

**Dickens and Science Fiction: A Study of  
Artificial Intelligence in *Great Expectations***

**Pete Orford**

‘and this is the gentleman what I made! The real genuine One!’  
- Magwitch, *Great Expectations*<sup>1</sup>

There are two remarkable features about science fiction which have prompted this article.<sup>2</sup> The first - which is generally recognized - is the ambiguity surrounding both its origin and definition: different critics have identified different authors as possible influences on or forebears of the genre, producing an extraordinary list of surprising names such as Daniel Defoe, Jonathan Swift, Cyrano de Bergerac, Lucien and Homer. The second remarkable feature is that Dickens is not on this list. Science fiction critics simply have not considered Dickens, neither exploring his input into the genre, nor questioning his lack of input: why, might we reasonably ask, *didn't* Dickens write science fiction? After all, he was frequently responding to contemporary events and trends both in his journalism and fiction. It has become apparent that Dickens was very much in favour of progress, as many articles elsewhere in this journal will testify; furthermore, he was involved in other new and developing genres of the time such as the detective novel and the sensation novel.<sup>3</sup> If science fiction too was emerging around him, then we would expect him to be involved, or at least wonder why he was not.<sup>4</sup>

My aims in this article are twofold. First, I shall outline the confused beginnings of science fiction and the contradictions that blight the study of its origin, to justify why Dickens's works can be explored for science fiction themes and what significance this decision has for studies of the genre. Second, I will show what science fiction can do for Dickens through an extended reading of *Great Expectations* (1860-61) as a form of early robot fiction.

I

**The Genre That Wasn't There**

After two early and insubstantial appearances, the term ‘science fiction’ was put into general

usage in 1929, by the editor Hugo Gernsback in his new magazine *Science Wonder Stories*.<sup>5</sup> At first glance, then, this would appear to be the beginning of science fiction. On second glance, the answer is not so simple; for by 1929 H.G. Wells had written nearly all of his novels, Jules Verne had been dead twenty-four years, and Mary Shelley's *Frankenstein* had been in publication for over a century: it would thus appear that 1929 is not significant. But then comes the third glance; for while it is by no means the beginning of the genre, 1929 remains a significant threshold in the history of the genre: the application and subsequent recognition of the title 'science fiction' unified and consolidated the genre. It is when the genre became self-conscious. From this point forward, there would be science fiction fans specifically seeking out books of the genre; more importantly, there would be science fiction authors, responding to expectations of the genre and the works of other science fiction writers.

Prior to 1929 lies a mess of discontinuity. Authors who we would now recognize as science fiction (SF) writers went under various other labels: H.G. Wells was writing 'scientific romance', Jules Verne termed his works as 'voyages extraordinaires', Edgar Allan Poe wrote 'ratiocination', while Mary Shelley described *Frankenstein* as 'a ghost story'. As Edward James suggests, they had yet to 'formulate any kind of definition of the type of fiction which they were writing.'<sup>6</sup> We cannot pinpoint the influence and development of SF because it wasn't actually defined - there is not a direct line of authors reading one another, but rather a culture in which themes of science fiction were bubbling under: it was the genre that wasn't there. The elusiveness of its origin makes it harder to define science fiction, which in turn makes it harder to agree on the origin, so we have a vicious cycle of ambiguity. After all, while SF can include robots, space-travel, aliens, ray-guns and mad scientists, none of these are compulsory - we have yet to agree on the one linking element throughout science fiction; this is perhaps why Damon Knight defines SF as 'what I mean when I point at it.'<sup>7</sup>

With the definition eluding us, the search for early or proto-science fiction is ultimately subjective, dependent upon each critic's idea of what science fiction is. Verne's fantastic journeys are a response to the scientific achievements of the age and the pioneering spirit of discovery, but these would equally be an influence on many contemporary writings. While Brian Aldiss's nomination of *Frankenstein* as the first science-fiction story may seem

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uncontroversial (mad scientist, experiment gone wrong and new life-form all tick the boxes of readily recognized SF), elsewhere *Gulliver's Travels* (1726) has also been suggested as proto-science fiction, based on the protagonist's journey to unknown lands and encounters with new species; furthermore, on that same basis both *Robinson Crusoe* (1719) and *The Odyssey* can also be included, along with other tales of the fantastic and unusual such as *The Arabian Nights*, *The Iliad* and *Gilgamesh*, taking the potential origin of the genre back to 2000BC.<sup>8</sup>

The other problem with the search for science fiction's origins is that it is not only subjective, but anachronistic. Yes, it is impossible to say that Dickens wrote science fiction, but it is equally impossible to say the same of Verne. If the term was not coined until 1929, then the logical answer is simply to state that the genre did not exist prior to this, and any attempt to identify works that can be retrospectively classified as science fiction involves the submission of those works to parameters of which their authors were unaware. Authors placed their work within recognized frameworks - consider Shelley's identifying of *Frankenstein* as a ghost story - and ultimately what we must recognize, obvious as it may seem, is that all pre-1929 writing retrospectively identified as science fiction belongs primarily to another genre. Intrinsicly then, early SF must be understood as a hybrid consisting of one conscious, pre-existing genre, and the later genre of SF of which the work may contain some elements that seem relevant in hindsight, and there is no clear line in any case where one genre ends and the other begins. Instead when we review such works we invoke a temporal split between contemporary understandings of the book's genre, and a modern critic's reappraisal of the work. The work is subjected to two exclusive considerations: to an 1818 audience *Frankenstein* is a ghost story, to some modern audiences it is SF.

Consequently, in considering Dickens's works in relationship to science fiction, I do not intend to rewrite history and implicate Dickens centrally in the development of the genre. Rather, by analysing Dickens's work retrospectively through the framework of science fiction the intention is to: a) apply those same techniques that SF critics regularly apply to the works of Verne, Wells, Shelley etc, and b) highlight how the search for early SF must ultimately become an all-or-nothing approach; that is to say, that we as critics must either conclude that

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no-one wrote early SF, or that any literature can be read as a hybrid and examined for elements pertaining to post-1929 fiction. Certainly, if authors were unconscious of a unified genre, then identifying 'key' authors and works based on later parameters imposes false structure and suggestions of influence. It may be more fruitful to look for the roots of science fiction in all literature, suggestive of a general trend, indicative of a wider awareness of science and celebration of man's achievements, which led towards the eventual emergence of this one particular genre.

Consider travel fiction: Swift's *Gulliver's Travels*, Poe's *The Narrative of Arthur Gordon Pym* (1838) and Robert Paltock's *Peter Wilkins* (1750) can be (and have been) read in relation to SF's exploration of new worlds, but the elements of SF within them can be found to some extent in any work of travel writing. In such writings by Dickens, then, we regularly find him 'transforming that impression of urban reality through the startling originality of his imagination.'<sup>9</sup> His unique viewpoint and personification elevate what would otherwise be verbatim reports to stylized fiction; in Venice he travels a 'phantom street' in 'this ghostly city', whilst on a train journey he felt he 'may be coming from the moon'.<sup>10</sup> Retrospectively, we can read such passages as otherworldly, but of course these allusions were not intended by their author to be taken literally; it is we who transform the works into science fiction, not Dickens, nor Swift, Poe and Paltock. Another fertile (or problematic) ground for exploration of pre-1929 SF is gothic horror and fantasy.<sup>11</sup> Distinct genres in their own right, they nonetheless contain numerous elements that overlap and presage science fiction. The otherworldly encounters of spirits and inhuman powers, or man's unholy pursuit of such forces, for example, can be thematically read in terms of alien life or the scientist's discovery of new and devastating technology. It is significant that writers frequently identified as precursors of SF - Edgar Allan Poe, E.T.A. Hoffmann and Fitz-James O'Brien - are all remembered primarily as writers of gothic fairy tales. Horror and fantasy allowed authors to write openly about extraordinary events without reference to metaphor and allegory; this touches upon a much larger debate about where fantasy ends and science fiction begins: what constitutes the 'science' in science fiction that distinguishes it from pure flight of fancy?<sup>12</sup> It is not so much the physical presence of science or technology within a narrative, so much as

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the *awareness* of science and technology which pushes early tales of the fantastic closer to the genre of science fiction as we know it today (Roger Luckhurst calls SF ‘a literature of technologically saturated societies’<sup>13</sup>). Dickens’s bizarre reference to ‘a Megalosaurus, forty feet long or so, waddling like an elephantine lizard up Holborn Hill’ in the opening passage of *Bleak House* highlights the factor of popular science, with contemporary theories forming a common reference in everyday conversation.<sup>14</sup> Of course, we now know that Megalosaurus had a completely different form from the elephantine lizard that Dickens and his contemporaries saw at the Great Exhibition, which serves to highlight the common danger of SF, namely that scientific theories are continually developed and revised so that the science of the past becomes the fantasy of today. When plausible explanations can become implausible in the wake of subsequent scientific discoveries, it is not so much the validity of an explanation, but the act itself of trying to rationally explain the inexplicable that can ground the fantastic into the realm of science fiction.<sup>15</sup>

For example, in O’Brien’s *What Was It?* (1859), in which a boarding house is host to an invisible creature, there is no scientific description of the creature’s origin (i.e. scientific experiment gone wrong, new species discovered, etc), yet once the protagonist catches the creature, his actions are entirely scientific: he binds the creature, and tries to examine it, inviting various scientists to come and do so as well.<sup>16</sup> The realm of fantasy is thus subjected to the conditions of science fiction: an irrational event is dealt with rationally. It is comparable with Scrooge’s rationalization of the ghosts in *A Christmas Carol* (1843). Scrooge initially disbelieves in Marley’s ghost, without ‘evidence’ of his ‘reality, beyond that of [his] own senses’, insisting that Marley is merely the product of indigestion, with ‘more of gravy than of grave about’ him.<sup>17</sup> Deborah Thomas notes that ‘Scrooge struggles to maintain his factual surroundings’ and while his rationalization is less developed than that in O’Brien’s story, nonetheless it is retained in the character’s attempt to reconcile unusual events within the framework of a normal existence; in Hollington’s words, to ‘infiltrate them into the everyday’.<sup>18</sup> Scrooge’s reaction addresses the issue of how such things may be possible, which is not the concern of pure fantasy; it places the extraordinary in the realm of the ordinary, which resonates with science fiction.

