature. Yet Roy’s response is remarkably human: a show of disgust at being associated with a “chickenhead”. As reader we are not asked to view Roy in this way. This episode should reveal his lack of empathy, the one flaw in the androids’ construction which separate them from the human. However, this is not expressed by the novel. Logically, every android should hold Roy’s opinion that “we kill Mr. Isidore and hide somewhere else” (pp.125-126), for every android would display the same lack of empathy. As it is Pris defends Isidore, persuading Roy to “make our stand here” (p.126). Roy’s hatred of Isidore cannot, therefore, be discarded as a mere lack of emotional capacity. Rather, it reaffirms the initial argument that Roy finds Isidore distasteful because of what he represents: a form of degraded humanity similar to himself.

Dick does not conclude the matter here. Like Isidore, Deckard finds himself relating to the androids which he has to kill, as well as to one he does not. The problem here is intensified by the fact that there is no obvious reason for him to have generated any emotion. Unlike Isidore, Deckard is not a special, he is not alienated by society. Indeed the beginning of the narrative shows Deckard as a conformist: married, with an apartment, neighbours, and an animal to care for (even though it is artificial). Still, though, he finds himself sympathetic to the Nexus-6's which he must retire. Phil Resch and he capture Luba Luft - who had infiltrated human society as an opera singer - and kill her. Deckard is unable to come to terms with her demise: "She was really a superb singer, he said to himself[. . .]. I don't get it; how can a talent like that be a liability to our society?" (p.105) He tests himself with the Voigt-Kampff Empathy equipment designed to uncover an androids' lack of empathy. The results reveal that Deckard is sympathetic to certain androids. Here Dick hits upon the essential irony of the difference between the human and the machine. Deckard is "unnatural" and "inhuman" because he feels empathy, while Phil Resch's reactions - entirely cold and calculating - are normal. Yet it is the cold and calculating nature of the androids which has set them apart as "unnatural" or "inhuman". What, then, does Deckard's response to the Empathy Test say about him,<sup>39</sup> and about humanity in general? Is it really Deckard who is alien because of

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<sup>39</sup> In Scott's 'Director's Cut' of *Blade Runner*, it is strongly suggested that Rick Deckard is himself an android. Several critics have pointed out the evidence for this. Nigel Wheale argues that "The motivation for this desolating possibility is one brief sequence, only seconds long, where Deckard dreams a vision of a unicorn, as he becomes drunk, trying to follow clues to Leon's whereabouts. The unicorn sequence is utterly enigmatic in its immediate context, but is resolved by a detail in the closing minutes of the film. Garff, a seedy detective, has throughout the action made origami figures from foil - a chicken, a man, and finally a unicorn, and he leaves this where Deckard will find it. This

his empathy towards the androids or is it the androids for their lack of empathy entirely? Dick's inversion of what it means to be human - which at the start of the novel rests solely on the ability to feel empathy - clouds the whole issue of artificiality and reality.<sup>40</sup> This, it seems, is his intention, and can be followed throughout the narrative, where the difference between the real and the artificial is continually questioned, by both the human and the mechanical characters. Deckard is always at the centre of this inquisition, either demanding answers or being demanded of them. Early in the novel he speaks with his wife over the phone, excited by the prospect of earning a large bounty for retiring the androids. Iran, however, is listlessly non-communicative, leading Deckard to terminate their conversation prematurely: "broodingly, he leaned down, gathered together on the car floor his crumpled papers, including the info on Luba Luft. No support, he informed himself.

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detail reveals him, perhaps, as Deckard's minder, as someone with access to Deckard's synthetic memories" (Nigel Wheale, "Recognising a 'human-Thing: Cyborgs, Robots and Replicants in Philip K. Dick's *Do Androids Dream of Electric Sheep?* and Ridley Scott's *Blade Runner*' in *The Postmodern Arts: An Introductory Reader*, ed. by Nigel Wheale (London: Routledge, 1995), pp. 101-114 (pp.112-113)). Wheale, however, does not notice the implications of the origami figures which Garff makes, which greatly reinforce his own argument. In fact each of these figures relates directly to Deckard's situation. The first - a chicken - is created while Deckard refuses his ex-boss's plans to seek out and kill the androids. It suggests his fear and cowardice. The second - not just a man but a man with an erect penis - is made during Deckard's search of Leon's apartment, where the film narrative is a parody of the classic tough-guy detective movie. Here the origami figure suggests, is Deckard as male machismo, as symbol of phallic power. The unicorn, of course, as Wheale points out, relates to Deckard's own memories. (See illustrations, pp.156-157).

<sup>40</sup> Entropy is certainly the central force in the dehumanising process but it is not the only one. Humanity's own recourse to mechanical aids also attests to the process of artificialising those properties which were once seen as the monopoly of natural man. The best example of this is the "Penfield mood organ" (p.9) which allows the user to dial for any particular mood or attitude, regardless of their 'actual' feelings. Deckard and his wife use it copiously, just like, it is suggested, the majority of the population: "Iran opened her grey, unmerry eyes, blinked, then groaned and shut her eyes again. 'You set your Penfield too weak,' he said to her. 'I'll reset it and you'll be awake and -' 'Keep your hand off my settings.' her voice held bitter sharpness. 'I don't want to be awake.' He seated himself beside her, bent over her, and explained softly. 'If you set the surge up high enough, you'll be glad you're awake; that's the whole point. At setting C it overcomes the threshold barring consciousness, as it does for me.' Friendlily, because he felt well-disposed toward the world - his setting had been at D" (p.7).

Most androids I've known have more vitality and desire to live than my wife. She has nothing to give me" (p.74). Turning the human into the android is a speciality of Deckard's. Having done so with his wife, he later questions the authenticity of Phil Resch, a fellow bounty hunter whose dampened emotions strike Deckard as peculiar. The tables, however, are often turned. Deckard is himself accused of artificiality by John Isidore, whose impression of Deckard is of: "something merciless that carried a printed list and a gun, that moved machine-like through the flat, bureaucratic job of killing. A thing without emotions, or even a face; a thing that if killed got replaced immediately by another resembling it" (p.120), and also, more immediately, by the androids themselves. Luba Luft, with whom Deckard finds himself empathising, logically concludes, at the end of a long conversation on the nature of android emotion, that "you must be an android", defending such an accusation by admitting that she finds him "so peculiar and hard and strange" (p.80). Deckard has great difficulty in coming to terms with these challenges to his humanity, he cannot determine whether Luba Luft has recognised some inherent truth in his nature or whether it is all "semantic fog" (p.81).<sup>41</sup> Certainly it is all "semantic fog" for Dick who, in the course of the novel, shows Deckard charging his wife and Phil Resch with unnatural behaviour (human to human); reveals Deckard testing Rachel for

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<sup>41</sup> In a previous footnote I have argued for a reading of *Blade Runner* which posits Deckard as an android. This aside, there are interesting comparisons made between Batty and Deckard in the concluding scenes of the film. With the other replicants dead, and Batty nearing death himself, he and Deckard play a dangerous cat and mouse game on the roof of a high rise building. The parallels and mirroring of their movements is extremely vivid. Batty breaks Deckard's fingers - as a token of revenge for Deckard's 'retirement' of his friends - before returning his gun to him and escaping. While Deckard howls in pain and snaps his broken bones back into place, Batty pushes a nail through his own dysfunctional hand and howls wolf-like at the sky. The comparison of the stigmata, as well as of the force of life which compel both of them to continue their fight is startling, and evidently at the forefront of Scott's mind, especially when we consider the looming denouement of the film.



empathic responses (human to android); highlights Isidore's perception of Deckard as mechanical (atrophied human to human); and relates Luba Luft's denunciation of Deckard's artificiality (android to human).

The sophistication of the android as reflected by the difficulty in defining these particular relationships finds further reinforcement in Baudrillard's simulacral hierarchy. As yet the artificial human has proceeded no further than the second order of simulation, which Frankenstein's creature touches on and to which L'Isle-Adam's Hadaly firmly adheres. Dick's androids, however, represent Baudrillard's third order, they are "simulacra of simulation, founded on information, the model, the cybernetic game - total operationality, hyperreality, aim of total control".<sup>42</sup> The terminology of this definition highlights the compatibility of the androids with Baudrillard's final order of simulation. Both are rooted in the power of information, of the ability of information theories to stand as an important power source for the simulacra. Both, too, are the product of cybernetic technologies, of the cyberneticians thrust for, as Baudrillard puts it, "total operationality" unhindered by anything outwith their own closed circle. Dick's androids achieve this state, they are reliant not on any external reality or on any human intervention. They exist not as a model of the real but as a hyperreal: a form without origin or template. The androids' ability to learn, to adjust its own responses, to function independently, have taken it from being no more than an imitation of the human to being a creature of its own making.

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<sup>42</sup> Baudrillard, p.121.

With the onset of hyperreality, Baudrillard suggests that it is no longer possible for narratives of scientific fiction to “fabricate the unreal from the real, the imaginary from the givens of the real”.<sup>43</sup> Instead SF will be able only to “put decentred situations, models of simulation in place and to contrive to give them the feeling of the real”.<sup>44</sup> Rick Deckard suffers from a realisation that his world is formed in exactly this way. He finds himself constantly questioning his own ‘real’ feelings, his difficulty in firmly defining the propriety of his empathetic nature inspires uncertainty, a decentring of his humanity. *Blade Runner*, of course, goes further: entirely constructing Deckard as a “model of simulation” to which “the feeling of the real” has been awarded. That the existence of the third order of simulation spells the end of SF, as Baudrillard argues, is, however, untrue. Dick conspires to confront the hyperreal in his scientific fiction and does so by using the narrative form which is central to all feasible SF texts. Dick, then, does continue to write science fiction even after the introduction of the hyperreal model.

In fact, Dick’s project is to deconstruct this binary opposition: of the human and the artificial, of the natural and the unnatural. But there are few answers to be found, only continued reflections of the real and the unreal, providing myriad perspectives which create a merging of the made and the born in a linguistic, imagistic, and metaphysical whirlwind. As with other writers of the artificial human,<sup>45</sup> this failure to find a single credible answer to what distinguishes the human from the artificial is not a basis from which to argue that *Electric Sheep* fails

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<sup>43</sup> Baudrillard, p.124.

<sup>44</sup> Baudrillard, p.124.

as a novel. Indeed it largely complies with contemporary investigations into the same topic, both scientific and literary. Gary K. Wolfe, in his book *The Known and The Unknown*, argues that:

With the image of the individual machine, and more specifically with the image of the robot, humanity sees itself reflected in the works of its own technology; the robot occupies a shadowland somewhere between that which is clearly human and that which is clearly mechanical.<sup>46</sup>

Patricia Warrick, in a discussion of recent (late twentieth century) science fiction narratives, believes, in accordance with Wolfe, that “the man-machine interaction will result in radical transformation of natural man as he existed prior to the age of modern technology. Man and machine merge, reverse positions, and become extensions of each other”.<sup>47</sup> Contemporary science also recognises the closing of boundaries between the real and imitations of the real. Kevin Kelly, in an explication of the increasingly biological technology which goes into the production of the machine, asserts that:

No longer do we have to choose between the living or the mechanical because that distinction is no longer meaningful. Indeed, the most meaningful discoveries in this coming century are bound to those that celebrate, explore, and exploit the unified quality of technology and

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<sup>45</sup> I have in fact argued that neither Hoffmann, Shelley, or L’Isle-Adam come to any concrete conclusion about the nature of their own artificial humans. Dick, in this sense, is no different.

<sup>46</sup> Gary K. Wolfe, *The Known and the Unknown: The Iconography of Science Fiction* (Ohio: Kent State University Press, 1979), p.153.

<sup>47</sup> Patricia Warrick, ‘Images of the Man-Machine Intelligence Relationship in Science Fiction’ in *Many Futures, Many Worlds*, ed. by Thomas D. Clareson (Ohio: Kent State University Press, 1977), pp. 182 -223 (p.215).

These commentators understand, as Dick does, that the chasm which once existed between the born and the made (as Hoffmann had revealed) has been bridged, and not by any flimsy construction of rope and plank. The bridge is itself so complex, so vast, as to make any view of the chasm almost impossible.<sup>49</sup> This, primarily, is the problem in *Electric Sheep*: to identify that the chasm is still there but has become obscured. For, despite their efforts to the contrary, creators of the fictional artificial human, Dick included, still maintain that their automata, robots or cyborgs are *different*.

Here, at least, Dick's novel does make some headway. *Electric Sheep* and *Blade Runner* stress the lack of emotional maturity in the androids which, at a very base level, all humans possess. Although Deckard finds himself empathising with the android this still proves his ability to react emotionally. Isidore may align himself with the androids, whom he sees as equally alienated, but he still finds their decapitation of a spider disturbing.<sup>50</sup> Deckard's wife, Iran, may seem less alive than

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<sup>48</sup> Kelly, p.141.