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Dickens's rationalizations are complemented by Luckhurst's 'technologically saturated society'; industrialism was a key influence on Dickens's writings. Whereas Shelley's futuristic novel *The Last Man* (1826), despite its twenty-first century setting, has no major discussion of technological advances, Dickens's accounts of the nineteenth century factor in the mechanisation of the world.<sup>19</sup> Sanders suggests that Dickens 'seems generally to have remained less enthused by landscape than he was by townscape.'<sup>20</sup> Dickens's fascination with industry and its effects upon society are unsurprising given the context of the nineteenth century; he was living between two eras, the pre-and post-railway landscape, where the past and future were clearly divided by the onset of widespread technology and industry and the rapid change in forms of transport in particular was 'a distinct demarcation between childhood and maturity, between then and now'.<sup>21</sup> Consequently Dickens's description of the heavily industrialized Coketown in *Hard Times* (1854) as a place of 'smoke and ashes', with 'serpents of smoke', a 'black canal' and 'several large streets all like one another' presents a dystopian view of a mechanized landscape familiar in SF cityscapes.<sup>22</sup>

Ultimately Dickens was not only writing of the fantastic, but seeking to represent how the ordinary world could offer the same sense of wonder found within the imaginative sphere. Harry Stone notes how the inexplicable was consistently framed within the everyday in Dickens's writings:

Dickens was not content to convey his vision of life through phantoms and goblins. He did not wish to confine his art to ghostly allegories and whimsical masques. He wanted to present life in its density, its solid reality, but at the same time convey its shimmering strangeness and wonder.<sup>23</sup>

Dickens frequently blended the extraordinary with the ordinary (and vice versa); this, alongside his inclusion of unusual phenomena within his books consequently affords regular opportunities for retrospective SF readings. Both *A Christmas Carol* and *The Chimes* (1844) depict the central character travelling through time, and making decisions to change the present based upon their knowledge of the future.<sup>24</sup> *A Tale of Two Cities* (1859) explores the doppelgänger: the portrayal of Sidney Carton and Charles Darnay 'so like each other in feature, so unlike each other in manner'.<sup>25</sup> Their mutual revulsion and unease, and the fatalistic consequences of their inability to coexist, has similarities to Hoffmann's *The*

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*Doppelganger* (1822), Poe's *William Wilson* (1839), Dostoevsky's *The Double* (1845) and of course Robert Louis Stevenson's *Dr Jekyll and Mr Hyde* (1886).

His work may not contain as much ground for SF readings as that of Verne or Shelley, but that does not preclude him from consideration; rather it challenges us to drop the idea of a group of distinct examples of early science fiction, and instead to address all pre-1929 fiction for varying levels of relevance to a later genre. In the wake of the Enlightenment and the Industrial Revolution, widespread celebrations of man's ingenuity and corresponding cautions against his arrogance, introduced the requisite ideas for science fiction to form. Dickens was writing in the same century as Mary Shelley, Edgar Allan Poe, E.T.A Hoffmann, Fitz-James O'Brien, Edward Bulwer-Lytton, Samuel Butler, Edward Bellamy and William Morris; all of whom have been identified as heavyweights in the reign of proto-science fiction, their works repeatedly drawn upon retrospectively as examples of the genre before the genre was known. But these names do not provide the complete picture of the development of science fiction; as Edward James suggests, in mapping out the early cartography of the genre, these names are just the peaks that are easy to spot, 'but no historian of the genre has examined what sustains them, how they are linked, and whether the landscape between them is made up of deep, separating valleys, or a mass of connecting hills. The science fiction landscape of the nineteenth century is only gradually being revealed.'<sup>26</sup> To understand science fiction's origins, or to truly identify our retrospective reading of SF's predecessors, we need to look beyond the conspicuous examples to see what was happening in other literature of the period: to consider either how SF developed across an entire culture to varying degrees, or else expose the futility of pinpointing particular examples of the genre before it was consciously known. It is now time to see how Dickens's works contribute to the landscape between the peaks, and, in turn, to see how a consideration of a science fiction theme can afford a new reading of his works.

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## II

**Concerning Robots and Automaton**

If ‘nineteenth-century science fiction’ is an anachronism, then ‘nineteenth-century robot’ is no lesser one. Though predating SF, the term robot was still not coined until 1921, when it was used in Karel Čapek’s play *Rossum’s Universal Robots*.<sup>27</sup> The play covers many of the generic features found in later robot fiction: the robots are mass-manufactured to serve humanity, yet ultimately revolt and usurp humans; the moral of the story is as much about man’s arrogance and the rights of the robots as it is about the menace of other life. Čapek’s use of the robot, like so many that followed him, was as an allegory for class distinctions in contemporary society: humanity’s use of the robot corresponds to the upper class treatment of the worker; frequently, then, we find robot fiction dealing with similar issues of social position and the conflict between internal merit and perceived status that are explored at length in *Great Expectations*. But there is a disparity between the locations of robot fiction and its predecessors. The term ‘robot’ is taken from the Czech verb meaning ‘to work’, so that to be a robot is literally to be a worker, but pre-twentieth-century fictions of artificial life do not specifically address the worker, nor are they based in the industrial sector. The reason for this is that there was a far more prominent example of artificial life, namely the automaton, and consequently it is this that offers the relevant model for predecessors of robot fiction, including *Great Expectations*.

The title of automata encompasses a wide assortment of clockwork models, intricate machines or elaborate hoaxes that all purported to simulate human life; these mechanical mimics of flesh and blood were a popular form of entertainment in eighteenth and nineteenth century society. Therefore, while an automaton is certainly a predecessor of the robot, the fundamental divide between the two is this: a robot is a worker, an automaton is an end in itself with no function other than to incite wonder; its place is not in the factory, but in society.

The other key element to note about the automaton is the resulting celebration of the inventor. Enlightenment culture allowed for the idea of artificial life to be distinguished from

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witchcraft and devilry (such as Friar Bacon's brazen head) and instead be perceived as a feat of engineering and demonstration of the inventor's genius.<sup>28</sup> Jacques de Vaucanson's life-sized flute-player of 1738, and his duck of 1739 that quacked, drank, ate and defecated, demonstrate the range of the automaton from the sublime to the surreal: it was the mechanics themselves that generated interest rather than the usefulness of either object. When Wolfgang von Kempelen showed his chess-playing Turk, a key part of each show was Kempelen's opening up of the automaton to show the mechanism inside while audiences tried to deduce how the feat of a chess-playing machine was accomplished; the exposure of its inner workings was an integral part of its appeal.<sup>29</sup>

Whilst Vaucanson's and Kempelen's automatons were showcased among the higher end of society (Benjamin Franklin was among the celebrities to match wits with the Turk, and Hoffmann called it '*de rigueur* to see him'), a larger array of simpler automatons produced similar responses from a wider audience at sideshows and exhibitions.<sup>30</sup> Indeed, any clockwork figure, puppet, doll or waxwork constitutes an automaton; any instance where art imitates, or simulates, life. Consequently the notions of the automaton and of artificially constructed beings were familiar across all levels of society, including Dickens's milieu.<sup>31</sup> Little Nell's travels across the countryside, for instance, provides meetings with two forms of automata, the puppet and the waxwork, that suggests the range of meanings of automata from the comedic to the purportedly educational.<sup>32</sup>

Of more interest to the current study is Dickens's reference in *Our Mutual Friend* to 'a well conducted automaton' who plays music at Georgina Podsnap's birthday party, primarily because the term is used to refer to a human; Katherine Inglis notes how in this instance, automata are used as 'models for human degradation', the use of the term 'automaton' here not being used to suggest that the inanimate form is achieving the qualities of the animate, but instead reversing the process and downgrading the animate to inanimate, the human to an object of insignificance.<sup>33</sup> In Dickens's works the automaton becomes an allegorical device. This questioning of man's anatomy in the knowledge of machinery dates back to Julien Offray de La Mettrie's highly controversial work *Man A Machine* written in 1748, in which the author likens the human to 'a self-winding machine', albeit 'a machine so complicated

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that it is impossible at first to form a clear idea of it, and, consequently, to describe it'.<sup>34</sup> La Mettrie's description of the human frame is focused purely on the tangible, dismissing the spiritual altogether, and is an approach more symptomatic of a clockmaker examining the many cogs and springs of a watch than it is of a philosopher extolling the wonders of humanity. The root of La Mettrie's work is a focus on functionality, and it touches upon the same fears voiced by critics of the widespread industrialisation of the nineteenth century; even those championing the rise of technology, such as Andrew Ure, still recognized how factory workers were effectively becoming cogs in a machine 'composed of various mechanical and intellectual organs [...] being subordinated to a self-regulated moving force.'<sup>35</sup> Dickens himself famously criticized the mechanization of humanity in *Hard Times*; fancy had no place in a town like Coketown, 'inhabited by people like one another, who all went in and out at the same hours, with the same sound upon the same pavements, to do the same work, and to whom every day was the same as yesterday and to-morrow, and every year the counterpart of the last and the next.'<sup>36</sup>

Dickens, like La Mettrie, uses machines to comment upon humanity (or lack of it). In their analysis of prosthetics in Dickens's writing, and his fascination with anthropomorphic description, Sussman and Joseph explore characters that bridge the animate-inanimate divide, positing that 'Captain Cuttle figures or prefigures the beneficent cyborg of the cyberfictional imagination', whilst also drawing attention to others such as Silas Wegg and his disembodied leg.<sup>37</sup> But in *Great Expectations* the boundary between real and artificial life is broken without the physical prompt of artificial limbs or enhancements; the mechanistic properties of characters are internalized. The model of the automaton could be used to analyse the human; as Mrs Jarley remarks to Nell, 'I won't go so far as to say, that, as it is, I've seen wax-work quite like life, but I've certainly seen some life that was exactly like wax-work.'<sup>38</sup>

### III

#### 'Cold, Cold Heart': Estella the Automaton

To appreciate the representation of automata in *Great Expectations*, let us first consider

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another tale of the automaton, Hoffmann's *The Sandman*.<sup>39</sup> The story begins with the death of the hero Nathanael's father, and the implication of the villainous Coppélius in the crime, who subsequently disappears before justice can be served. Years pass, and Nathanael, now a student, falls in love with his mentor Spalanzani's supposed daughter, Olympia, who is cold and distant, with 'icy lips' and a 'cold hand'.<sup>40</sup> This romance forms the central premise of the story; his pursuit of her alienates him from a childhood sweetheart who, like Biddy in Dickens's story, offers a more homely yet less intoxicating romance; it also brings him into conflict with his friends who all note the unsuitability of Olympia as a lover:

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 particularly measured: all of her movements seem to stem from some kind of clockwork.<sup>41</sup>

These last words prove tragically insightful, for the strange girl is revealed to be indeed a clockwork automaton, made by the joint efforts of Spalanzani and Coppélius, who has returned under the pseudonym of Coppola. Nathanael discovers Olympia's lifeless body just as her bickering inventors leave her in pieces, her eyes vacant to emphasize her artificiality. Haunted by the horror of what he has experienced, Nathanael ultimately commits suicide.

There are four elements of Hoffmann's story that are relevant to *Great Expectations*: the unfulfilled love of the hero, the coolness and detachment of the heroine, the (im)morality of her inventors, and the location of the narrative within society. This last point is a direct indicator that the model for Olympia is the automaton, not the robot; it also explains how this mechanical creature can exist in society without causing a response of sensationalism or fear, but rather invoking quiet disapproval of the 'inexcusable deceit to have smuggled a wooden doll into proper tea circles [...] and to have palmed it off as human.'<sup>42</sup> It is not a tale of a usurping race, but of a created being operating outside of its social class.

The emotionless Olympia who casts a spell over the hero is clearly comparable to Estella and her hold over Pip. Nathanael first sees Olympia prior to her debut in society, 'locked up so that no-one can come near her' by Spalanzani within his house, just as Pip meets Estella contained within Satis House during her formative years, before she too goes

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out into the world to learn the ways of society.<sup>43</sup> Like the automaton, Estella is frequently referred to as distinct from others, ‘like a statue’ (239), with a ‘cold, cold heart’ (271). The limitations of Pip’s knowledge as narrator prevent an omniscient understanding of Estella’s education and the impact on her - Barbara Hardy suggests that Estella’s true character is ‘to be inferred, not straight-forwardly and clearly read’ - yet on those occasions when she does speak frankly to Pip, it seems to only confirm her inhumanity, revealing not her inner soul so much as an internal mechanism:<sup>44</sup>

You must know [...] that I have no heart [...] Oh! I have a heart to be stabbed in or shot in, I have no doubt, [...] and, of course, if it ceased to beat I should cease to be. But you know what I mean. I have no softness there, - sympathy - sentiment - nonsense. (211)

It seems, [...] that there are sentiments, fancies - I don’t know how to call them - which I am not able to comprehend. When you say you love me, I know what you mean, as a form of words but nothing more. You address nothing in my breast, you touch nothing there. (321-322).

Love is only a word for Estella; it is reminiscent of La Mettrie’s claim that, if we are machines, then ‘Soul is, therefore, only an empty word to which no idea corresponds.’<sup>45</sup> Estella’s responses to the world around her are exclusively logical: she hears the words Pips says, but cannot respond to them emotionally. The unrequited love of Pip and Nathanael for a being unable to respond can trace its roots back to Pygmalion, whose statue is ‘at once a perfect woman, too good to be true, and also less than a woman, not even real.’<sup>46</sup> Dickens had touched upon the myth before; in *Master Humphrey’s Clock*, Sam Weller tells the tale of a hairdresser enamoured with a mannequin, who vows only to wed the girl who looks exactly like the dummy, which various female admirers interpret as being ‘wery sinful and that he was wurshippin’ a idle’.<sup>47</sup> Yet no sooner does he meet such a girl than she in turn falls in love with a male mannequin and makes the same vow he had before: the hairdresser perceives ‘the hand of fate’.<sup>48</sup> The love for the mannequin is defined as unnatural and justly punishable, yet its root is precisely in the unattainability of the object. Is the allure therefore, precisely because the subject is so different? For Pip, Estella seems from another world; he places her upon a pedestal and worships her initially without hope of reciprocation: he ‘would have gone through a great deal to kiss her cheek’ but recognizes that to her a kiss ‘was worth nothing’

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(81). The relationship places her in the context of the mannequin, or Pygmalion's statue; a perfect model in appearances but lacking the necessary warmth within.

#### IV

#### **Setting Expectations: The Inventor**

Estella's description and actions mimic the automaton, but what truly confirms her as such, rather than emotionally troubled, is her relationship with Miss Havisham; her role as 'the cold instrument of Miss Havisham's revenge' identifies her as a puppet obeying the instructions of its master.<sup>49</sup> The presence of an evil genius dictating her decisions compounds Estella's emotional restrictions with the reduction of her own autonomy. It is significant that Dickens provides a human creator here as the cause for Estella's condition: elsewhere, in *The Haunted Man*, the protagonist becomes detached through supernatural means, while characters such as Scrooge or Dombey are each responsible for their own isolation, but here Estella's emotionless character is forged purely by Miss Havisham, the inventor figure who shapes and moulds this girl into an automaton, a shell with the appearance only of being human. Pip's experiences from the forge find an unexpected unity with the mindset of Miss Havisham; Joe's song about Old Clem, 'that imitated the measure of beating upon iron', when rendered by Pip is said to 'catch her fancy' (84), and they sing the song regularly in the house. The tune used by Joe while he manipulates metal is also used by Miss Havisham while she is forging her own creation. Her tools are not mechanical apparatus but social engineering: Jeremy Tambling suggests that in the book '[i]dentities become a matter of social control and naming', noting in particular that Estella's constitution is altered from its original status 'by the identity she receives from Miss Havisham's hands'.<sup>50</sup> Everything cold and inhuman about Estella is the direct result of Miss Havisham's crazed intentions to turn her into an object of desire (specifically, an object to be desired, rather than one that feels desire):

Hear me Pip! I adopted her to be loved. I bred her, and educated her, to be loved. I developed her into what she is, that she might be loved. Love her! (213)

The science fiction element of the inventor is emphasized by the gothic presentation of Miss

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Havisham; Brian Aldiss summarizes that science fiction is ‘characteristically cast in the gothic or post-gothic mode’.<sup>51</sup> As discussed earlier, gothic fiction is often interpreted retrospectively as early science fiction. Fred Botting justifies the link between the genre by suggesting that they both ‘share a fascination with the ruination of the species and the monstrous dissolution of the imaginary integrity of the human body’, and it is precisely such degradation of the human form that is not only performed by Miss Havisham on her young ward, but furthermore exhibited in her own decayed state; Dickens’s descriptions of her are both horrific and indicative of the body’s collapse.<sup>52</sup> Whether Miss Havisham be a ‘ghastly waxwork’ or ‘skeleton in the ashes of a rich dress’ (49), the character has a supernatural element, and is frequently referred to by critics either as a witch or witchlike.<sup>53</sup>

Dickens describes Miss Havisham’s surroundings at Satis House in such a way that resonates with the stereotypical creepy castle in the middle of the forest, where horror story protagonists foolishly seek shelter from the storm.<sup>54</sup>

A fire had been lately kindled in the damp, old-fashioned grate, and it was more disposed to go out than to burn up, and the reluctant smoke which hung in the room seemed colder than the clearer air - like our own marsh mist. Certain wintry branches of candles on the high chimney-piece faintly lighted the chamber: or, it would be more expressive to say, faintly troubled its darkness. It was spacious, and I daresay had once been handsome, but every discernible thing in it was covered with dust and mould, and dropping to pieces. The most prominent object was a long table with a tablecloth spread on it, as if a feast had been in preparation when the house and the clock all stopped together. An epergne or centre-piece of some kind was in the middle of this cloth: it was so heavily overhung with cobwebs that its form was quite indistinguishable; and, as I looked along the yellow expanse out of which I remember its seeming to grow, like a black fungus, I saw speckle-legged spiders with blotchy bodies running home to it, and running out from it, as if some circumstance of the greatest public importance had just transpired in the spider community.