<sup>49</sup> Donna Haraway makes this same point in a more general discussion of the cyborg. She suggests that "late twentieth-century mechanics have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines. Our machines are disturbingly lively, and we ourselves frighteningly inert" ('A Manifesto For Cyborgs: Science, Technology, and Socialist Feminism in the 1980s' in *Coming To Terms*, ed. by Elizabeth Weed (London: Routledge, 1989), pp. 173-204 (p.176)).

<sup>50</sup> "Rising to her feet, Pris said, 'You know what I think, J.R.? I think it doesn't need all those legs.' 'Eight?' Irmgard Baty said. 'Why couldn't it get by on four? Cut off four and see.' Impulsively opening her purse she produced a pair of clean, sharp cuticle scissors, which she passed to Pris. A weird terror struck at J. R. Isidore" (p.155).

many mechanical constructs, but, as we see at the conclusion of the novel,<sup>51</sup> her emotions remain intact. The manner in which Dick registers this heterogeneity between the maturity levels of the android and the human points toward the scientific investigations which were beginning to take shape in the late 1960s. These grew from the post-war research of cybernetics, Information Theory and computer technology all of which, as has been previously discussed, are gathered under the umbrella of physical entropy. The scientific community's movement into chaos and complexity theories shed a great deal of light on the creation of the artificial human in *Electric Sheep* as well as revealing an intellectual return to the scientific philosophies of early nineteenth century romanticism and to the more mystical branches of science which have been so influential in the SF narrative. Elizabeth Ermarth, taking a lead from the work of Katherine Hayles,<sup>52</sup> defends the process of comparison between literature and these new sciences, particularly, in her case, chaos theory: "The physical sciences provide clear examples of the changed condition under which the term "reality" seems to need translation: for example, "chaos theory".<sup>53</sup> It is the changed condition of reality, or more precisely the difference between the real and the artificial, which Dick is primarily concerned with

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<sup>51</sup> Iran orders some artificial flies over the phone, to feed to Deckard's artificial toad. She asks the saleswoman: "Will you deliver? I don't want to leave my apartment; my husband's asleep and I want to be sure he's all right[. . .]. I want it to work perfectly. My husband is devoted to it.' She gave her address and hung up. And, feeling better, fixed herself at last a cup of black, hot coffee" (pp.182-183).

<sup>52</sup> Particularly in her book, *Chaos Bound: Orderly Disorder in Contemporary Literature and Science* (London: Cornell University Press, 1990). This critical survey works from the assumption that "the radical instabilities within texts led to an interest in disorder and unpredictability in literature analogous to that in the sciences" (p.xiii) and that there is an increased emphasis within her text "on locating science and literature within contemporary culture" (p.xiv).

<sup>53</sup> Elizabeth Deeds Ermarth, *Sequel To History: Postmodernism and the Crisis of Representational Time* (Princeton: Princeton University Press, 1992), p.62.

in *Electric Sheep*, and the formulae with which he denotes this difference is one which chaos and complexity theory find central to their endeavours.

Complexity theory<sup>54</sup> in particular comprises many of the attributes, and has received the same damning indictments, as those sciences which, in the nineteenth century, were seconded by writers of science fiction to aid in the creation of their artificial humans. In accordance with the romantic sciences which inspired the earliest scientific narratives of Hoffmann and Shelley, complexity is a totalising science, a “new and thoroughly scientific version of vitalism”<sup>55</sup> which conforms to the historical position of viewing life as a dynamic force, a form of energy that is more than the sum of its parts. Like cybernetics before it, and again similar to many of the beliefs of romantic scientists, it “attempts to weave a coherent big picture together”,<sup>56</sup> to view the world, from a scientific perspective, as a congruous whole. The Santa Fe Institute - an organisation at the heart of the study of complexity theory - emphasises this all-encompassing ideal, noting what they call Complex Adaptive Systems at work in immune systems, brains, cells, developing embryos, political parties and scientific communities, to name but a short selection.<sup>57</sup> Such fantastic claims, of course, attracted a great deal of scepticism, and complexity theory is today

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<sup>54</sup> Complexity theory has its basis in biology, looking intently at structures and patterns of life cycles. It is a dynamic system which is constantly changing and unfolding, at once decaying and rebuilding. Stephen Wolfram, a complexologist, explains that “whenever you look at very complicated systems in physics or biology[. . .]you generally find that the basic components and the basic laws are quite simple; the complexity arises because you have a great many of these simple components interacting simultaneously. The complexity is actually in the organisation - the myriad possible ways that the components of the system can interact” (Waldrop, p.86). Complexity, then, studies the patterns of these interacting systems and attempts to define, and copy, their characteristics. One of the central aspects of this work is to study how these complex systems come about, in other words, to look at their emergence.

<sup>55</sup> Waldrop, p.280.

<sup>56</sup> Kelly, p.584.

harangued in the same way as mesmerism or psychical research were in the last century. Rolf Landauer is exemplary of the type of sneering disbelief that all of these sciences were subject to. He accuses complexologists of “seeking a ‘magic criterion’ that will help them unravel all the messy intricacies of nature”.<sup>58</sup>

Dick does not refer to complexity theory in *Electric Sheep* in the same way as either Hoffmann or L’Isle-Adam refer to mesmerism or psychical research. After all, complexity was still very much in its infancy in the late 1960s. Yet there is a distinct comparison between these three: all were rather dubiously regarded by the traditional scientific community, all were somewhat esoteric in formulation, and all were an aid in the construction of the automata or cyborg. Dick’s use of complexity, however, while more subtle, coheres more with the other branches of science dealt with in the narrative. Complexity is not so much an alternative scientific authority - as psychical research was for L’Isle-Adam - but a concomitive one, one to which the fields of complexity and computer studies lead naturally. Like these fields complexity was also driven by the forces of entropy. As M. Mitchell Waldrop shows, self-organising systems reveal “matter’s incessant attempts to organise itself into ever more complex structures, even in the face of the incessant forces of dissolution described by the second law of thermodynamics”.<sup>59</sup> And, in a much closer link, the effects of the work of Alan Turing are viewed as vital to the research being done by complexologists:

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<sup>57</sup> Waldrop, p.145.

<sup>58</sup> John Horgan, ‘From Complexity to Perplexity’, *Scientific American*, June 1995, 74-79 (p.75)

<sup>59</sup> Waldrop, p.102.

The effort [to find the principle of life] culminated in the early decades of the twentieth century with the work of Alonzo Church, Kurt Godel, Alan Turing, and others, who pointed out that the essence of a mechanical process - the 'thing' responsible for its behaviour - is not a thing at all. It is an abstract control structure, a program that can be expressed as a set of rules without regard to the material the machine is made of.<sup>60</sup>

It is such "abstract control structures" that complexity theory deals with, and which are important for a clearer understanding of the difference between the android and the human in Dick's novel.

Christopher Langton, in describing where complex systems are found, and what they are able to do, could well be describing the design of any of the androids which Dick presents:

You should look at systems in terms of how they behave instead of how they're made. And when you do[. . .]then what you find are two extremes of *order* and *chaos*. It's a lot like the differences between solids, where the atoms are locked into place, and fluids, where the atoms tumble over one another at random. But right in between the two extremes[. . .]at a kind of abstract phase transition called "the edge of chaos", you also find *complexity*: a class of behaviours in which the components of the system never quite lock into place, yet never quite dissolve into turbulence, either. these are the systems that are both stable enough to store information, and yet evanescent enough to transmit it. These are the systems that can be organised to perform complex computations, to react to the world, to be spontaneous, adaptive, and alive.<sup>61</sup>

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<sup>60</sup> Waldrop, p.278.

<sup>61</sup> Waldrop, p.293.



Roy Baty, Pris, Irmgard and Luba Luft are all at “the edge of chaos”, both scientifically and metaphorically. From the perspective of chaos as symbol the androids are certainly very near to the precipice, their chances of avoiding detection are slim (and come to naught by the conclusion of the book) and their own systems are slaves to the process of entropy (as seen much more directly in *Blade Runner*). Scientifically, too, they fit well with Langton’s definition of a complex system: they are able to “perform complex computations”, through the many different choices available to them in their “neural pathways”, which is also a field of enquiry for complexologists,<sup>62</sup> they “react to the world”, are “spontaneous, adaptive, and alive”. Indeed the androids fulfil all the criteria of a complex system as laid down here, as well as many other fundamentals of the science of complexity. One such basic premise is the manner of apparently deterministic systems (again there is a similarity with the work of Turing) to appear random in nature. As Daniel L. Stein discusses, “there is an inherent unpredictability to many of these systems”,<sup>63</sup> which the androids certainly reflect. They are, after all, not supposed to be on earth at all, and the arrival of the five we see in the novel is not a course of action predicted by the law-enforcing human figures, who have a deal of trouble in correcting their “seemingly chaotic

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<sup>62</sup> Daniel L. Stein points out, in his introduction to *Lectures in the Science of Complexity (Lectures Volume I: Santa Fe Institute, Studies in the Science of Complexity)*, ed. by Daniel L. Stein (California: Addison-Wesley, 1989), that the term complex system “has been used in many ways by many people. Some use it to signify systems with chaotic dynamics; others refer to cellular automata, disordered many-body systems, “neural” networks” [my italics] (p.xiii).

<sup>63</sup> Stein, p.xiv.

behaviour”,<sup>64</sup> Obversely, humanity does have its own organisations set up to deal with such erratic behaviour patterns. Rick Deckard - whose job it is to track and kill renegade androids - is the prime example of such an organisation. Perhaps this is in recognition of the fact that “surprising and unexpected behaviour[. . .]seems to be a property of the system as a whole”,<sup>65</sup> a truth fully acknowledged by complexity theory.

Most importantly, and most revealing when dealing with the discrete differences between the real and the unreal, between the human and the android, is how these behaviour patterns come about. Complexologists are very clear on this matter: they emerge. As structures become more and more complex they move onto new levels and “at each level, new emergent structures would form and engage in new emergent behaviour. Complexity, in other words, was really a science of emergence.”<sup>66</sup> The importance of this concept is two-fold; first, it highlights the fundamental difference between machines, which are engineered from the top downward, and life, which emerges from the bottom upward; and second, it makes it clear why the androids of *Electric Sheep* are almost identical with the humans while remaining somehow different. Complexity gives the androids life, an emergent behaviour indistinguishable from natural biological systems and the processes of human learning.

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<sup>64</sup> Stein, p.xiv.

<sup>65</sup> Stein, p.xiv.

However, they are not solely created from such biological systems. Part of their physical and mental make-up is mechanical. This mediates the complexity which drives them and limits their emergent behaviour. In human terms, it restricts their ability to grow, to learn and to mature: the androids are “born” as adults yet they display the immaturity of children. They lack the experiences which every human takes for granted. It is their mechanical construction which determines this fact and, regardless of the complexity of their artificial minds, it also obstructs their ability to formulate human emotions, which the novel calls empathy, to a degree similar to that of their human counterparts. As Rick Deckard, in the final epiphany of the novel, points out to Rachel Rosen, “you’re not made out of transistorized circuits like a false animal; you’re an organic entity. And in two years, he thought, you’ll wear out and die. Because we never solved the problem of cell replacement” (p.149). This, finally, is the undeniable truth of the nature of the artificial human. However human it may appear, however well science can imitate the function of the human mind and body, the artificial human is always made, never born. By relying on the craft of human science the automaton, robot, android, or cyborg discards nature and thereby discards the natural processes which mark out the real from the imitation. On missing out on the experiences of life which growth gives the human, the android misses out on life entirely.

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<sup>66</sup> Waldrop, p.86.