I heard the mice too, rattling behind the panels, as if the same occurrence were important to their interests. But the black beetles took no notice of the agitation, and groped about the hearth in a ponderous, elderly way, as if they were short-sighted and hard of hearing, and not on terms with one another.

These crawling things had fascinated my attention, and I was watching them from a distance, when Miss Havisham laid a hand upon my shoulder. In her other hand she had a crutch-headed stick on which she leaned, and she looked like the

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Witch of the place (72-74).

Little wonder that Margaret Oliphant denounced Dickens's depiction of Miss Havisham as 'fancy run mad'.<sup>55</sup> Miss Havisham's repulsive appearance corresponds to 'the most hideous figure' of Hoffmann's Coppelius, whose 'whole appearance was loathsome and repulsive' and inspired 'disgust and abhorrence' in those watching him; such overt gothic tones objected to by Mrs Oliphant were exhibited in real-life inventors too.<sup>56</sup>

Luigi Galvani's various experiments of electricity on frog corpses in the 1790s, as popularized through his nephew Giovanni Aldini's tour of Europe, connected the creation of life with reanimation, especially when Aldini then conducted the same experiment on a prisoner's severed head at Newgate prison.<sup>57</sup> Such work on corpses and the resulting industry of resurrectionists confirmed the inherently grotesque aspect of creating life artificially, even when the work was completely devoid of such horror. Steven Connor notes the 'tawdry Gothic trappings' with which Hollingshead spoke of Faber's talking machine Euphonia, which the inventor would exhibit without pomp or dazzle, creating instead a melancholy scene. Faber himself was described by Hollingshead as 'a sad-faced man [...] not too clean, and his hair and beard sadly wanted the attention of a barber.'<sup>58</sup> Whilst the automaton was a wonder of science, the inventor was closer to an outcast, a shadowy figure playing second fiddle to his own creation. Arthur C. Clarke said that 'any sufficiently advanced technology is indistinguishable from magic', and Wood notes of the early shows how 'mixed in with the magic and the marvel was a fear': inventors were not only confused with magicians but also heretics.<sup>59</sup> Hoffmann spoke of the Turk having 'a fearful, unknown power' at its root: La Mettrie's writings were condemned by the church, and when Jacquet-Droiz took his automaton on tour in Spain, both he and his machine were imprisoned by the Inquisition: the inventor, real or fictional, invoked superstition of engaging dark forces when entering new territories of knowledge and invention.<sup>60</sup>

Unsurprisingly then, given these prejudices, there is a consistent association in fiction between the creation of artificial life and divine punishment; Victor Frankenstein has been repeatedly hailed as 'an archetype in his own right', yet Mary Shelley herself implicated a far older prototype in the novel's full title of *Frankenstein, or The Modern Prometheus*.<sup>61</sup> Brian

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Stableford notes Percy Shelley's 'fascination with the character of Prometheus', who stole fire from the gods and put it in mortal hands; the character is mentioned also by La Mettrie and Andrew Ure as a symbolic figure for the inventor. Wood further suggests the original female automaton to be 'Pandora, the destructive "manufactured maiden" of Greek mythology, sent to Earth by Zeus as punishment for Prometheus's transgression'.<sup>62</sup> The archetype proposes that he who disturbs the natural law is damned in response; certainly, Prometheus's fire proves to be a literal curse upon Miss Havisham in the end. To create life is to be a god, and the inventor's action can be empowering, it also verges on blasphemy. In Čapek's play, Rossum 'wanted to become a sort of scientific substitute for god', and Stone identifies that Miss Havisham too 'has undertaken God's role; she has acted as creator and destroyer'.<sup>63</sup> Pride, even megalomania, lies at the root of the inventor's pursuit; a reviewer of the Turk called it 'the boldest idea that ever entered the brain of the mechanic' to construct 'a machine to imitate man, the master-piece of creation'.<sup>64</sup> As Connor notes, 'nothing could demonstrate the power of the inventor more than the mechanism's autonomy'.<sup>65</sup>

Yet whilst Rossum, Coppelius and Frankenstein can all, as pioneering scientists, have their motivations explained by either the furtherance of science or a thirst for glory, the motivations behind Miss Havisham's work are more emotional. Though she is certainly proud of her creation, ostensibly, the fundamental reason behind her forging of Estella into this emotionless being is revenge. This is not without precedence in predecessors of robot fiction: in Fitz-James O'Brien's *The Wondersmith* (1859), the titular character is an outcast gypsy whose child is dead, the blame of which he lays upon a Christian aristocrat. In retaliation, he creates mannequins and gives them both life and murderous intentions so that 'the children of the Christians shall die'.<sup>66</sup> His intention is misdirected revenge blown out of proportion beyond the original crime by his own pain, just as Miss Havisham intends Estella to wreak havoc upon the male population as escalated revenge for her own pain: 'to save her from misery like my own' she says, 'I stole her heart away and put ice in its place' (356).

Estella is born of Miss Havisham's misery, and this betrays a further motivation. Derek de Solla Price suggests that 'some strong innate urge toward mechanistic explanation led to the making of automata'; consequently the desire to create a new woman, one without

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feelings, speaks of Miss Havisham's own need to both understand and conquer the wounds her heart has suffered.<sup>67</sup> Her desire to comprehend her own internal workings forms the nexus of her response to the tragedy of her wedding day. Stone notes that she 'has stopped time, or so she thinks' in wearing her wedding dress, stopping the clocks, denying the outside world and trying to maintain that singular moment, to be a master of time rather than a victim; the creation of life in a form of her choosing is an equal attempt to re-establish the power relationship and redefine her position.<sup>68</sup>

But there is a yet deeper root to Miss Havisham's education and adoption of Estella; the automaton provides a surrogate child. This again is a common interpretation of the male inventor; Wood refers to it as 'no surprise' that so many inventors were men and draws attention to the psychologist's term of 'womb envy', noting that 'the automata of the Enlightenment were frequently designed in the image of children'.<sup>69</sup> For Miss Havisham to be identified with the inventor requires an acceptance of a woman having womb envy, yet given that her character is defined by that one singular moment when her marriage was taken away from her, the ensuing obsession with a surrogate child obtained through other means is less surprising. That Miss Havisham should grow to love her cold instrument of revenge is an indication that a woman still exists beneath the decayed wedding dress.

It is this unintentional emotional tie on her part that constitutes her final tragedy - it is ultimately the same that the other inventors face, when their creations exceed their expectations and turn upon them. Each inventor is blind to the monstrosity they have created until it is too late, with fatal consequences. Aldiss notes that 'the core' of Shelley's novel is 'the experiment gone wrong'; Frankenstein's 'daily fear lest the monster whom he had created should perpetrate some new wickedness' applies equally to Miss Havisham, and in each instance the creation, though initially subservient, ultimately proves dominant over the inventor.<sup>70</sup> The monster tells Frankenstein 'You are my creator, but I am your master; obey!'; Victor is subsequently plagued by the monster until their mutual death.<sup>71</sup> Likewise, the Wondersmith's plans go equally awry and the murderous mannequins turn on him instead; their success is directly due to the criteria with which he made them: 'To stab and kill was their mission, and they stabbed and killed with incredible fury'.<sup>72</sup> Similarly, Miss Havisham

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creates an emotionless being to wreak havoc on those who would love her, only to develop a maternal love for Estella which is, inevitably, rejected according to Estella's programming. As Stone rather forcefully phrases it, 'When this proud witch, white-clad stealer of innocent hearts, asks heartless Estella for love, she learns at last what heartlessness is [...] this blighted bride now abases herself before the cold monster that she created'.<sup>73</sup> The judgement upon Miss Havisham is the fate of the inventor. Just as the monster tells Frankenstein, 'Remember, thou hast made me more powerful than thyself [...] I am thy creature', so too does Estella rebuke her creator by forcing her to take ownership of her creation:<sup>74</sup>

You should know [...] I am what you have made me. Take all the praise, take all the blame; take all the success, take all the failure; in short take me (271).

The scene is strikingly similar to Louisa Gradgrind's reprimanding of her father in *Hard Times*. Once again, the character has been denied her natural emotions as a child and raised to be purely logical; once again, the result is an abomination that haunts the perpetrator:

How could you give me life, and take from me all the inappreciable things that raise it from the state of conscious death? Where are the graces of my soul? Where are the sentiments of my heart? What have you done, O father, what have you done, with the garden that should have bloomed once, in this great wilderness here?<sup>75</sup>

In each case Dickens is stating what has hitherto been apparent to the reader - the inhumanity of each girl's treatment by their guardian - yet also in each case, at the moment of revelation, the reader's sympathies are made to lie with the person responsible. Pip notes the distinction when he observes that 'while Estella looked at me merely with incredulous wonder, the spectral figure of Miss Havisham, her hand still covering her heart, seemed all resolved into a ghastly stare of pity and remorse' (309). For Gradgrind, his eyes are opened, and the road to salvation begins; but Miss Havisham's route is firmly entwined with that of the inventor - her creation is truly autonomous, and out of her control. 'What have I done?' she cries, but Pip does not know 'how to answer, or how to comfort her':

That she had done a grievous thing in taking an impressionable child to mould into the form that her wild resentment, spurned affection, and wounded pride found vengeance in, I knew full well. But that, in shutting out the light of day, she had secluded herself from a thousand natural and healing influences; that her mind, brooding, solitary, had grown diseased, as all minds do and must and will

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that reverse the appointed order of their Maker, I knew equally well. And could I look upon her without compassion, seeing her punishment in the ruin she was, in her profound unfitness for this earth on which she was placed, in the vanity of sorrow which had become a master mania, like the vanity of penitence, the vanity of remorse, the vanity of unworthiness, and other monstrous vanities that have been curses in this world? (338)

## V

### **‘The Misshapen Creature’: Pip the Monster**

Estella and her inventor correspond with various elements of artificial life in fiction: the cold heart, the proud creator, the experiment gone wrong. But there is another, more deviant, representation of product and inventor to subvert these criteria: Pip himself discovers that he is the creation of Magwitch. Of course, the adoption and social bettering of a character by a gentleman is not unique to this novel; E. S. Dallas noted early on the comparisons between Pip and Oliver Twist, and their rise through the social strata thanks to a fairy godmother: ‘The convict in the new story takes the place of Mr Brownlow in the old, and supplies Master Pip with every luxury’. Equally, Gilmour notes another ‘fairy godparent’ figure in Betsey Trotwood, of whom ‘Miss Havisham is a grotesque version’ though it might be noted that in both Oliver and David’s case they are ultimately being restored, rather than raised, to a position of young gentleman.<sup>76</sup> A more relevant comparison for Magwitch’s enforced raising of a young man through the class system is in *Our Mutual Friend*, where Eugene Wrayburn assumes the role of protector for Lizzie, supplying her with education in a bid to improve her, and make a gentlewoman of her. In Eugene’s plan, Dickens exposes the folly of even well intentioned social engineering; it is Eugene, not Lizzie, who needs to change his way of thinking, and his insistence on advancing her position is more a reflection of his own limitations.