## Conclusion:

### Man and Machine? : Man or Machine?

The preceding chapters have studied specific texts from a variety of perspectives: narrative, historicist, cultural, and critical. All of these literary tools were a means toward an end; to compare the different representations of the artificial human in science fiction texts from the early nineteenth century to the late twentieth century. Science fiction criticism has invested a great deal of time on this issue in the last twenty years, primarily because the appearance of the artificial human is so predominant in the SF field over this same period. This criticism, however, was rather one-dimensional, restricting itself to listing a few solitary narratives as historical antecedents; E.T.A. Hoffmann's 'The Sandman' and Mary Shelley's *Frankenstein* easily the most popular. Indeed the artificial human was almost always taken to be yet another example of the Frankensteinian mythology of monstrous creation and placed in a lineage that began in 1818 with the publication of that novel and remained untouched by future, or by previous, investigations. Nor does this aspect of science fiction criticism<sup>1</sup> appear to move forward greatly in the years, say, from 1968 (when Dick published *Do Androids Dream of Electric Sheep?* and

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<sup>1</sup> It is not my intention to disparage science fiction criticism in general. Indeed a great deal of insightful work has been done since the late 1960s and the majority of critics working throughout this decade and the next provided SF literature with a presence in the literary canon which it had never held before. Patrick Parrinder, for example, is intuitive enough to see that "SF considered as a system - a small and recently colonized planet, let us say - itself belongs within much larger systems: the solar system of literary fictions, the galaxy of modern culture, the universe of human life as a whole" ('Introduction', in *Science Fiction: A Critical Guide*, ed. by Patrick Parrinder (London: Longman, 1979), pp. viii-x (p.viii)). Here, I will make reference only to those pieces of criticism which attempt to directly engage with the concept of artificial humanity.

commentary upon the genre was in its infancy) to the present day. Rather, critical opinion wanders across a vast landscape of themes concerning the artificial human without ever quite gaining any ground. Thus we find John J. Pierce, in a 1987 essay, focusing yet again on Hoffmann and Shelley and concluding that no “literary genealogies[. . .]matter as much as the common point of view in Hoffmann’s and Shelley’s works[. . .]they view artificial beings as sinister”.<sup>2</sup> Patricia Warrick, writing a decade earlier, had also highlighted Mary Shelley’s novel, although she goes further than Pierce in arguing that it “is the first SF work portraying a creature made by man”.<sup>3</sup> The basis for Pierce’s insistence that the artificial human is no more than sinister can also be seen in Warrick’s work, where she describes the monster as “a malignant, uncontrollable monster”.<sup>4</sup> This is attributed not solely to its artificial nature but to the repeated SF theme of the “reversal of the master-servant relationship between man and the robot he creates”.<sup>5</sup>

Robert Scholes and Eric S. Rabkin, in a book written in the same year as Warrick’s, similarly accept that the “device of the android[. . .][is] a modern streamlining of the image of Frankenstein’s monster”.<sup>6</sup> Their commentary, when they move on from this starting point, is at least not quite so derivative, and their discovery that “cyborgs always serve fictionally to question what might constitute a human essence”<sup>7</sup> is among the most intelligent statements of these early critical

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<sup>2</sup> John J. Pierce, *Great Themes of Science Fiction: A Study in Imagination and Evolution* (New York: Greenwood, 1987), p.78.

<sup>3</sup> Warrick, p.195.

<sup>4</sup> Warrick, p.196.

<sup>5</sup> Warrick, p.196.

<sup>6</sup> Scholes and Rabkin, p.180.

<sup>7</sup> Scholes and Rabkin, p.180.

works. Certainly it is an improvement upon Brian Ash's 1975 book *Faces of the Future*, which states that "androids first made their appearance in the genre in Karel Capek's play *R.U.R.*"<sup>8</sup> and, as Patricia Warrick also stated two years later, that "the principle development of androids in science fiction has been to illustrate their various rebellions against human masters".<sup>9</sup> As John J. Pierce's work has illustrated the 1980s did not bring about any re-appraisal of the artificial human in science fiction. Writing in 1981 Mark Rose continues to concentrate on the great shibboleths of the field, that "robot stories[. . .]tend to revolve around some form of master-slave antinomy"<sup>10</sup> or alternatively (or should that be traditionally) looks back to Capek and to the "Frankenstein allusion"<sup>11</sup> of many recent narratives.

These critics are by no means the only ones guilty of such limited preconceptions but they serve as an exemplary cross-section. Their work reveals the paucity of science fiction criticism in dealing directly with the many connotations of the man-machine debate, connotations which are brought about not merely by previous exercises upon the same theme but by the scientific and cultural milieu in which each writer was working. To suggest that every work concerned with the android, the robot or the cyborg is a rewriting or a revision of Mary Shelley's *Frankenstein*, or even of Capek's *R.U.R.*, is reductionist in the extreme. To argue also, as many of these commentators do, that the relationship between natural man and artificial man is one reflective of a master/slave dynamic is equally abortive. The

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<sup>8</sup> Brian Ash, *Faces of the Future - the Lessons of Science Fiction* (London: Elek/Pemberton, 1975), pp.137-138.

<sup>9</sup> Ash, p.138.

<sup>10</sup> Mark Rose, *Alien Encounters: Anatomy of Science Fiction* (London: Harvard University Press, 1981), p.157.

conception, construction and creation of the artificial human in science fiction communicates an enthusiasm on the part of the writer to delve into the most vital questions of the world as it is, and as it will be, with the forces of science at the forefront of human endeavour. Scholes and Rabkin recognise but do not articulate this when they argue that the search for a “human essence” is central to the fictional creation of the artificial human; for it is in the complex relationship between the human, the scientific and the artificial that the real questions of the man-machine debate are to be found. Not always, as I conclude, are these questions answered but it is here that they are given a voice, challenged, and held up for scrutiny.

What these questions ask is fundamental. As the discussions herein - of Hoffmann, Shelley, Poe, Dickens, Verne, L’Isle-Adam, Capek, Huxley, Dick and others - have made clear, they are essentially very straightforward. (It is only in attempting to answer them that the waters become somewhat muddied.) How far can science, in its various forms, replicate human form and behaviour? How far does science, generally in the form of the machine, mould humanity into *its* own image? How, as science becomes more and more sophisticated, is it possible to tell the difference between the born and the made, between natural man and artificial man? Is there, indeed, any difference at all? These are the four questions which all the narratives examined in the previous five chapters attempt to address. The respective texts do not always approach these questions in the same way: Dickens was concerned most of all with the moulding of humanity in the image of the machine, while Dick was predominantly interested in the difference, if any, between the

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<sup>11</sup> Rose, p.160.

human and his androids. Nevertheless, the central themes of science fiction which focuses upon the artificial creation of man are to be found in both.

It is all very well to discover the important questions of the man-machine debate, and these indeed are illuminating in themselves, but how has a detailed examination of specific texts helped to answer them? A consideration of the narrative construction of each work has proved to be a productive way in which to access the precise formulae that acted as a foundation for further investigations of the nature of artificial man. The combining of different forms of communication and tradition led to an espial of the basic necessities of science fiction, which must be in place for the narrative to engage credibly with the reader. It is an axiom of science fiction criticism to agree with H.G. Wells' statement that a narrative need only make the incredible appear commonplace for it to succeed. As the texts studied here have shown, this assumption is too simplistic. It fails to indicate any ways in which this incredulity would be absorbed, nor does it go much further than commenting on the mundane realism of many SF settings<sup>12</sup> which apparently fool the reader into

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<sup>12</sup> H.G. Wells' own novel *The Time Machine* is an often used example here. Criticism addresses the normality of the Time traveller's lifestyle, the traditional Victorian household in which he lives, and the practicality of his inventions and colleagues, in showing that such ordinary backdrops provide the necessary footing in the real from which the extrapolation of the unreal can be made. Frank McConnell, for example, notes that "*The Time Machine* as we have it now is as distinct an advance over those early Gothic and post-Gothic frame-tale narratives as it is over previous nineteenth-century utopias. We begin in the most cordial and comfortable of surroundings, a late-nineteenth-century dinner party, where a group of talented men are exchanging serious but politely vague, conventionally mellowed after-dinner views" (*The Science Fiction of H.G. Wells* (Oxford: Oxford University Press, 1981), p.85). Darko Suvin agrees with this appraisal of the novel's conventionality: "I am proceeding upon the hypothesis that the basic device of *The Time Machine* is an opposition of the Time Traveller's visions of the future to the ideal reader's norm of complacent, bourgeois class consciousness." ('A Grammar of Form and a Criticism of Fact: *The Time Machine* as a Structural model for Science Fiction', in *H.G. Wells and Modern Science Fiction*, ed. by Darko Suvin and Robert M. Philmus (London: Associated University Presses, 1977), pp.90-115 (p.91)).



believing that anything is possible if it has begun from such an empirical starting-point.

A detailed appraisal of Hoffmann's short stories and Mary Shelley's *Frankenstein* - texts which were chosen for inclusion here as they are most in need of being freed from the shackles which SF criticism has placed upon them - highlights a much more complex building of credibility than Wells infers. The stressing of magical traditions in each of these narratives is not, as commentators have suggested, detrimental to their ambition to appear as credible science fiction but a necessary component of the apparent scientific authenticity of their claims. Hoffmann, Shelley and L'Isle-Adam play mysticism against factual science so as to raise the profile of the sciences to a level of believability which allows the fantastic extrapolation of these sciences to appear convincing when set against the more esoteric framework of the text. Such a technique does not remain static throughout these works: Hoffmann's method of setting down a foundation of magico-mysticism and then backgrounding this to concentrate upon the mechanistic and mesmeric sciences which influence his automata is taken a step further by Shelley. *Frankenstein* gives the mystical a freer role and the atmosphere of gothic supernaturalism is ever-present in the investigations of romantic and materialistic science, thereby preventing these sciences from dropping to the level of fantasy by constantly offering an ever more fantastic alternative. *Tomorrow's Eve* develops Shelley's method by bringing together the real and the mythical in the character of Thomas Edison and utilising the fantastic elements of Edison's public personae to give greater credibility to the artificial human which is constructed largely upon the

scientific inventions of the real Edison. Philip K. Dick's *Do Androids Dream of Electric Sheep?* employs a similarly dualistic approach: his future city is a fantastic creation analogous with Lang's *Metropolis* but is actualised by its comparison to a similar city of the late twentieth century. Likewise the inclusion of the transcendental religion of Mercerism makes Dick's androids appear far more authentic than they may have done without such mysticism against which to react.

The relevance of this narrative technique to the problem at hand, the realisation of the nature of artificial man, is two-fold. First, it allows the writer to concentrate on the scientific creation of the artificial human, be it an automaton, an organic being, or a cyborg, without recourse to the problematics of credibility; and, second, it persuades the reader to view the artificial creature as less fantastic and thereby more human. For it is the creation of an alternative humanity which is central to these texts, and the *scientific* creation of this alternative in particular.

Science, in all of these works, is the pivotal impulse and the basis of three of the four questions which these narratives pose. Let us see if we can answer them in turn. The first is how far can science replicate human form and behaviour? The simulation of the human form appears not at all troublesome. Even the earliest piece of fiction studied here - E.T.A. Hoffmann's 'The Sandman' - conspires to represent an automaton who is recognisably human in form and is provided with all the trappings of physical humanity. Likewise Victor Frankenstein's creature is definitively human, an amalgam of human parts gathered together from different corpses. L'Isle-Adam's Hadaly is the exact copy of a human female and indistinguishable from the real woman in the eyes of her intimate friend Lord Ewald.

Dick's androids, too, are entirely human in appearance, so much so indeed that Rick Deckard, who, as a bounty hunter, is particularly sensitive to the differences between the real and the imitation, is unable to tell the human from the android without his testing equipment.

Behaviour is much more problematic. Certainly the Talking Turk and Olympia (in Hoffmann's short tales) have a highly restricted set of behaviour patterns which are noticeably repetitive and artificial. Olympia especially is capable only of responses programmed into her mechanism and is unable to act or react to anything outwith this limited range. Hadaly is of the same constituents: Edison invests her with a set of instructions which determine her behaviour and while these show a greater flexibility than Olympia they elicit similar deterministic signs which signify an artificially simulated set of reactions. It is also fair to say that the androids in *Electric Sheep* are no more than a complex reformulation of this same method and while they have an almost illimitable number of criteria from which to choose behaviour patterns these are still a product of a pre-determined mode of instruction. Frankenstein's monster is different. His behaviour is more a result of what he does not have than of what he does. There is no mechanistically defined set of instructions from which he is able to choose what appears to be an apt human response. In a sense, Victor's creature has no behaviour when he is first created, he achieves it through interaction with human figures. This would appear to argue that *Frankenstein* shows us the most human of all the artificial constructs studied; however the very nature of the monster's scientific construction - part-romantically inspired, part-materialistic - constantly defines his behaviour despite the apparent

learning process in which he partakes. These opposing forces of science determine behaviour just as much as the conflagration of cogs and wheels, or the insertion of neural networks, in the other artificial humans. Simply put, he may appear free, he may even believe himself to be free, but the creature can never release himself from the over-riding regulations of the sciences which are the essence of his nature.

While science can certainly mould the artificial into the image of the human, can it also work in reverse, altering the human to such an extent that it has the appearance of artificiality? Hoffmann hints more at this possibility rather than dealing with it directly. Neither of the main protagonists, Nathanael and Ferdinand, appears artificial in nature but the influences exerted upon them by the science of mesmerism certainly colour their patterns of behaviour, making them behave automatically and without cognition. Their actions are more a product of mesmeric force than of normal human thought. They seem to act irrationally, that is, against their own nature as a consequence of this and, from such a perspective, it can be argued that they have been somewhat artificialised by science. *Frankenstein* approaches the same subject from a decidedly more oblique angle. While Victor Frankenstein is not so plainly controlled by a form of scientific power as either Nathanael or Ferdinand, there are many points of comparison between himself and the artificial human of his own making. In this way the narrative suggests, more than reveals, the metamorphosing potential of science when applied to the human just as equally as to nature. Victor Frankenstein, like his creation, is torn between and driven by the alterior poles of scientific investigation which romanticism and materialism reflect.

It is only after *Frankenstein* that the dehumanisation of man was considered more candidly and in the mid-nineteenth century focused strongly upon the image of man as the machine. Science, in a sense, became mechanics in this period and the machine the ultimate symbol of scientific authority. Poe, Verne and Dickens all uncover the effects of the machine on the nature of the human. Poe does so starkly in his short story 'The Man That Was Used Up' by representing a character who is both man and machine, both born and made while Verne investigates the effects of power and of alienation upon the human character. Dickens' approach is more psychologically based. He sees the moulding of the human through scientific means to be a form of regimentation, a mechanising of human action and thought. His characters are all 'real' yet their entire weltanschauung is coloured by mechanical procedure: they are repetitive in nature, automatic in behaviour, and often very restricted in action, unable to perform multiple or complex tasks. This view of the machine-man was reiterated by early twentieth century writers who actualised the automation of the human as a form of death, both spiritual and imaginative. L'Isle-Adam provides an even more striking image of the way in which science artificialises humanity. The crux of Edison's argument in highlighting the perfection of Hadaly is that humanity itself (and woman in particular) is just as artificial as his own creation. To reinforce this point of view he invites Lord Ewald to watch the performance of two dancers, one very beautiful and one hideous, before revealing that they are the same person. The first, of course, has used the products of scientific discovery to 'perfect' her beauty while the other is the 'natural' person beneath these additions. Like *Tomorrow's Eve*, Dick's novel takes a lead from Poe, Dickens and

early twentieth century reactions to the influence of the machine on humanity. The force of entropy, the diseases rife in the aftermath of World War Terminus, and the mechanical contrivances which alter human moods all have a dehumanising effect on the inhabitants of his futuristic San Francisco. This is summed up by the Voigt-Kampff Empathy Test, designed to sift out the android from the human, but slowly becoming obsolete not only because the androids are becoming smarter but also because humanity is regressing. Deckard's superior points out that a certain percentage of the population would be unlikely to pass the test. Nowhere is man made more of a machine than here: a specific form of direct questioning which differentiates between the real and the unreal but which the real would fail.

It is true to say that the gap between the real and the unreal is ever closing as we move forward temporally. As science becomes increasingly sophisticated so too do the artificial humans. Hoffmann's automata are a long way from Dick's androids; about 150 years of scientific investigation to be precise. It should not have been taken for granted that this would be the case and I have not done so. Nevertheless it is largely true. From Hoffmann's short fiction and Shelley's *Frankenstein*, the available scientific tools have added ever more layers of complexity to the creation of the artificial human. Hoffmann needed to use the influence of mesmerism to mystify his central protagonists into viewing the mechanical figures as 'real'. Victor Frankenstein's creation was constantly feared and reviled by those humans he met, their disgust springing from his obviously alien otherness. Poe's own version of the cyborg, General Smith, does at least fool the narrator if not any of the subsidiary characters. By the time we reach the close of the nineteenth century, however, L'Isle-

Adam's Hadaly is a far cleverer simulacrum: science had given the android a more representative human voice, a more sophisticated electrical power source and a mechanical technology which was growing smaller and more delicate without a reduction of capability, all of which lend credibility to its human appearance. Still, however, it is the instigation of the spiritual figure of Sowana which provides the final piece of the human jigsaw. The androids of Dick's *Do Androids Dream of Electric Sheep?* have no such magical associations because, very simply, they have no need of them. Contemporary science is actually in the process of creating real robots,<sup>13</sup> using scientific techniques to bring to fruition the projects begun in the fiction discussed here. It is little wonder that Dick was able to create a credible android from the available technology; technology which included the computer's immense power of data storage and retrieval, micro-electronic components, the transplantation of live human organs from one being to another, and this without recourse to the extrapolative powers of the imagination. Dick's androids reflect the vast power of late twentieth century science and its ability to construct its own thinking machines. Roy, Pris, Rachel, Irmgard, Luba Luft and the others are powerful, intelligent, organic beings who learn from their errors and have

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<sup>13</sup> The popular scientific magazine *Focus*, in an article at the beginning of 1997, reported that "Mechatronic researchers at the University of Plymouth are developing an 'intelligent' artificial hand by linking it to a learning computer that can scan and read brain activity with great precision" (*Focus*, January 1997, p.56. See also illustrations, p.153) The article continues "scientists are considering the idea of connecting machines to the human nervous system - and the first steps have already been taken. Bionic or 'myoelectric' artificial limbs have been developed by scientists over the last two decades and are in widespread use" (p.57). *New Scientist* has highlighted this same trend. In 'Birth of a Human Robot', Roger Lewin looked at the efforts of Artificial Intelligence Laboratory at the Massachusetts Institute of Technology. They introduced him to Cog: "Cog is a robot, and a very special one. The brainchild of MIT's Rodney Brooks, an AI researcher who has already won fame for designing tiny robots that move like insects, Cog will not only be dextrous and mobile, as any good robot should be. It will also be intelligent" ( May 1994, p.26).

assimilated themselves into human society with little or no reaction from their human associates. They are not stiff and motionless like Hoffmann's Olympia, nor hideous phantasms in the shape of Frankenstein's monster. Nor do they have the blatantly artificial hands of steel of nineteenth century mechanics or appear as the mere delusive apparition that was Hadaly/Sowana.

Being so perfect, Dick's androids have surely answered the final question. There must be no definable difference between artificial man and natural man. Dick, however, does not agree. His androids remain somehow alien. The answer to this puzzle lies not with the artificial construct but with natural humanity. The automaton, robot or android only appears human when humanity itself has been somehow degraded. The artificial only appears real when the real becomes more artificial. This brings together the two distinct approaches of the writers studied here. It is at the point when the man-machine and the machine-man meet that the nature of the artificial human is wholly discovered. Hoffmann's automata are real only when the human characters are relieved of their own nature by mesmerism; Frankenstein's creature is afforded sympathy only by his own creator, who is equally at the mercy of scientific forces; Hadaly is lifelike only when Edison reduces the natural humanity of other women; and Dick's androids are more human because the rest of humanity is so ridden by decay.

The investigation into the nature of artificial man is as much an investigation into the nature of humanity itself. It is by comparison with the artificial that the writers studied here come to see what it means to be real. It is a curious but viable



polarity: in viewing the alien we see what it is to belong, by exploring what is inhuman we expose the perceptions of our own humanity.

## Appendix 1

The following appendix reprints an article based upon Chapter One of the present work: 'Staring Stiff and Motionless: The Short Fiction of E.T.A. Hoffmann'. It appeared as 'Scientific Portraits in Magical Frames: The Construction of Preternatural Narrative in the Works of E.T.A. Hoffmann and Arthur Machen', in *Extrapolation*, 35 (3) (1994), 186-200.

# Scientific Portraits in Magical Frames: The Construction of Preternatural Narrative in the Work of E. T. A. Hoffmann and Arthur Machen

MARTIN T. WILLIS

■ Hoffmann's tale *Der Automate* and Arthur Machen's *The Three Imposters* seem firmly footed in the world of nineteenth-century romanticism. On these foundations the elements of the fantastic, or the supernatural, work within the narratives by the invocation of what Shklovsky termed the technique of "estrangement" (*ostranenie*);<sup>1</sup> defamiliarizing the commonplace by placing the everyday in parallel with this supernatural "otherness." Theories of fantasy literature reinforce this interpretation by suggesting that magical supernatural in such fictions is "of another order of reality from that in which we exist and form our notions of possibility" (Manlove 3). This study will attempt to show that both Hoffmann's and Machen's alternative realities reside not only in the preternatural content of the narratives but in the very fabric of the narratives themselves. Their fictional worlds may appear to be that of nineteenth-century scientific rationalism, however, the rules governing the evocation of these worlds belong solely within the traditions of magic, alchemy, and ancient esotericism.

The rules of sorcery permeate both the form and content of *Der Automate*. Its narrative form, exemplifying the fragmentation so common in the Gothic literary tradition, resembles the structure of Russian dolls: one fitting within another until we reach the smallest and last, which remains empty, revealing nothing. The story of Adelgunda's paranormal visions—transmitted orally by Cyprian—together with Theodore's manuscript of "Der Automate" are mediated by the narrator's account of the events that led to the exposition of both

these tales, an account that suggests Hoffmann's own experiences of informal literary gatherings. Indeed this reveals the outermost walls of the story's complex framework. Hoffmann himself interpolates the meetings of his artistic acquaintances into the narrative, meetings that were attended by, among others, "Ferdinand Koreff, fashionable doctor and enthusiast for magnetism" (Hughes 114). Recognizing this seemingly minor detail as at the forefront of Hoffmann's mind during the composition of *Der Automate* provides a clue to the understanding of the story entire and will be referred to in the course of this article.

Turning inward to the core of the narrative structure brings us to the manuscript of "The Automata" itself. Initially urged upon his fellows by Theodore in an attempt to retrieve some sanity in the wake of Cyprian's ghost story, the exegesis of the Talking Turk ends somewhat prematurely for the gathered company, Theodore's fellows becoming dismayed at the hollowness of the denouement. This is the innermost of the Russian dolls, offering no solution or enlightenment of the facts therein.

Why, therefore, do the tales within tales of Hoffmann's story offer only fragments of the whole? Scientific empiricism seemed able to unearth the very secrets of nature, but here the protagonists fail to draw any concrete conclusions from what appears to be a rational and scientific narrative.

Hoffmann's construction of the world of *Der Automate* provides the answer. Scientific method—as personified by the multitude of experts who examine the workings of the Talking Turk—reveals nothing. Contemporary science provides only the portrait; the culture of magic and sorcery composes the frame. A. E. Waite tells us that in the world of legerdemain, "the visible melts into the unseen, the invisible is manifested openly . . . all paradoxes seem to obtain actually, contradictions coexist logically, the effect is greater than the cause and the shadow more than the substance . . . words and wishes possess creative power, thoughts are things, desire realises its object" (*Ceremonial Magic* 3). To continue our artistic metaphor in the light of this information, it is as though Hoffmann's tale resembles a painting by Joseph Wright enclosed with a frame by Dali.<sup>2</sup> Moreover, Waite convincingly proves that magical literature from the Middle Ages onward becomes remarkably conservative, unwilling to reveal complete formulae or describe entire rituals. This gave rise to a fragmentation of information in the world of sorcery which, nonetheless, could provide substantial instruction if several texts were considered simultaneously. As Waite has argued, "what is obscure in the one may be understood by the help of the other" (*Ceremonial Magic* 5). No wonder, then, that scientific investigation proves fruitless. A magical method is necessary for the understanding of such a magical world. *Der Automate* presents living proof of this method.

In deciphering the mystical narrative of the Talking Turk one must juxtapose this text with that of Cyprian's tale of Adelgunda as well as the

narrator's description of the events that began the story. These disparate accounts must be approached magically, as an initiate of the paranormal would approach three magical texts in the knowledge that the art works "by definite formulae [and is] a process in words" (Waite, *Ceremonial Magic* 7). The tales within *Der Automate* are not so much a process in words but in subtle ideas released through dialogue. Let us apply this magical method to the three layers of narrative in turn. First, the narrator's description of his arrival at the evening gathering of his friend Vincent, where he finds his friends sitting around a table "... staring, stiff and motionless, like so many statues, in the profoundest silence up at the ceiling. . . . I went nearer, full of amazement, and saw a glittering gold ring suspended from the ceiling, swinging back and forth in the air, and presently beginning to move in circles" (71). Inquiring of the company's undertakings, the narrator reports their excitement at having successfully moved this gold ring by, as Vincent argues, "the concentrated human will" (71). A discussion of the verity of such a theory continues before Cyprian takes "the very short step to ghosts and supernatural stories" (72) that has naturally arisen from their deliberations. Obviously the story of the gold ring is inherently connected to the tale of Adelgunda's frightening visions. Its area of influence is that of the human imagination, the power of the human mind to control objects not normally affected by such a "spiritual principle" (72). Carrying this point into Cyprian's discourse adds a further dimension to what appears to be a traditional tale of the paranormal.