This is also true of Magwitch: we find further evidence for labelling him as an inventor in the grotesque descriptions of him as ‘a fearful man [...] who limped and shivered, and glared and growled’ (2) that hark at his gothic heritage. Robin Gilmour is one of many critics

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to connect him with Miss Havisham, likening the convict to ‘another “witch” direct from the underworld, ‘literally the underworld of Australia where he has made his money, and symbolically from the social underworld of violent crime with which he is associated in Pip’s mind for most of the novel.’<sup>77</sup> This Mephistophelean figure also shares Miss Havisham’s traits of pride, a past hurt, and an aim for revenge or retaliation; while she is openly hostile in her plans for Estella, Magwitch, though trying to act in Pip’s best interests, is no less self-serving. G. Robert Strange notes that ‘The convict would not only make a gentleman but own him’: Magwitch’s plans for Pip are not altruistic like previous benefactors, but rather Pip is a necessary component in his own personal quest for glory.<sup>78</sup> He lives vicariously through his creation: admiring the fine books on Pip’s shelves, he says ‘You shall read ’em to me, dear boy! And if they’re in foreign languages wot I don’t understand, I shall be just as proud as if I did’ (286). But it is not only that Magwitch wishes to be a gentleman himself: just as the creation of man is a rebuke against God, so too is his creation of a gentleman a rebuke against the higher classes:

The blood horses of them colonists might fling up the dust over me as I was walking; what do I say? I says to myself, ‘I’m making a better gentleman nor ever *you’ll* be! [...] All on you owns stock and land; which on you owns a brought-up London gentleman?’ (287)

Pip, the product of Magwitch’s workmanship, deconstructs the elevated position of the gentry: if a convict is capable of making a gentleman, then it follows that the upper class are not so naturally elevated as they believe themselves to be. Thus in pushing Pip up, Magwitch seeks to pull himself up, whilst also bringing the elite classes down.

If we read Pip as a product, designed and constructed by a mysterious inventor, then it affords the opportunity for a different reading of the android. Estella is an automaton in the mould of Hoffmann’s Olympia, and a forebear of the android Maria in Fritz Lang’s *Metropolis*; she is the social beauty who draws the admiration of men whilst compromising their morality. But whereas Estella is, as her name implies, star-like, a sight to be marvelled at but never truly approached, Pip is likened to a monstrosity; his name, as Stone notes, ‘means “seed” and “disease”’: each hint at his initial smallness and inconsequentiality, followed by a potentially lethal blossoming.<sup>79</sup> Estella defines him as a ‘coarse, little monster’ (71), regularly

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telling him how sub-human he is, and Pip too learns to think of himself as ‘a species of savage young wolf, or other wild beast’ (81). Pip is a misshapen thing, and his education does not diminish his youthful bestial nature. Pip carries his lower class origins with him, corrupting his gentlemanliness. The adoption and shaping of Estella at an earlier age allows for her ‘creation’ to be effectively from new parts, but Pip is adopted by Magwitch much later and therefore is remoulded, rather than moulded; the subsequent rearrangement, or reanimation, of existing parts casts him in the mould of Frankenstein’s monster. Both carry the burden of disadvantaged youth that they are trying to overcome: the monster’s lamentation could also be spoken by Pip:

No father had watched my infant days, no mother had blessed me with smiles and caresses; or if they had, all my past life was now a blot, a blind vacancy in which I distinguished nothing.<sup>80</sup>

Both Pip and the monster lack natural parents, and both seek a surrogate paternal figure to guide them. Pip rejects Joe in favour of a greater benefactor, whilst Frankenstein rejects the monster, leaving him to seek solace elsewhere. The subsequent repulsion of the monster by society matches the continued outcasting of Pip in his visits home; when Trabb’s boy sees Pip in his finery, the boy’s expression of ‘a paroxysm of terror and contrition’ (219) and outright mockery of the ‘gentleman’ is taken up by society to Pip’s ‘disgrace’ (220). Such reactions do not occur in London; the distaste arises from the recognition by the townspeople of the previous Pip in this new version. The reshaping of Pip the blacksmith’s boy into Pip the gentleman is a clumsy operation similar to Gillian Beer’s observation of Frankenstein’s monster as being ‘fabricated as if he were a machine, but out of organic bits and pieces’, resulting in ‘a gap between concept and material’ that ensures the creation ‘is necessarily hideous’: they are both outsiders.<sup>81</sup>

Magwitch and Miss Havisham invent two fundamentally different creations: if Estella represents the automaton, Pip is the monster. The contrasting aspects of the two characters show both ends of the spectrum of humanity’s response to non-humans, either as freaks of nature or pinnacles of human achievement. Yet whilst Pip may be the social inferior of Miss Havisham’s glittering debutante, he has the advantage in audience sympathy; while Estella’s

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views are largely hidden from the reader, Pip speaks directly to us. La Mettrie asked ‘why would it be absurd to think that such beings, machines nearly as perfect as us, are, like us, made to think and to feel the natural law working in them?’, yet much of early robot fiction centred on the inhumanity and monstrosity of these machines, prohibiting the opportunity to empathize with them: the Wondersmith’s toys are ‘assassins’ with ‘villainous countenances’, Olympia a ‘wax-faced, wooden puppet’.<sup>82</sup> In contrast, Shelley has been praised for creating a monster ‘with insight and [...] eloquence’ to describe his experience of persecution and rebellion.<sup>83</sup> Pip continues this vein of the eloquent machine, communicating to us the expectations and disappointments of the creation, and the restrictions imposed upon them; by narrating us through his own story, he allies the reader with him to subvert the traditional concept of the created being as the outsider. At the very least, we stand outside with him.

That Pip should love Estella now presents a different model from the one previously proposed in Weller’s story of the hairdresser and the mannequin; for it is no longer a man in love with an automaton, but the love of artificial life for its kin. It is not the desire for something so different, but actually their connection that dictates the attraction. Pip claims ‘it was impossible for me to separate her, in the past or the in the present, from the innermost life of my life’ (209). In linking the pair, Stone notes their common heritage: ‘both have been “made”; both have been fashioned impiously as instruments of revenge’, while Q. D. Leavis pities their shared origins in the fixation of a creator: ‘Pip and Estella are equally victims of an *idée fixe*.’<sup>84</sup> They are both puppets, both being manipulated by their elders for their own purpose, ‘inanimate instruments’ as Van Ghent suggests, used ‘as if they were not human but things.’<sup>85</sup> The subsequent relationship of the two is reminiscent of the monster’s plea for Frankenstein to make him a mate:

I am alone and miserable; man will not associate with me; but one as deformed and horrible as myself would not deny herself to me. My companion must be of the same species and have the same defects.<sup>86</sup>

Only another such creation can understand the plight and heart of the other. In confessing her own unique nature, so different from others, Estella also identifies her resulting connection with Pip: ‘I make a great difference between you and all other people when I say so much’

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(322). It is their distinction from society that binds them closer together with a 'long chain of iron or gold' (62); only they can understand one another.