Adelgunda (the daughter of a family with whom Cyprian is familiar) is shocked by the vision of "the White Lady" (74), a spirit who haunts the ruins at the bottom of her garden. After her first sighting of this creature, to which the family accredit a trick of the light, the figure reappears every evening at nine o'clock, visible only to Adelgunda. Her relatives become concerned for her well-being, certain that these constant visions are attributable to Adelgunda's state of mind. In other words, she herself is constructing the spirit with the power of her imagination. Were the story to end here its relation to the movements of the gold ring would be obvious. However, after several attempts to rid Adelgunda of the strange spectre, she proves its existence: "'Oh God!' cried Adelgunda, 'they think I am out of my mind.' . . . And as though she were acting under the influence of another, without exercise of her own will, with eyes fixed and staring, she put her hand behind her back, took up a plate which chanced to be on the table, held it out before her into the vacancy, and let it go. The plate did not drop, but floated about among the persons present, and then settled gently on the table" (76). Adelgunda's cry that she is out of her mind is fitting. While the floating plate convinces everyone present of the existence of the White Lady, the tale of the gold ring throws a shadow of doubt over the proceedings. Adelgunda seemed to be "acting under the influence of another . . . with eyes fixed and star-

ing," this other being her own subconscious. If, as the experiment of the narrator and his acquaintances proved, external objects can be influenced by the exertion of will, the moving plate takes on a less-than-supernatural appearance. On the other hand, of course, the passage above suggests science just as much as it does magic. Adelgunda's fixed eyes and seeming lack of will are reminiscent of the Mesmeric trance discovered by Franz Anton Mesmer, the founding father of modern hypnotism.<sup>3</sup> There are convincing arguments for either alternative, leaving the truth somewhat unclear.

From the magical stance this article has taken, of course, Waite can again provide some clarification. The unearthing of secrets within magical texts is characterized by those intent on such a discovery. Within *Der Automate*, Cyprian, Vincent, and their colleagues fall into the category of "independent seekers" who, Waite tells us, "by thought, study and intuition, sometimes attained veridic results without assistance [from adepts]" (*Ceremonial Magic* 12). Such results, if we remember, require the careful piecing together of fragmentary manuscripts in the hope that one may illuminate the other. Hoffmann, in building the world of *Der Automate* on the principles of magic, presents the reader with three fragments, suggesting that any "veridic results" demand the deconstruction of all three texts. Theodore's "Automata," therefore, may well bring us to some conclusion.

The tale of the Talking Turk is the central narrative of the entire story. It encompasses not only the mystical, preternatural frame around which Hoffmann built *Der Automate* but also the alchemy and science with which he paints in the details of his portrait. The Turk itself provides several problems. Its cleverly realistic construction can be readily dismissed as the ingenious creation of a skilled mechanist, but the oracular answers received by its many inquisitors is more difficult to define. Indeed, science can provide no reconciliation for its "marvellous intelligence" (80): "The figure and its exhibitor were watched and scanned most closely by the eyes of the most expert in mechanical science, but the more close and minute the scrutiny, the more easy and unconstrained were the actions and proceedings of both. . . . The upshot of it all was, that the mechanical geniuses said the devil himself could make neither head nor tail of the confounded mechanism" (80).

Despite Hoffmann's satirical humour in comparing the Turk to the devil and thereby to magic (which was often seen as devilish in consequence of its blasphemous communication with the supernatural<sup>4</sup>), explaining the seer-like qualities as derivative of a spiritual influence fails to convince. Leonardo da Vinci, for example, himself a mechanical genius, totally rejects this hypothesis: "O mathematicians, shed light on this error. The spirit has no voice, because where there is a voice there is a body, and where there is a body space is occupied, and this prevents the eye from seeing what is placed behind that space. . . . And if anyone should say that . . . a spirit may take various forms and by this means speak and move with strength—to him I

reply that when there are neither nerves nor bones there can be no force exercised in any kind of movement made by such imaginary spirits" (Richter 252). Yet da Vinci did believe in the spiritual principle of mechanics. Rather than magical, however, his belief sprang from alchemical theories of the growth of metals. This theory arose from the discovery of metals in various states, leading alchemists to believe that all metals enjoyed a growth similar to plants and animals. From this point of departure was construed the assumption that metals—again akin to animals—maintained both a body and a spirit. Paracelsus defended such a view generally although was less than forthcoming with more intimate details, saying only that "to write more about this mystery is forbidden" (Jacobi 223), paralleling the magicians' stubborn refusal to divulge important information in their magical texts. The Turk, we remember, consists almost entirely of metal, compared at times to the workings of a clock containing "a complicated mechanism consisting of a number of wheels" (*Der Automate* 79). Hoffmann's automaton presents a figure built on the principles of science but reflecting the composite world of magic and alchemy that governs it. The spirit of the metals that comprise the inner workings of the Turk has been mystified by the narrative's sorcery to create an animated puppet that personifies Waite's statement of contradictions coexisting logically.

There is little more in "The Automata" to further illuminate the difficulties encountered in the narrator's or Adelgunda's tales. A discussion of the Talking Turk's "spirit" appears to have relevance to the powers of human imagination that were the central impulse of the previous narratives. Again, however, we must remind ourselves that the scientific explanations encountered there were governed by the laws of magic, undermining the verity of rational argument. More, perhaps, will be revealed in the science of "The Automata" than in the alchemy. If the magical framework continues to operate, the scientific world personified by Professor X will be molded by this esoteric hierarchy into a shape that brings some clarity to all three fragmentary tales as well as to the surrounding structure.

Professor X—the creator of the Talking Turk—is first encountered at his home by Lewis and Ferdinand, determined to uncover the cause of Ferdinand's disturbing conversation with the Talking Turk. Our first impressions of the illustrious scientist are far from sympathetic: "They found him to be an old man . . . exceedingly keen and lively, with small grey eyes which had an unpleasant way of fixing themselves on one, and a sarcastic smile, not very attractive, playing about his mouth" (93). Just as Adelgunda's eyes were "fixed and staring" so, too, do the Professor's have "an unpleasant way of fixing themselves on one." Such a common bond is differentiated, however, by the activity that each description belies: Adelgunda's stare being passive while the Professor's stony glances are intensely conscious and active. The intention here must be to connect Professor X with Mesmer, and indeed there

is evidence to suggest that this is the case. Hoffmann would have known mesmerism well; its discoverer was renowned throughout the Western world, and a colleague who attended Hoffmann's soirees was a supporter of magnetism, one of Mesmer's important healing techniques. Professor X is even more closely allied to Mesmer both during and directly after Lewis and Ferdinand pay him a visit at home. There the Professor reveals to them his passion for music, treating his guests to a concert played entirely by automata of his own making. Lewis, upon leaving the Professor's home, takes exception to the inhumanity of music played by machines, discussing his theories with Ferdinand as they walk through the city. Their stroll brings them "before the entrance to a garden which was surrounded by lofty trees and tall hedges" from which they hear the most exquisite sound, "which, as it swelled and became more distinguishable, seemed to resemble the tone of a glass harmonica." Intrigued by such a melody, they move closer to the garden gate in order to see through it: "What was their astonishment to see Professor X—standing in the middle of the garden, beneath a lofty ash-tree! Instead of the repellent ironic grin with which he had received them at his house, his face wore an expression of deep melancholy earnestness, and his gaze was fixed upon the heavens, as if he were contemplating that world beyond the skies, of which those marvellous tones, floating in the air like the breath of a zephyr, were telling" (99). Connecting Professor X with the "extraordinary sound" of the glass harmonica highlights a direct link with Mesmer himself. As Mesmer's biography tells us, his "reputation was that of a fashionable Viennese physician with a taste for science and music, his particular forte being the playing of the glass harmonica" (Buranelli 48). Music, of course, has already played an important part in the story—Ferdinand being haunted by the beautiful singing of the young lady who later appears to him in a dream. Now, again, the same voice accompanies the "marvellous tones." Is the truth of Ferdinand's case that Professor X has somehow mesmerized the young man, making his subconscious susceptible to the charms of the song and the singer?<sup>5</sup> There is certainly potential for this. Mesmer was able, as Buranelli notes, to "recall long-forgotten events, often into childhood, by switching from his [the patient's] conscious mind to the unconscious. Most astonishing, he [the patient] became susceptible to post-hypnotic suggestion, carrying out when awake orders given to him during hypnosis, in total ignorance of the cause or meaning of his behaviour" (13).

Ferdinand's relation of his story to Lewis exhibits several aspects of Mesmer's abilities. His first encounter with the young lady occurs soon after he had retired for the evening, but, tired as he was, Ferdinand's sleep "was scarcely more than a kind of dreamy, half-conscious condition, in which I was cognizant of all that was going on about me" (84), reminiscent of the mesmeric trance in which the "fully hypnotized subject appeared to be asleep [although] his thought processes might be more acute than ever" (Buranelli



13). Tied to this is Ferdinand's dream in which the lady who had sung the song appears to him, whereupon he suddenly recognizes her as "the beloved of my soul, whose image had been enshrined in my heart since childhood" (86). While Hoffmann's narrative is never absolute, a process denied him by the very nature of his creation of a scientific world ruled by mystical logic, it does appear to be mesmeric theories of autosuggestion that influence the story of "The Automata." Nevertheless, the supernatural affects such a scientific reading by molding the cause and effects of mesmerism with a certain mysticism. Never, for example, do we find Professor X plying his hypnotic trade as scientifically as in Poe's short story "The Facts in the Case of M. Valdemar" (194-204), nor is the philosophy of alchemy ever very far removed from the surface of the tale. Mesmerism, and Mesmer in particular, are continually portrayed as magical or alchemical. Many of Mesmer's rivals, indeed, challenged the authority of his techniques, comparing him to Paracelsus or even Cagliostro. There is certainly an element of truth to their accusations: Buranelli notes that "the occultists had heard he [Mesmer] was one of them" (92), and Paracelsian medical treatments very often made use of magnets or the power of the mind in attempted cures. Paracelsus himself confidently assumed that the will of man could combat any physical disability: "The spirit is the master, the imagination is the instrument, the body is the plastic material" (Buranelli 20). Mesmer could have no argument with these denunciations of his technique, often fueling controversy by his own arcane practices. One eyewitness of mesmerism records that "Mesmer sat at the right side of the bed on a chair with his left arm turned against the chair. He wore a light gray robe trimmed with gold lace. On one foot he was wearing a white silk stocking. The other foot was bare and plunged into a bucket filled with water" (Buranelli 68). Such a description would not be out of place in Waite's *Book of Ceremonial Magic*.

Mesmer's science of the mind certainly had magical and alchemical sympathies. In actuality, the entire structure of *Der Automate* is construed along the oppositions between science and magic, the explainable and the impossible. Mesmerism gives us the details and the surface textures of the story while the rules of a magical world determine its logic. As this article asserted, esotericism governs the form and, inevitably, the content of *Der Automate*, which, if we approach Hoffmann scientifically, leads us down blind alleys of illogicality and into back streets scattered with paradoxes from which we would require a map of another nature to return us to the proper path. This map takes the shape of a magical text; in following its rules we can begin to decipher some meaning from the story as a whole.

The narrator reveals the fascination with the power of the human mind that will exert an influence over the two subsequent narratives. Approaching Cyprian's ghost story with this knowledge brings us to the conclusion that Adelgunda's own imagination is the transgressor. Her powers of subconscious

creation are so great that she even finds herself able (unconsciously) to move a plate through the air, just as Vincent and his colleagues are able to move the suspended golden ring. Theodore's manuscript of "The Automata" provides further clarification of the previous tale, imparting much-needed scientific information on mesmerism, which accounts for Adelgunda's staring eyes and terrific powers of imagination. The movement of information is not only unidirectional. The importance of imagination and will (which the first two narratives account for) work as an aid to understanding Ferdinand's conversation with the Talking Turk as well as his paranoid belief that fate—in the form of Professor X—will lead him to his death.

Having studied the text through the eyes of the magician, the last words of Theodore's manuscript become much clearer. Ferdinand discovers Professor X and the young lady of his dream in a church. He watches the young lady faint but can remember no more. "What happened further I do not know, nor have I any recollection as to how I got here; probably Professor X can tell you all about it" (101), he writes to Lewis. This blank spot in Ferdinand's memory is most likely the cause of a mesmeric trance, exerted over him by Professor X, whom Ferdinand rightly says will be able to tell Lewis "all about it." Remarkably, Ferdinand feels greatly improved, "a peace and a happiness" having "taken possession of [his] soul" (101). Again we need look no further than mesmerism: Professor X's influence in the trance has cured Ferdinand of his obsession, leaving him free to live his own life once more.

As for the company's disappointment at the sudden close of this narrative, we must turn to the magical framework of the story. Full knowledge requires exceptional faith. As Paracelsus explains, "magic is an art which reveals its higher power and strength through faith . . . and further revelation is the prerogative of the divine power . . . wherefore not everyone can understand it" (Jacobi 211–23). This is important, although Paracelsus's idealism is a little naive. The magical act, with its reliance on ancient texts, can never obtain the full picture no matter how strong the faith of its practitioners. The incredible divergence of contradictory information (to which Waite made reference) leaves the faithful able to piece together only parts of the whole, allowing their imagination to wander freely over those that are unobtainable. Hoffmann has an affinity with these adepts. As Theodore admits, "nothing is so distasteful . . . as when . . . the stage on which the imaginary world has been in action is swept so clean . . . that not the smallest grain or particle of dust is left on it" (102). Imagination, having been such a powerful force in *Der Automate*, is allowed to swing—like Foucault's pendulum—from one conclusion to another, forever arriving at a truth but never certain if such a concept exists.

Truth is equally transient in Arthur Machen's *The Three Imposters*. More so than Hoffmann's, Machen's fictional world is as much a product of the theories of A. E. Waite as it is of the author's narrative intentions. While

Waite was undoubtedly influenced by the type of mysticism to which Hoffmann gives credence—Mesmerism being the most obvious connection<sup>6</sup>—his links with Arthur Machen are pointedly less tenuous. Machen and Waite met in January 1887 and liaised for over fifty years until Waite's death in 1942. Upon hearing of his friend's departure, Machen said, "to lose Waite is for me to lose a considerable part of life" (Gilbert 61). This is surely some proof of Waite's peculiar yet important contribution to preternatural narrative, an importance based on his championing of a forgotten mysticism that may never, without his work, have received such unique attention. Even Aleister Crowley, forever one of Waite's most vehement detractors, was forced to admit that "Waite certainly did start a revival of interest in Alchemy, Magic, Mysticism, and all the rest" (Gilbert 11).

Fiction, however, in the years after Hoffmann's greatest tales, had not entirely forgotten "Mysticism, and all the rest." Indeed, Waite no doubt drew inspiration from the many narratives of this period treating a scientific/supernatural topic. Of these, perhaps the most influential would have been the novels of Sir Edward Bulwer-Lytton, whose *Zanoni*, *A Strange Story*, and *The Coming Race* all contain a similar narrative structure to that already used by Hoffmann and, in time, by Machen. So greatly did Waite admire Lytton's work that at age seventeen he published his poem *Zastroni*, which Gilbert argues "was a marriage of Shelley's *Zastrozzi* and Lytton's *Zanoni*" (31). It is no surprise, then, to find the following in Waite's own fiction: "He [Prince Starbeam's father] knew too that his boy was favoured by the Fairies, whom he had seen at night hovering over his bed; white figures passed in and out of the cottage, and weird, wonderful music was heard at times around it" (*Prince Starbeam* 14), or alternatively, "Prince Starbeam looked shyly into the eyes which scanned his face, and in the same way that his body was thrilled by the contact of the hand, so was his soul by the mesmeric influence of their potent glance" (33).

Although *Prince Starbeam* remains a traditional fairy tale, lacking entirely the more complex narrative frames of Hoffmann's fantastic tales, Waite's language is a continual referent to the mystical beliefs of its author. The "white figures" that pass "in and out of the cottage" are little different from the mysterious forms that haunt (rather more terrifyingly) Doctor Fenwick in Lytton's *A Strange Story*, while the "weird, wonderful music" draws parallels with Hoffmann's *Der Automate* in which Ferdinand is bewitched by the "marvellous tones" encountered outside Professor X's garden. Indeed Professor X is again called to mind in the meeting of Prince Starbeam with the Hereditary Prince of the Birds, whose eyes "scanned his [Prince Starbeam's] face" so intently that his very soul was infused by the "mesmeric influence of their potent glance." Likewise, when Ferdinand and Lewis first discover Professor X at home his eyes have "an unpleasant way of fixing themselves on one."

Such allusions—with Hoffmann and others—are put to more effective use in Machen's *The Three Imposters*. Waite may have provided the theory for a textual representation of his mystical world, but his own fiction never reached the high standards of his academic work. It was left, then, to Machen to provide a lasting narrative account of the omnipotent yet invisible forces with which Waite tangled in this world without being able to translate them into the fictional.

*The Three Imposters*, says Julian Symons in his introduction to the 1964 edition of the novel, "is a brilliantly ingenious collection of loosely interwoven tales which have about them a real sense of horror" (11). True as this is, in the most practical sense, the narrative construction should not be so easily tossed aside. Just as Hoffmann's story of Adalgunda seemed, at least initially, almost irrelevant within the scheme of *Der Automate*, a closer examination of Machen's own regulations of discourse will unearth stronger links between the "loosely interwoven tales" than most critics allow. What appears to be a series of extant and autonomous "novels" describing the rationally scientific in opposition to the wholly mystic (with the mystic appearing far more probable than any of the weak scientific explanations) actually describes the "playing-out" or processes of certain mystic forces which go beyond any earthly system of comprehension.

The text itself is built rather like a growing cell. The detection theme (in the manner of Conan Doyle) holds the narrative together like a cell wall, within which the tales continue to divide, each one adding more complexity to the overall structure. Even Machen's clever finalé fails to resolve this endless division of tales. The Gold Tiberius, after which the imposters search, remains unfound while the steadily enlightened duo, Dyson and Phillips, may well feel moved to further investigation upon their discovery of the murder of the young man with spectacles.

The comparison of the narrative with a living cell is particularly apt on a more mystical level. As each of the tales administers yet another division in the text, the membranous superstructure (our metaphoric cell wall) continues to enforce its own laws, constraining the stories within a given boundary, awarding them shape and context. This outer layer can be identified as the materialized influence of Waite's mystical forces (which in Hoffmann were associated with Mesmerism) here portrayed as supernatural or even occultist in origin. Returning to the text itself affords an opportunity to uncover—in view of these forces' authority—any possible linkage between the separate tales and their eventual constitution as interlocked sections of a complete entity, as well as questioning the source, or controlling agent—if one exists at the surface level—of such primal energy. Hoffmann's *Der Automate* employed mesmerism to link the disparate elements of the tale, with Professor X acting as a medium for channeling these forces. Machen may well prove to have a similar route through the fragmentation of *The Three Imposters*,

providing not only a complete picture but also (somewhat akin to Hoffmann's Professor) a powerful centrifugal force.

After the initial introduction of Davies, Richmond, and the girl, who are to become Burton, Wilkins, Lally, and Leicester in various guises, followed by their narrow escape in confronting Davies and Phillips, the narrative becomes a series of encounters and subsequently narrated "novels," occurring between no more than two characters: one of the imposters and either Dyson or Phillips. It is not until the rereading of the "History of the Young Man with Spectacles" (itself a virtual narration from beyond the grave) and the "Adventure of the Deserted Residence" that the full panorama of the story is completely revealed. Indeed, the introduction apart, only these last two sections of the text provide any illumination as to what has happened. Between, we encounter a series of orally related "fantastic tales" that appear to have little or no bearing on the—apparently—straightforward lines of the plot. There are four of these.<sup>7</sup> In the first Dyson is approached by Richmond/Wilkins, who relates the story of Smith, who had supposedly "perpetrated the most infamous cruelties on men and women" (57). In the second, Phillips meets Miss Lally—superficially distraught over the disappearance of her brother—who tells him the strange tale of the black seal in which a renowned scientist (Professor Gregg) discovers the ability to remove himself from the everyday world into that of faerie. The third involves Dyson yet again, this time accosted by Davies/Burton and told the tale of the antique thief whose lack of "commercial morality" (135) enabled him to steal a valuable gem that Burton had acquired for himself. Finally, Dyson becomes involved with a Miss Leicester (another pseudonym of Miss Lally) and hears of her brother's gradual demise at the hand of an unknown white powder that transforms him into "a dark and putrid mass, seething with corruption and hideous rotteness" (161).

The motives for the narration of each of these tales are obscure. On what grounds do the three imposters choose Dyson and Phillips for particular interest? They do not appear to know that Dyson has the Gold Tiberius or that he has been witness to their pursuit of the young man with spectacles. Can any of the novel's connections be more than mere coincidence? In a realistic sense, of course, they cannot. However, Machen—like Hoffmann—bases his narrative integrity not on the traditions of the human plane but on the esoteric. The text in this case is, as Manlove says, "of another order of reality" (3), that reality being the preternatural and the magical as A. E. Waite perceives it. A magical reality allows "all paradoxes . . . to obtain actually" (Waite 3) so that what appears as illogical is in fact entirely expected. The forces of this reality do not contend with the basic plot for control of the narrative. They work, rather, from the foundations: controlling the basic premises of the text and thereby controlling the entire theoretical structure of the novel. Their influence is expressed through language, which on the one hand

betrays their existence by connection with images of the mesmeric or electric, while on the other drawing metaphors from more mundane sources. Thus we find Professor Gregg explaining, "It was as if one glanced down on the even surface of the sea, clear and immobile, and saw beneath raging depths and a storm of contending billows" (96). Or the reaction of the young man with spectacles who "started violently when he saw Dyson placidly sitting in the corner, and glanced keenly about him. He seemed to be on wires, controlled by some electric machine" (174).

Realizing that otherworldly forces are present within the very foundations of the narrative leads one to assess the tales on a different level. What may seem coincidental is actually controlled; what could never be known *is* known. So the progression goes on until, as Waite has shown, "contradictions coexist logically" (3). The separate tales make more sense in this framework. Taking for granted that the imposters are guided by forces beyond their command (although perhaps controlled by another), each "novel" acts as a warning. Richmond/Wilkins's story of Smith proves how easily the focus of attention can be switched from one protagonist to another, just as the imposters will switch their attentions from the young man with the spectacles to Dyson if his ownership of the Gold Tiberius is revealed. The solitary tale that Phillips is subjected to is peculiarly suited to his personality. A rationally scientific thinker who "flatter[s] himself with the title of materialist," Phillips's beliefs are neatly subverted by introducing Professor Gregg, a scientific authority whom Phillips regards as "one of our most acute and clear-headed observers" (69). The novel of the Black Seal plays on Phillips's credulous side, which "required a marvel to be neatly draped in the robes of science before he would give it any credit" (59). This Miss Lally duly provides, kindling in Phillips the belief in powers beyond mortal ken that may prove useful to introduce to him at some later stage. As for Dyson's encounter with Burton/Davies, as a parable denouncing the theft of one another's valuables, it is a rather thinly veiled attempt to shame Dyson into revealing the whereabouts of either the young man with the spectacles or the Gold Tiberius itself. Obviously designed to appeal to Dyson's moral character, this tale seems to fail in its purpose; yet in Machen's narrative scheme, which leaves so many doors unclosed, it could well prove—beyond the boundaries of the text—to have been merely on pause. The final tale is the most horrifically dark and foreboding of the four. As a warning to Dyson not to meddle with forces of which he has no knowledge (just as Miss Leicester's brother had done with the "Vinum Sabbati"), it could hardly be more forceful.

With this, *The Three Imposters* is now seen to include several layers of textuality. The first is the en vogue detection theme, with both protagonists and antagonists pacing the streets of a less-than-ethereal London. Progressing deeper into the structure highlights the esoteric rules that actually govern the more commonplace. These rules—consciously adhered to by Machen, who

bases them on the theories of his colleague A. E. Waite—clarify and fit together the strands of narrative that in a more realistic narrative formula would make little contextual sense. Understanding the correct formula and applying it to the narrative allows the adept (as Waite would call the reader skillful enough to achieve this) to appreciate the full revelations of the text. Waite would agree with this. After all, he saw magic as “a conventional art, working by definite formulae; above all, it was a process in words” (*Ceremonial Magic* 7).

Machen, too, fully appreciated the linguistics to which Waite refers in calling the esoteric arts “a process in words.” *The Three Imposters* gives substance to the mystical forces through language, or, more commonly, through a lack of it. These forces are spread through the narrative infrastructure, but very rarely do they venture to the surface. Their controlling influence, however, remains strong. Characters find themselves unable to communicate (through the written word) the essence of such forces. Professor Gregg, attempting to elucidate to Miss Lally the nature of his discovery, stresses that “never will I write the phrases which tell me how man can be reduced to the slime” (120). Dyson, too, realizes the impossibility of expressing the fanciful, as his friend Mr. Russell complains, “these were my fancies; but when pen touched paper they shrivelled and vanished away” (141). Elusiveness is the catchword of Machen’s mysticism, the ability to control language belying an ability to control the forces of mysticism.