It is the shared bond of rebellion, for as automatons they are not only outsiders, but inferiors as well; Inglis notes that 'In Dickens's material imagination, to display an automatus affinity is to be diminished.'<sup>87</sup> Their inhumanity not only permits their usage by other characters, but forces Pip and Estella to recognize the rights those characters have over them: Hollington notes that Pip continually 'accepts the categories and power relationships involved', whilst Gilmour notes that the 'important events' which happen to Pip are 'thrust upon him by his elders'.<sup>88</sup> Like Rossum's robots that have 'no will of their own', Pip and Estella also have their lives mapped out for them; Pip notes that 'we were mere puppets' (239), while Estella informs him that 'We have no choice you and I, but to obey our instructions. We are not free to follow our own devices, you and I' (236).<sup>89</sup> Magwitch's talk of ownership corroborates this: 'If I ain't a gentleman, nor yet ain't got no learning, I'm the owner of such' (287). With external agents controlling his life, Tambling suggests that Pip 'has learned nothing, he is a recidivist, unaware of how much he has been made himself a subject of other people's power and knowledge.'<sup>90</sup> Steven Connor notes that even Pip's 'desires are not [...] really his own. Rather, he is acting out the desires of others'.<sup>91</sup>

Pip's ideas of free will are self-deluding, a necessary sham to conceal his true situation; yet there is evidence of a subconscious revolution taking place. Peter Brooks argues that Pip's obsession with unearthing Estella's origin derives from his own 'failure ever to recover his own origin', while Carolyn Brown likewise views it as 'a displaced search for his own identity'.<sup>92</sup> Pip believes that they share a common creator in Miss Havisham, using this shared origin as the foundation for their future happiness: 'She had adopted Estella, she had as good as adopted me, and it could not fail to be her intention to bring us together' (205-6). Again, he is reliant on the action of others to bring them together rather than his own initiative. The revelation that Miss Havisham is not their mutual inventor is followed by a new connection courtesy of Magwitch, Estella's biological father and Pip's 'second father' (285). The quest for Estella's ultimately murky past can be read either as a conscious diversion for Pip from identifying his own, or a subconscious search for his own origins and the nature of his true

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being. Freud noted how automata could trigger ‘intellectual uncertainty’ of the distinction between the animate and inanimate; Wood adds that the presence of an automaton raises the fear that ‘we can be replicated all too easily, and that we are uncertain now of what it is that makes us human.’<sup>93</sup> The theme is famously taken up in Philip K. Dick’s *Do Androids Dream of Electric Sheep?* and its subsequent film adaptation *Blade Runner*; the bounty hunter Deckard faces the morality of hunting ‘replicants’ and is forced to confront the nature of his own humanity. Pip’s obsession with Estella, her origins and her subsequent education at the hands of Miss Havisham, communicate an anxiety on his part regarding his own origins, and the manner in which he has been moulded. Estella, Pip’s ‘self-projected and self-defeating mirage’ is a mirror by which he can identify himself.<sup>94</sup> Pip is grappling with the confines of his own identity; a robot rebellion is occurring not on the mass scale of Čapek’s play, but internally. This is displayed best in Pip’s referencing of *Frankenstein* to explain his relationship to Magwitch:

The imaginary student pursued by the misshapen creature he had impiously made, was not more wretched than I, pursued by the creature who had made me, and recoiling from him with a stronger repulsion, the more he admired me and the fonder he was of me. (300-301)

Dickens here identifies the relevance of inventor and creation to his own story, and turns it upside down, implying the inhumanity of the human rather than the automaton. Pip, in likening his maker to the creature, advertises his own self-delusions over who is the monster and who is the man. Yet for the creation to shun the creator is to be expected. We anticipate our creator will be our better; La Mettrie criticized man’s presumption in assuming he is the product of a divine creator rather than of the arbitrary creatures of nature, arguing that ‘Our pride sets limits where none exist’ which causes us to assume that ‘here is a cause superior to the one we owe everything to’.<sup>95</sup> While the inventor may inspire admiration from others for the skill of his creation, it is a logical consequence that if the automatons themselves were indeed created as marvels, that they should look with shame, rather than pride, at the inferior creatures who made them. Likewise, as a gentleman Pip should, by the rules of society, be Magwitch’s better, and the revelation that he owes his status to the convict is understandably disorientating. He is both disgusted by his creator and forced to confront his own status as a

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product. That he overcomes this repulsion is not only an acceptance of Magwitch, but an acceptance of himself.

## VI

### Reprogramming Expectations

The classic conclusion for early robot fiction is one in which the ‘scientist is rightly punished for daring to usurp the divine prerogative of creation’.<sup>96</sup> How does *Great Expectations* compare? The fact that the novel has two endings - Dickens’s original plan and the amended version under Bulwer-Lytton’s suggestion, where Pip and Estella seem to be reconciled - has prompted much critical discussion of the novel’s purpose and how either end suits this. Martin Meisel suggested that Pip experiences a rebirth following his illness, during which sees imagery of ‘the womb of his shaping past and the great social machine in which he had been caught up’, and focuses on his return to Joe as indicative of his retracing his roots to be born again.<sup>97</sup> Meisel suggests that the novel is already concluded at this point, with either of the two alternative sections being ‘a tidying postscript to the ending proper.’<sup>98</sup>

In terms of the work as an allegory of artificial life, it is equally true that the book, without the final section, has already deviated from other examples of early robot fiction. Not only has he accepted both his creator and his own status, but also, as Stone suggests, ‘One part of Pip’s rebirth consists in recognizing and accepting of Estella’s true identity’, an understanding which distinguishes him from the inability of Nathanael to accept Olympia’s inhumanity.<sup>99</sup> But where this novel ultimately branches away from the other early robot novels is that in its conclusion, after the inventors have died, the creations endure. Olympia is destroyed by her inventors, the monster gives up his own life when Frankenstein dies, and the mannequins burn with the Wondersmith, but Estella and Pip live on beyond the deaths of Magwitch and Miss Havisham: the puppets hold their own strings; the automatons can focus on their own amusements and desires; the robots achieve independent thought.

The dual endings of the novel offer two responses to this moment of growth: in Dickens’s original ending, Estella and Pip continue along their original programming, their

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lives running separately. This original conclusion is more in keeping with robot fiction, the tragedy of the creations being that even after their creators' demise, their rule over them continues. But the irony of Dickens amending his ending is that the result, while more conventional for a romance, is very unconventional for robot fiction. The change is a positive one for the genre: the ambiguity of the novel's close is entirely fitting to the enormity of the situation in which these automatons find themselves. Both have adapted and grown: Estella claims 'I have been bent and broken, but - I hope - into a better shape' (433), while Leavis suggests that Pip 'is now truly a free man, freed from the compulsions of childhood guilt, and from the unreal aspirations imposed on him': they are providing their own instructions and commands.<sup>100</sup> The reconciliation of Pip and Estella is an indication that they are stepping above their station and their programming - the uncertainty of the future now that they are in control of themselves is reflected in the inconclusive ending.

Brian Stapleford suggests that Shelley had to make her monster so demonic, as 'the horribly indecent and blasphemous' possibility that the creature could prove an improvement on man could 'never have been published in 1818'. It is certainly true that early robot fiction demonized its creations, and that the amended conclusion of *Great Expectations*, in bucking this trend, has more in common with later robot fiction than its predecessors.<sup>101</sup> In his early years, Isaac Asimov identified two classes of robot fiction: in one corner, 'Robot-as-Menace', that was simply 'a mixture of "clank-clank" and "aarghh" and "There are some things man was not meant to know"', and in the other corner, 'Robot-as-Pathos' where 'the robots were loveable' and the humans were at fault.<sup>102</sup> The amended ending of *Great Expectations* anticipates these later examples. In William Gibson's *Neuromancer*, where any artificial intelligence unit that develops too far is destroyed, the solution to this is the union of two such beings, Wintermute and Neuromancer, which allows them to escape their bonds and surpass their human creators. Wintermute is built with 'the compulsion that had driven the thing to free itself, to unite with Neuromancer': his longing for the other is their salvation, so that, while their creators die and the rest of humanity continue their humdrum lives, it is the artificial intelligence that evolves and achieves closure.<sup>103</sup> Similarly, in the final act of *Rossum's Universal Robots*, when robots, ignorant of how they are manufactured, face their

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own extinction, the sole surviving human, Alquist, recognizes their possible salvation in two of their number - Primus and Helena - who have developed a mutual attraction to one another. This attraction that is confirmed when Alquist appears to threaten Helena:

Primus. He shall not touch you Helena. Old man, you shall kill neither of us.

Alquist. Why?

Primus. We - we - belong to one another.

Alquist. Now you have said it. (*Opens the door, centre.*) - Go!

Primus. Where?

Alquist. Wherever you like. Helena, lead him. Go, Adam - Go Eve. You shall be his wife. Be her husband Primus.<sup>104</sup>

Thus Armageddon evolves into a new creation myth. It is love that proves the robot to be humanity's successor, love that allows them to transcend their programming, their status and the expectations placed upon them. When Brian Cheadle suggests that 'Pip proves his right to be the hero of this tale by turning repugnance into a love for the outcast', Cheadle's 'outcast' is Magwitch, but the statement is equally valid for Estella.<sup>105</sup> Pip begins the novel unaware of his inventor, unaware that he is a creation, and that his initial love for Estella is rooted in how different she is from everything he knows, yet the course of their romance is one of self-discovery as he realizes how alike they are. That they find solace in their shared connection, rather than repulsion, refutes the monstrosity of the machine and celebrates its beauty.

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<sup>1</sup> Charles Dickens, *Great Expectations*, ed. by Robin Gilmour (London: Everyman, 1994), p. 281. All further references are to this edition.

<sup>2</sup> Acknowledgments are gratefully made to Professor Malcolm Andrews and Dave Reason at the University of Kent, both of whom are responsible for first kindling my interest in Dickens and science fiction respectively. Equally thanks also to their colleagues Dr Paul March-Russell and Dr Vybarr Cregan-Reid for their helpful suggestions in the early stages of writing this article.

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<sup>3</sup> Dickens was acutely aware of the importance of responding to events around him: he regularly changed the direction of a work in response to sales figures (e.g. increasing the role of Sam Weller in *The Pickwick Papers* when he proved popular, or the infamous intrusion of the American scenes in *Martin Chuzzlewit*, which show an author reacting to sales and the opinion of others) while his continuing work in journalism afforded him the opportunity to stay in touch with current affairs, indeed, demanded it. Michael Slater, among others, argues persuasively for Dickens's favourable attitude towards progress, citing in particular his admiration of the railway, despair at ungrounded nostalgia and his repeated calls for social reform in Michael Slater, *An Intelligent Person's Guide to Dickens* (London: Duckworth, 1999), pp. 68-87. Finally, the characters of Inspector Bucket in *Bleak House*, and Dick Datchery in *Edwin Drood*, along with the mystery elements of these novels and others have prompted critics such as Murray Baumgarten to call Dickens 'the first general practitioner of the detective novel' - see 'Fictions of the City' in *The Cambridge Companion to Charles Dickens*, ed. by John O. Jordan (Cambridge: CUP, 2001), pp. 106-119 (p. 117).

<sup>4</sup> Science fiction was certainly happening around Dickens - we know that he and Edgar Allan Poe were aware of each other's works, the latter being a great fan, praising *The Old Curiosity Shop* and *Barnaby Rudge*, and it has been suggested the character of Grip proved inspiration for *The Raven* (see <http://poecalendar.blogspot.com/2009/02/charles-dickens-with-his-raven.html>, for further details). Elsewhere Dickens's friend Thomas Carlyle was an advocate and translator of E.T.A. Hoffmann's stories, and Una Pope-Hennessy believes, based on this and on resemblances between *A Christmas Carol* and *The Golden Pot*, that Dickens 'had certainly read Hoffmann's tales', while Michael Hollington more cautiously identifies possible grounds for a relationship between Dickens's work and German Romanticism; see Una Pope-Hennessy, *Charles Dickens* (2<sup>nd</sup> ed. Harmondsworth: Penguin, 1970), p.337, and Michael Hollington, *Dickens and the Grotesque* (London: Croom Helm, 1984), pp. 17-24. Moreover, many of the examples already given of early science fiction were either owned or read by Dickens, a number of them as cherished childhood reading which has since been recognized as a key influence on Dickens's later writing: *Peter Wilkins*, *Robinson Crusoe*, *Gulliver's Travels*, *The Arabian Nights* and works by Edgar Allan Poe and Nathaniel Hawthorne are all listed in the catalogue of Dickens's library, along with several scientific works; *Catalogue of the Library of Charles Dickens from Gadshill etc.* ed. by J. H. Stonehouse (London: Piccadilly Fountain Press, 1935). Harry Stone discusses the influence of these works and others on Dickens in *Dickens and The Invisible World: Fairy Tales, Fantasy and Novel-Making* (London: MacMillan, 1979), pp. 18-32. Finally, and most tantalizingly, Dickens's friend Bulwer-Lytton wrote *The Coming Race* (1871), a universally recognized work of early science fiction, just one year after Dickens's death; we can only wonder whether Dickens, had he lived longer, may have responded in kind to this as he did to Wilkie Collins's sensation fiction in *The Mystery of Edwin Drood*.

<sup>5</sup> Edward James notes that William Wilson used the phrase 'science fiction' in an 1851 treatise on the poetry of science. After this, the term was used only once more prior to Gernsback, in an editorial response in 1927, so to

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all intents and purposes, 1929 is when the term became synonymous with the genre. See Edward James, 'Science Fiction by Gaslight: An Introduction to English-Language Science Fiction in the Nineteenth Century' in *Anticipations*, ed. by David Seed (Liverpool: LUP, 1995), pp. 26-45, esp. p. 27-8.

<sup>6</sup> James, p. 29.

<sup>7</sup> Damon Knight, cited in *The Road to Science Fiction Volume 6: Around the World*, ed. by James Gunn (Clarkston: Borealis, 1998), p. 17.

<sup>8</sup> Brian Stableford notes Aldiss's efforts to establish *Frankenstein* as the 'foundation stone of the modern genre of science fiction' as 'entirely appropriate'; see Stableford, 'Frankenstein and the Origins of Science Fiction' in Seed, pp. 46-57, (p. 48). Paul Baines offers an excellent survey of pre-nineteenth-century examples of science fiction in "'Able Mechanick": *The Life and Adventures of Peter Wilkins* and the Eighteenth-Century Fantastic Voyage', in Seed, pp. 1-25. James Gunn has also described Gilgamesh as early science fiction, along with many other examples, in the first volume of his exemplary anthology of science fiction *The Road to Science Fiction: From Gilgamesh to Wells* (New York: Mentor, 1977).

<sup>9</sup> Andrew Sanders, *Authors in Context: Charles Dickens* (Oxford: OUP, 2003), p. 85.

<sup>10</sup> 'An Italian Dream' in Charles Dickens, *American Notes and Pictures from Italy*, ed. by F. S. Schwarzbach and Leonee Ormond (London: Everyman, 1997), p. 363; 'Railway Dreaming' in Charles Dickens, *Gone Astray and other Papers from Household Words*, ed. by Michael Slater (London: J. M. Dent, 1998), p. 370. Deborah Thomas notes the polishing of such sketches to a degree where they are 'fictionalized "impressionistic sketches"' rather than simple observation, often indeed more worked upon than his short stories; see Thomas, *Dickens and the Short Story* (London: Batsford Academic and Educational, 1982), p. 2.

<sup>11</sup> Roger Luckhurst notes that SF is a hybrid 'interweaving strands of Gothic, Realist, fantasy and Utopian writing', in *Science Fiction* (Cambridge: Polity, 2005), p. 11; whilst Fred Botting specifies that 'Gothic and science fiction share a fascination with the ruination of the species and the monstrous dissolution of the imaginary integrity of the human body' in "'Monsters of the Imagination": Gothic, Science, Fiction', in *A Companion to Science Fiction*, ed. by David Seed (Oxford: Blackwell, 2005), pp. 111-126 (p. 119).

<sup>12</sup> James Gunn suggests that fantasy deals with the impossible, 'those experiences that by their very nature can never be "known"', while science fiction deals with the one-day possible, centred on 'the premise that the universe is knowable'; see Gunn, Vol. 6, p. 17.

<sup>13</sup> Luckhurst, p. 3.

<sup>14</sup> Charles Dickens, *Bleak House*, ed. by Andrew Sanders (London: Everyman, 1994), p. 3.

<sup>15</sup> The majority of proto-science fiction begin with the narrator's insistence on rationalizing the succeeding events; Poe's *Arthur Gordon Pym* (1838) acknowledges that 'the incidents to be narrated were of a nature so positively marvellous, that, unsupported as my assertions must necessarily be [...] I could only hope for belief among my family, and those of my friends who have had reason, through life, to put faith in my veracity'. See

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Edgar Allan Poe, *The Narrative of Arthur Gordon Pym* (London: Penguin, 2006), p. 3. The narrator of Samuel Butler's *Erewhon* (1872) refuses to disclose the exact location of the wondrous land he has visited in case others launch an expedition there before him to reap the benefits: 'I prefer the risk of being doubted to that of being anticipated', Samuel Butler, *Erewhon* (London: Jonathan Cape, 1960), p. 17. However, this definition is not without contention. While rationalization can be used cautiously as a yardstick for identifying early science fiction, modern examples can prove even more elusive of definition. James Gunn discusses the New Wave rebellion of science fiction in the 1960s, whose writings were concerned less with the explanation of events, producing works that were 'anti-science stories, even anti-science fiction stories'; see Gunn, *The Road to Science Fiction Volume 4: From Here to Forever* (Clarkston: Borealis, 1982), pp. 15-16.

<sup>16</sup> Fitz-James O'Brien, *What Was It?* in Fitz-James O'Brien, *The Diamond Lens and Other Stories* (New York: W. E. Rudge, 1932).

<sup>17</sup> Dickens, *A Christmas Carol*, in *The Christmas Books*, ed. by Sally Ledger (London: Everyman, 1999), p. 19.

<sup>18</sup> Thomas p. 36; Hollington, p. 158. Such a response is indicative of Dickens's own stance on the fantastic: Louise Henson notes that 'Throughout his working life, Dickens participated in wide-ranging and sometimes fierce debates about the nature and authenticity of ghostly phenomena'; see 'Investigations and fictions: Charles Dickens and ghosts', in *The Victorian Supernatural*, ed. by Nicola Bown, Carolyn Burdett and Pamela Thurschwell (Cambridge: CUP, 2004), pp. 44-63 (p. 44). The attempt to confront spirits with rational scientific investigation was explored again in *The Haunted House* (1859) by Dickens and his collaborators. Determined to confirm objectively whether the house is haunted or not, the residents each pursue their quest rationally and find the previous wild tales replaced with a more judicious explanation: 'In a word, we lived our term out, most happily, and were never for a moment haunted by anything more disagreeable than our own imaginations and remembrances.' *The Haunted House* in Charles Dickens, *The Christmas Stories*, ed. by Ruth Glancy (London: J. M. Dent, 1996), p. 339.

<sup>19</sup> Shelley's vision of twenty-first century transport in *The Last Man* has proved rather conservative: the protagonists travel predominately by horse, and the narrator announces of his forthcoming trip to Scotland that: 'I go to-day [...] this very hour I will engage a sailing balloon; I shall be there in forty-eight hours', while the boat trip from Dover to Calais takes 'twelve hours'; see Mary Shelley, *The Last Man*, ed. by Morton D. Paley (Oxford: OUP, 1994), pp. 70 and 378. James Gunn concludes that the book 'exhibits no awareness that the future will be any different from the present', *The Road to Science Fiction: From Gilgamesh to Wells*, p. 164.

<sup>20</sup> Sanders, p. 91.

<sup>21</sup> Sanders, p. 170. Sanders also draws attention to Thackeray's recognition of the distinction between pre- and post-railway age in his 1860 essay 'De Juventute': 'We who have lived before railways were made, belong to another world' (quoted in Sanders, p. 170).