Only one character appears to have these forces subjugated to his will. Dr. Lispius, the gangleader of the imposters group, possesses knowledge which, especially to the young man with the spectacles, goes beyond the realms of practical research. “How can you know?” is his constant question, to which Lispius answers only that “it would bore you” to know of all “the cogs and wheels . . . which move the machine” (184). These “cogs and wheels” do, however, appear to be at Lispius’s disposal. His management of the three imposters, the young man with the spectacles, and, undoubtedly, his many victims is impeccable if diabolic. Yet Machen alerts us to his failings. If indeed the narrative’s mysticism finds an outlet in the text through language, whosoever controls this language will, logically, inherit the ability to regulate and manipulate such forces. Lispius, though, as his name suggests, lacks the necessary skills. His symbolic “Lisp” implies a speech impediment that highlights a language difficulty, necessarily overthrowing his control of the primal forces of mysticism. “The farce” that Miss Lally/Leicester believes to be “played” at the close of the novel<sup>8</sup> is double-edged (17–18). The last laugh does not go to the imposters, who we find “grinning evilly” at their handiwork,<sup>9</sup> but to the esoteric forces of Waite, Hoffmann, and Machen which, ultimately, need no human medium to exert their own particular set of narrative laws.

Both Hoffmann and Machen construct these narratives through a process of conscious artifice that mediates and, more than this, determines the textuality not only of form but, likewise, of content. Their preternatural theories, which are observed with greatest profundity in the theses of A. E. Waite, link them, and others throughout the nineteenth century, to a narrative form that finds its most admirable outlets in the fiction this essay has discussed.

### Notes

1. From Viktor Shklovsky's essay "Art as Technique" in Lodge, 16–30.
2. See for example Wright's famous scientific painting "An Experiment Upon a Bird in the Air Pump." As for Salvador Dali, I refer here to the surreal illogicality that can be found in the majority of his more famous works.
3. Arguably the most informative and thorough of the works on Franz Anton Mesmer is Vincent Buranelli's *The Wizard From Vienna*.
4. Magic implied a certain competition with the Church, which, after all, communicated with the supernatural world by a sacramental system as opposed to a ritual one. The Church, therefore, condemned magical practices as blasphemous. See Waite chapter 1.
5. One other aspect of the story's musical significance could also be considered: the link between the music and the Great Works of both alchemy and magic. John Read finds that "from many sides . . . alchemy was brought into intimate touch with music" (249), most generally because alchemists believed musical influences to be essential in laboratory operations. This theory probably arose for a number of reasons: the Pythagorean philosophy of numerical relationships between musical notes tied to their belief in the harmonic motions of the heavenly bodies, known as "the music of the spheres," as well as the Platonic construction of nature upon a mathematical plan that expressed matter as the juxtaposition of mysterious harmonies. Besides this, Hermes Trismegistus—the founder of the Hermetic arts—was also regarded as a patron of music. Interestingly, Mesmer himself believed music to be very influential in his own work, stating throughout his many publications that stormy music helped to bring on a Mesmeric crisis while softer tones would often allay it.
6. Although there is nothing in Waite's own papers—be it his diary, letters, or notes—to show that he had read Hoffmann's fiction, there is nonetheless substantial information to prove their similarities of interest. Hoffmann, as this essay reveals, was greatly involved with the theories of Mesmerism and its more romantic counterparts, such as mysticism, clairvoyance, and spiritualism. Some seventy to eighty years later (toward the end of the nineteenth century) Waite's interests coincide with these. He met many spiritualists, some of whom had been drawn to the sect by Madame Blavatsky (herself an admirer of Mesmer's techniques) as well as proposing his own theories of the transcendental, the descriptions of which have much in common with the transcendence of many of Hoffmann's fictional protagonists, not least Anselmus, the hero of Hoffmann's best-known tale, *Der Goldene Topf*.
7. The four separate narratives within the novel are entitled, in the order they occur, the "Novel of the Dark Valley" (36–59), the "Novel of the Black Seal" (71–124), the "Incident of the Private Bar" (124–38), the "Novel of the White Powder" (144–69).
8. This refers to the chronological close of the novel. In Machen's scheme the conversation cited here occurs in the prologue. However, the characters are discussing the "farce" which they have played on Dyson and Phillips in the past tense, even although the reader is yet to discover the exact nature of this throughout the rest of the novel.



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9. Especially as the Gold Tiberius—stolen by the young man with the spectacles—for which they have searched so long was constantly under their noses. In fact it is probable that as each of them created a different fantastic tale for Dyson, the coin was in his pocket no more than a few feet away! This fact is never revealed. If it had been, their exalted smugness about the recent farce may not have been so buoyant.

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## Appendix 2

The following appendix reprints an article based upon chapter two of the present work: 'A Hideous Phantasm?: Mary Shelley's *Frankenstein* and the Romantic/Materialist Debate'. It appeared as 'Frankenstein and the Soul', in *Essays in Criticism*, 45 (1) (1995), 24-35.

## *Frankenstein* and the Soul

MARTIN WILLIS

IN 1831, SOME TIME after the deaths of Shelley and Byron, Mary Shelley published the short story 'Transformation' in *The Keepsake*.<sup>1</sup> Although it retains certain echoes of *Frankenstein*, the later story proves far less enigmatic in its concerns over the existence or nature of the soul. Comparisons can be made between Victor Frankenstein's 'hideous phantasm' (p. 9)<sup>2</sup> and the 'misshapen dwarf' (p. 174) with 'squinting eyes, distorted features, and body deformed' (p. 174), but the latter reveals a greatly enhanced empiricism in his dealings with the spiritual. Guido – the belatedly romantic hero – is persuaded to exchange his soul for a casket of treasure, an operation which requires intermingling the blood of both giver and receiver in order to transmit the soul from one to another in ethereal transfusion. The tale follows conventional late Gothic sensationalism by concluding with Guido's admirable recapture of his own soul in a clever parody of epic mortal combat:

In the midst of my frenzy there was much calculation:—fall I might, and so that he did not survive, I cared not for the death-blow I might deal against myself. While still, therefore, he thought I paused, and while I saw the villainous resolve to take advantage of my hesitation, in the sudden thrust he made at me, I threw myself on his sword, and at the same moment plunged my dagger, with a true, desperate aim, in his side. We fell together, rolling over each other, and the tide of blood that flowed from the gaping wound of each mingled on the grass. (p. 184)

Providing the soul with such physicality marks an important deviation for Mary Shelley. The association of the life-force with the life-blood, in this context, involves a tangibility that lies uncomfortably with the romantic philosophies she had

previously championed. However, this apparent desertion does not go as far as to embrace the opposing materialist camp. By asserting that the soul embodies one's entire personality and individuality and forcefully rejecting the materialist 'man as machine' hypothesis, Mary Shelley leaves herself in a void: sceptical of the rationality of a romantic transcendental ideal yet antagonistic of materialist reductionism.

Although written in the period of her life when Mary Shelley was most enamoured by romantic philosophy, *Frankenstein* faces some of the same problems. While intending to emphasize the necessary deference to nature (inspired by romanticism) that empirical science lacked, she found her portrayal of Victor's artificial human complicated by the materialism of his genesis. Surely the morality of such a creature, as well as the internal organisation of consciousness, should exhibit an adherence to the philosophy that brought him into creation? The point of most contention is again the existence of the soul. *Frankenstein* displays this existence much less readily than 'Transformation'. Indeed the entire novel is peculiarly reticent over the practical origins of the monster's psyche. If Mary Shelley's mechanistic creation of the monster did not allow for a soul, it would be inconsistent with her later fiction, which further debases romanticism but still retains both an outward and inward representation of spirit.

The question has been largely disregarded by recent critics, who accept *a priori* the humanity of the creature (at least as far as his anatomy and consciousness are concerned). Only Maurice Hindle briefly addresses the soullessness of Frankenstein and his creature, arguing that our belief in the creature's lack of soul is a response to the 'Frankenstein myth' rather than to the novel itself. He concludes that

The 1818 edition of *Frankenstein* has a passage explicitly referring to electricity as a 'fluid'. This suggests that Frankenstein's cosmology does originally contain the notion of an immaterial, but a 'sensing' human soul, one that shares its life-nature with electricity.<sup>3</sup>

Although this surmise is basically correct, Hindle does not seem to appreciate the great divergence of belief among con-

temporary scientists as to the nature of electricity. Victor Frankenstein's simple reference to the electrical fluid in no way allows for the instantaneous leap of logic from a liquid conception of electricity to a similarly formed human soul, that Hindle apparently makes.

There is, therefore, a great deal more to the construction of the monster's psyche than critics generally suppose in *Frankenstein*. The argument is not so much between new science and gothic mysticism as between conflicting views of romanticism and materialism. The hypotheses of these two philosophies engage in a battle, on the one hand, to resurrect the soul of man and, on the other, to condemn it. Mary Shelley understood the materialist philosophers of the eighteenth and early nineteenth centuries well enough to present both their views and those of the romantics subtly and objectively.

By the time Victor Frankenstein completes his undergraduate training at Ingolstadt University his scientific pragmatism has blotted out all trace of the romantic outlook of his youth. Even the blatantly materialistic M. Krempe, whom Victor at first despises, imparts 'a great deal of sound sense and real information' (p. 49). The rationalism with which Victor pursues nature 'in her hiding-places' (p. 47) is reflected in his account of the research he has undertaken to discover 'the cause of generation and life' (p. 51). It was a combination of observation – '[I was] forced to spend days and nights in vaults and charnel-houses' (p. 50) – and the sort of experiment – '[I] tortured the living animal to animate the lifeless clay' (p. 53) – championed by the chemist Oersted, who often disparaged romantic scientists such as Friedrich Schelling for their disregard of the appropriate procedures. Already, the conception of the monster is overshadowed by empiricist techniques, yet the gross materialism of his actual construction far outweighs this. Victor recreates each stage of his hideous task with much descriptive power:

I collected bones from charnel-houses and disturbed, with profane fingers, the tremendous secrets of the human frame. In a solitary chamber, or rather cell, at the top of the house, and separated from all the other apartments by

a gallery and a staircase, I kept my workshop of filthy creation. The dissecting room and the slaughter-house furnished many of my materials . . . His limbs were in proportion, and I had selected his features as beautiful. Beautiful! – Great God! His yellow skin scarcely covered the work of muscles and arteries beneath; his hair was of a lustrous black, and flowing; his teeth of pearly whiteness; but these luxuriations only formed a more horrid contrast with his watery eyes, that seemed almost of the same colour as the dun-white sockets in which they were set, his shrivelled complexion and straight black lips. (pp. 53-56)

From the basic skeleton through the ‘muscles and arteries’ to the facial complexion a picture is built up of a straining mass of sepulchral material barely held together. The monster personifies scientific materialism in the most literal sense, his appearance tangibly paralleling the dominant philosophical beliefs of his creator, Victor Frankenstein, who recognises such metaphorical connections in the dream sequence which follows his animation of the creature. Slumbering, he sees ‘Elizabeth, in the bloom of health’ (p. 57) becoming ‘livid with the hue of death’ (p. 57) as he ‘imprinted the first kiss on her lips’ (p. 57), thus associating his own materialist touch with that of the graveyard constituents from which the monster had been assembled.

When the full horror of the monster’s countenance is revealed, it is hardly surprising to find him reviled by those members of society whose path he crosses. However, although his physiognomy would certainly inspire fear or loathing, the extreme reaction of all whom he encounters is surely expressive of some other indication of his inhumanity. There is a parallel here with E. T. A. Hoffmann’s short story ‘The Sandman’,<sup>4</sup> written at almost the same time as *Frankenstein* and in a spirit of romanticism which would have appealed to Mary Shelley and her circle. Olympia – later discovered to be an automaton – is distrusted by the gathered company who find her ‘rather weird’, as though she were ‘playing the part of a human being [and] there really were something hidden

behind all of this' (p. 302). In *Frankenstein* a comparable situation is adapted to suit the more secularly horrific strain of the narrative: the revulsion inspired by the monster is due to an innate sense of his *difference*, his manifestation of the alien, rather than an admittedly indisputable physical repugnance.

Certainly – considering the detailed summary of the monster's construction – it must be more than physical attributes which fully account for the inhuman 'otherness' which so shocks his antagonists (his body-parts are, after all, human ones). In view of the materialist philosophy which courses symbolically through each vein and artery of his newly-created body we need to ask whether his inhumanity stems from the absence of a soul. If so, this in turn would indicate his profane creation by man as opposed to a divine creation by God, and the mastery of a materialist nature over Mary Shelley's romantic background. The validity of this narrative approach is buttressed by the theories of several contemporary philosophers, among them Charles Bonnet, whose 1754 monograph *Essai de Psychologie* was later quoted by T. H. Huxley in his essay 'On The Hypothesis That Animals Are Automata': 'It is not to be denied that Supreme Power could create an automaton which should exactly imitate all the external actions of man.' (p. 247). Victor's God-like powers of creation and the fake religiosity he shows in such sentiments as 'a new species would bless me as its creator and source' reveals a correlation with Bonnet's 'Supreme Power' and associates the monster with the automaton which imitates 'all the external actions of man', providing, again, a strong parallel with Hoffmann's Olympia.

These mechanistic connotations can also be seen in the monster's early life and subsequent education. Samuel Holmes Vassbinder has shown that Mary Shelley utilised the work of the empirical materialist David Hartley, whose *Observations on Man, His Frame, His Duty and His Expectations* (1749/1791) agrees perfectly with the stages of enlightenment through which the monster progresses. Hartley's philosophy (in conjunction with Condillac's to whom Vassbinder also pays close attention), is basically dualistic in nature, and thoroughly opposed by the cosmic harmony of romantic thought which

finds all natural phenomena inextricably linked. Such dualism has no place for the existence of a soul, further rendering the monster a child of materialism devoid of any romantic influence and without moral value or spirit.<sup>6</sup>

These arguments all emphasise the soullessness of Victor's creation, but the real battle does not take place in the monster's early life or his abortive attempts at human interaction but at the precise moment of his birth – that vital turning-point between inertia and animation. Victor describes it as follows:

It was on a dreary night of November, that I beheld the accomplishment of my toils. With an anxiety that almost amounted to agony, I collected the instruments of life around me, that I might infuse a spark of being into the lifeless thing that lay at my feet. It was already one in the morning; the rain pattered dismally against the panes, and my candle was nearly burnt out, when, by the glimmer of the half-extinguished light, I saw the dull yellow eyes of the creature open; it breathed hard, and a convulsive motion agitated its limbs. (p. 56)

Almost all of Mary Shelley's commentators agree that Victor Frankenstein employs a form of electricity to bring his creation to life and all the evidence, even in the short excerpt here quoted, points towards such a conclusion: Victor's hope of 'infus[ing] a spark of being' into the lifeless body in his workshop and finding his success heralded by 'a convulsive motion [which] agitated its limbs' proves, at the very least, the author's appropriation of electrical rhetoric. But if the application of electricity is taken for granted what are the theoretical implications as far as the existence of the soul is concerned?

Post-Newtonian scientists, beginning with the accepted theory that electricity was some form of effluvia or fluid, continued to work from this hypothesis throughout the seventeenth and early eighteenth centuries. The discovery of the Leyden Jar in 1745 proved how powerful a force electricity could be but it continued to be described as fluidic; when the Leyden Jar was fully charged any excess – which sparked at earthed points – was known as the overflow. Despite periodic



refutations of this belief in the later eighteenth century, the survival of the fluid theory goes some way to explaining the continuing symbolisation of electricity as a physical, tangible phenomenon. Benjamin Franklin successfully proved the synonymy of thunder clouds with the Leyden Jar and, as Ritterbush reveals, 'this discovery of atmospheric electricity inspired speculation that all kinds of natural phenomena were caused by electricity'.<sup>7</sup> Disease was soon heralded as one of these 'natural phenomena' as doctors began to reveal the healing properties that a series of electric shocks had on certain patients. While it is likely that many of the cures were psychosomatic a proportion of them could only have owed their success to the powers of electricity. Such a discovery quickly led to the hypothesis that the recorded improvements were due to lost internal electricity being replaced by electrical therapy. To many this was an acceptance of electricity as 'the cause of life' (p. 47)

The movement of scientific thought in this direction takes us closer to *Frankenstein* and the creation of the monster, whose 'cause of life' is the introduction of an animating electrical shock. But what actual properties did this internalised electricity relay to the recipient? Once again, the materialists and romanticists expressed divergent views, either asserting or denying that the vitalism of electrical power is the basis not only of mechanistic animation but also of a spiritual psyche. Whether or not the monster (with the aid of Victor's electrical discoveries) *was* imbued with a conscious soul is at the centre of the narrative.

As we have seen, there is much evidence that he was not, but the question ultimately depends on the monster's post-animation relationships, when his forced alienation from his own origins as well as society subdues his generic design and turns him against Victor, the divine creator who formed him in his own image. The monster's rage at this double abandonment (by Victor and society) leads him to treat others as they themselves have treated him. This aligns him more closely with the romantics than might have been expected, as Morse Peckham shows: 'to impose one's will upon others . . . is to treat them as mere instruments for realising the will, to treat them as

objects, to treat them, in short, as society treats the alienated romantic'.<sup>8</sup> The monster's similarity to Victor Frankenstein has often been noted, and Victor, typically romantic in his boyhood, slowly alienates himself and becomes immersed in scientific materialism. The monster parallels this metamorphosis; his initial romantic animation is slowly eroded by the materialism of his construction, alienating him from the rest of humanity and transforming him into nothing more than a metaphor of the rampant scientific hubris seen in Victor Frankenstein himself.<sup>9</sup> It thus becomes obvious that the processes of electricity that gave the monster life are the agents of a distinctly romantic hypothesis entirely opposed to the severely mechanistic theories of certain materialist philosophers. How, then, do romantic notions of the properties of electricity alter the materialist position which the monster has assumed? And will such notions provide his only missing attribute – a soul?

A full understanding of the romantic position concerning the forces of electricity needs to take into account the fact that empirical research, though uncommon in the science of the early romantics (as exemplified by Schelling's speculations in *naturphilosophie*), was greatly involved in proving their hypotheses. In fact literary romanticism had always enjoyed a more fulfilling partnership with empiricist discoveries than is often assumed, as Ritterbush recognises: 'A bald statement that the Romantic poets were opposed to science, whatever it might mean, would oversimplify their reactions and neglect their indebtedness to the naturalists for beliefs about external nature' (p. 200). The endeavours of romantic philosophers to include electricity in a system of thought that was built on the beliefs of cosmic harmony, of the solitary force through which all nature was expressed, were aided by the research of such chemists as Humphry Davy, whose experiments proved the existence of many links between base chemicals and electrical molecular construction. Such discoveries became extremely important for the romantic scientist when the connection of magnetic polarity and electrical power was established by Oersted's uncovering of electromagnetism in the early 1820's. It is on Davy, however, that one must concentrate in

*Frankenstein*. His portrayal in the novel (as the Ingolstadt Professor M. Waldman) is the most positive image of science in the narrative, indicating Mary Shelley's great respect for his work.<sup>10</sup> Davy's association with the vitalist movement (who believed the source of vital power lay within electricity), and his work on apparent harmonies between natural forces, made him revered in romantic circles. What seemed to them to be the over-riding proof of their speculations into the natural correspondancy of electric power with other natural forces led them to an almost spiritual confidence in the importance of electricity, whose role as the lynchpin of this theory seemed deserving of such respect. Ritterbush argues this position historically: 'The inheritance of a harmonious system of forces was made to order for electrical speculation. This relationship between the speculative framework and the newly discovered cosmic force accounts for the extravagance of belief' (p. 48). Romanticism, then, seized upon electricity's apparent congruity with those forces which were already believed to be distinct parts of a harmonious whole. This, allied to the enormous power of which electrical energy was capable (and here one is reminded of the stroke of lightning which shatters a tree as Victor Frankenstein looks on<sup>11</sup>), gave electricity a position from which it appeared capable of not only providing the animating principle of organic life but also of spiritual life. In the romantic system of cosmic euphony, there could be no dualism, no disparity between mind and body. In giving life – romantic dogma asserts – electricity also gave a soul.

To some extent Mary Shelley's narrative defends this view. While throughout his reign of terror over Victor's family and friends the monster reveals very little in the way of moral values (of which the soul has traditionally been the guardian), some residual spiritual qualities (from which he has been so long alienated) do once again appear by the novel's end:

"But soon," he [the monster] cried, with sad and solemn enthusiasm, "I shall die, and what I now feel be no longer felt. Soon these burning miseries will be extinct. I shall ascend my funeral pile triumphantly, and exult in the

agony of the torturing flames. The light of that conflagration will fade away; my ashes will be swept into the sea by the winds. *My spirit will sleep in peace; or if it thinks, it will not surely think thus.* Farewell.”

(p. 215, my italics)

The speech acts as an epitaph and, despite the rhetoric, is traditionally Christian in value. The monster allows death to remove all his bodily ills before consigning his remains to the sea, but this does not conclude his self-destruction as it surely would from a materialist point of view. There remains a concern over the ‘spirit’ – the monster’s soul – which only here, in the final dialogue of the novel, is expressed so openly. Indeed this final line seems far more than a confirmation of the monster’s soul: his belief that ‘if it thinks, it will not surely think thus’ expresses a desire on his part to refute the materialism of which he has been the most powerful narrative symbol. The ‘funeral pile’, in this scenario, becomes a purifying fire, destroying (both bodily and psychologically) the extremes of materialistic scientific endeavour and allowing, one is encouraged to believe, the romantic spirit to ‘sleep in peace’.

Ultimately, therefore, Mary Shelley contrives a finale which involves both the debasement of reductionist philosophies and the transcendence of romanticism. These two distinct ideologies have fought throughout the novel over Victor Frankenstein’s ‘daemon’ (pp. 73, 161, 162), the unnamed monster who wears, at various points in the narrative, the mantle of both factions. That romanticism comes to be a form of salvation could have been anticipated. Mary Shelley’s personal experience is deeply-rooted in *Frankenstein*, the most idiosyncratic of her many works of fiction.<sup>12</sup> Nevertheless the text is as much a fictional representation of historical debate as it is of personal discovery. In the process of evoking the conflict of philosophies concerning the monster, Mary Shelley provides a microcosm of the dispute between scientific materialism and romanticism which had been going on since the later part of the eighteenth century. *Frankenstein* may not resolve many of the more problematic issues it raises, but the

monster's subjugation by materialism both anticipated the ascendancy which the new science was to enjoy in the nineteenth century and warned its readers that discarding romanticism's humility and respect could only augur disaster.

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NOTES

<sup>1</sup> Mary Shelley's many stories in *The Keepsake* can be found collected in *Tales And Stories* by Mary Wollstonecraft Shelley (Boston, 1975). 'Transformation' is reprinted on pp. 165-185.

<sup>2</sup> References to *Frankenstein* from the Penguin Classics edition, ed. Maurice Hindle (1992).

<sup>3</sup> Maurice Hindle, 'Vital Matters: Mary Shelley's *Frankenstein* and Romantic Science', *Critical Survey*, 1990, Vol. 2, No. 1, pp. 29-35.

<sup>4</sup> In E. F. Bleiler (Ed.). *The Best Tales of Hoffmann*, (New York, 1967), pp. 277-308. This story was first published in 1816, the approximate time of Mary Shelley's sojourn at Byron's Villa Diodati where *Frankenstein* was conceived. There is, however, no sufficient evidence to prove whether or not Mary Shelley read Hoffmann's tale.

<sup>5</sup> T. H. Huxley. 'On The Hypothesis That Animals Are Automata, and Its History' in *Collected Essays Volume One: Method and Results*, (1893), pp. 199-250. This essay was first published in 1874.

<sup>6</sup> For a fuller discussion of Vasbinder's excellent theories see his book *Scientific Attitudes in Mary Shelley's Frankenstein*, (Michigan, 1984), especially pp. 35-50 and pp. 65-82 respectively.

<sup>7</sup> Philip C. Ritterbush. *Overtures To Biology: The Speculations of Eighteenth Century Naturalists*, (1964), p. 25.

<sup>8</sup> In *Romanticism: The Culture of the Nineteenth Century*, ed. Morse Peckham, (New York, 1965).

<sup>9</sup> The similarities which critics have noticed between Victor Frankenstein and Mary Shelley's husband may also play a part here. Percy Shelley may well have seen himself, at times,

as an alienated romantic. His father continued to detest his son's wasteful poetic career as well as his dubious moral values. Percy's father-in-law, William Godwin also deplored Percy and Mary's elopement while Percy remained married to his first wife. From the Villa Diodati it may well have appeared that Shelley – like Lord Byron – was ostracized by his own community.

<sup>10</sup> Samuel Holmes Vasbinder, *op. cit.*, compares the rhetoric of Waldman to that of Davy's *Elements of Chemistry*, from which the most astonishing similarities arise.

<sup>11</sup> This incident occurs in the second chapter. 'As I stood at the door, on a sudden I beheld a stream of fire issue from an old and beautiful oak . . . and so soon as the dazzling light vanished, the oak had disappeared, and nothing remained but a blasted stump. When we visited it the next morning, we found the tree shattered in a singular manner. It was not splintered by the shock, but entirely reduced to thin ribbons of wood. I never beheld anything so utterly destroyed' (p. 40).

<sup>12</sup> Autobiographical elements in *Frankenstein* would include the killing of Victor's younger brother, William, which may relate to Mary Shelley's fears for the survival of her own son, also called William, who did in fact die in childhood; the comparisons between Victor Frankenstein and Mary's husband, already noted; the settings, all of which had been visited by Mary Shelley, including the Alps, the Scottish Highlands, the rivers of Germany and the Swiss lakes.

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