<sup>22</sup> Charles Dickens, *Hard Times*, ed. by Grahame Smith (London: Everyman, 1994), p. 24. The image of the

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dystopian city is prevalent in cinematic science fiction; consider the grimy streets in *Blade Runner* (dir. Ridley Scott, 1982) or *Metropolis* (dir. Fritz Lang, 1927); the latter resonates particularly with Dickens, when the hero sees workers at the machine as analogous to sacrifices to an Inca-esque god, just as Dickens see Coketown's smoke-smearing red brick buildings as being 'like the painted face of a savage' (24).

<sup>23</sup> Stone, p. 144.

<sup>24</sup> Stone notes that both Scrooge and Trotty Veck's 'enlightenment is effected by being swiftly conveyed through space and time'; see Stone p. 129.

<sup>25</sup> *A Tale of Two Cities*, ed. by Norman Page (London: Everyman, 1996), p. 77. The concept of the doppelgänger was certainly known to Dickens: in a review of Catherine Crowe's *The Night Side of Nature* for *The Examiner* in 1848, Dickens discussed at length the doppelgänger and its universality beyond German romanticism; see Hollington, pp. 20-1.

<sup>26</sup> Edward James, p. 26.

<sup>27</sup> Though Karel Čapek was first to use the term, he credited his brother Josef with inventing it.

<sup>28</sup> Gaby Wood notes that 'In the eighteenth century, an interest in anatomy, advances in the design of scientific instruments and a fondness for magic tricks meant that automata were thought of as glorious feats of engineering, or philosophical toys.' in *Living Dolls: A Magical History of the Quest for Mechanical Life* (London: Faber and Faber, 2002), p. xvi.

<sup>29</sup> In a fictionalized encounter with the Turk, Hoffmann applauded the mechanics of the trick, stating that 'the undiscoverable connection between him and the hidden being who, besides speaking through him, must produce the movements which accompanied his answers, was unquestionably very wonderful, at all events a masterpiece of mechanical and acoustical skill.' See E. T. A. Hoffmann, *Automata*, collected in *The Best Tales of Hoffmann*, ed. by E. F. Bleiler (New York: Dover Publications, 1967), p. 89.

<sup>30</sup> Hoffmann, *Automata*, p. 81.

<sup>31</sup> Dickens's associate John Hollingshead, a reporter for *Household Words*, visited Joseph Faber's automaton Euphonia, and Paul Schlicke notes Dickens's 'lifelong commitment' to entertainment in all its forms. He regularly visited shows and fairs, and was attentive to the animate within the inanimate: when he visited the statues of Gog and Magog at Guildhall, he noted that, despite their being 'made of something that was not flesh and blood, I still invested them with attributes of life - with consciousness of my being there'. See Paul Schlicke, *Dickens and Popular Entertainment* (London: Allen and Unwin, 1985), p. 3; Charles Dickens, 'Gone Astray', reprinted in "Gone Astray" and *Other Papers from "Household Words," 1851-59*, ed. by Michael Slater, *The Dent Uniform Edition of Dickens' Journalism, III* (London: J. M. Dent, 1998), pp. 155-165 (p. 158).

<sup>32</sup> Dickens's descriptions of the Punch and Judy men Codlin and Short regularly address Mr Punch as a living character, moreover one who challenges the traditional boundaries of master and servant during their travels between shows 'for whereas [Codlin] had been last night accosted by Mr Punch as 'master' [...] here he was,

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now, painfully walking beneath the burden of that same Punch's temple, and bearing it bodily upon his shoulders on a sultry day and a long a dusty road.' When Nell later finds employment with Mrs Jarley and her waxwork models; Mrs Jarley categorically states the waxworks to be 'calm and classical'; an educational and inspirational form of high art, yet when audiences dwindle, she resorts to the use of an animatronic nun that has seen better days, and now shakes its head 'paralytically all day long', Charles Dickens, *The Old Curiosity Shop*, ed. by Paul Schlicke (London: Everyman, 1995), p.136, p. 251.

<sup>33</sup> Charles Dickens, *Our Mutual Friend*, ed. by Joel J. Brattin (London: Everyman, 2000), p. 137; Katherine Inglis, 'Becoming Automatous: Automata in *The Old Curiosity Shop* and *Our Mutual Friend*', *19: Interdisciplinary Studies in the Long Nineteenth Century*, 6 (2008), www.19.bbk.ac.uk.

<sup>34</sup> Julien Offray de La Mettrie, *Man A Machine and Man a Plant*, trans. by Richard A Watson and Maya Rybalka (Indianapolis: Hackett Publishing, 1994), pp. 30-2.

<sup>35</sup> Andrew Ure, *The Philosophy of Manufactures: or, An exposition of the scientific, moral and commercial economy of the factory system of Great Britain*, ed. by P. L. Simmonds, (London: H. G. Bohn, 1861), p. 13.

<sup>36</sup> *Hard Times*, p. 24

<sup>37</sup> Herbert Sussman and Gerhard Joseph, 'Prefiguring the Posthuman: Dickens and Prosthesis', *Victorian Literature and Culture*, 32 (2004), 617-628 (p. 624).

<sup>38</sup> *The Old Curiosity Shop*, p. 209

<sup>39</sup> Hoffmann's tale is more familiar to modern audiences through its adaptation as Delibes' ballet *Coppelia*, or its inclusion in Offenbach's *Tales From Hoffmann*.

<sup>40</sup> Hoffmann, *The Sandman* in *Tales of E. T. A. Hoffmann*, ed. by Leonard J. Kent and Elizabeth C. Knight (Chicago: University of Chicago Press, 1969), pp. 93-125 (p. 116).

<sup>41</sup> *Tales of E.T.A. Hoffmann*, p. 117.

<sup>42</sup> *Tales of E.T.A. Hoffmann*, p. 120

<sup>43</sup> *Tales of E.T.A. Hoffmann*, p. 104.

<sup>44</sup> Barbara Hardy, *The Moral Art of Dickens* (London: Athlone Press, 1970), p. 73.

<sup>45</sup> Hardy, p. 59.

<sup>46</sup> Felicia Miller Frank, *The Mechanical Song: Women, Voice, and the Artificial in Nineteenth-Century French Narrative* (Stanford: Stanford University Press, 1995), p. 103.

<sup>47</sup> Charles Dickens, *Master Humphrey's Clock*, ed. by Peter Mudford (London: Everyman, 1997), p. 123.

<sup>48</sup> *Master Humphrey's Clock*, p. 124.

<sup>49</sup> G. Robert Strange, 'Expectations Well Lost: Dickens's Fable for His Time', reprinted in *The Dickens Critics*, ed. by George H. Ford and Lauriat Lane J (New York: Cornell University Press, 1961), [PAGE RANGE?]. p. 301.

<sup>50</sup> Jeremy Tambling, *Dickens, Violence and the Modern State: Dreams of the Scaffold* (London: Macmillan,

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1995), p. 32.

<sup>51</sup> Brian W. Aldiss with David Wingrove, *Trillion Year Spree: The History of Science Fiction* (London: Victor Gollancz, 1986), p. 25.

<sup>52</sup> Botting, p. 119.

<sup>53</sup> Stone, for example, calls Miss Havisham ‘witchlike and infernal’, in *Dickens and the Invisible World*, p. 313.

<sup>54</sup> Peter Brooks notes the ‘nightmare energies of Satis House’ in *Reading for the Plot: Design and Intention in Narrative* (Cambridge, Massachusetts: Harvard University Press, 1984), p. 117.

<sup>55</sup> Margaret Oliphant, ‘Sensational Novels’, *Blackwood’s Magazine*, May 1862, in *Dickens: The Critical Heritage*, ed. by Philip Collins (London: Routledge and Kegan Paul, 1971), p. 439-442 (p. 439).

<sup>56</sup> Hoffmann, *The Sandman*, pp. 96-7.

<sup>57</sup> Galvini and Aldini’s career is discussed, along with resurrectionists, in Susan E. Lederer and Richard M. Ratzan’s ‘Mary Shelley: *Frankenstein: Or, the Modern Prometheus*’ in *Seed, A Companion to Science Fiction*, pp. 455-465 (p. 457).

<sup>58</sup> Steven Connor, *Dumbstruck: A Cultural History of Ventriloquism* (Oxford: OUP, 2000), p. 355; see also Wood, pp. 121-2.

<sup>59</sup> Arthur C. Clarke, cited in Terry Pratchett, Ian Stewart and Jack Cohen, *The Science of Discworld* (London: Ebery Press, 1999); Wood, p. xiv.

<sup>60</sup> Hoffmann, *Automata*, p. 88.

<sup>61</sup> Hayes, cited in Lederer and Ratzan, p. 455.

<sup>62</sup> Stableford, p. 49; La Mettrie, p. 69; Ure, cited in Gaskell, p. 351; Wood, p. xix.

<sup>63</sup> Karel Čapek, *Rossum’s Universal Robots* (London: OUP, 1923), Act 1, p. 11; Stone, p. 319.

<sup>64</sup> Karl Gottlieb Von Windisch, cited in James Cook Jr, ‘From the Age of Reason to the Age of Barnum: The Great Automaton Chess-Player and the Emergence of Victorian Cultural Illusionism’, *Winterthur Portfolio*, 30 (Winter, 1995), 232-257 (pp. 238-9).

<sup>65</sup> Connor, p. 149.

<sup>66</sup> Fitz-James O’Brien, *The Wondersmith*, in *The Diamond Lens and Other Stories* (New York: William Edwin Rudge, 1932), pp. 76-7.

<sup>67</sup> Derek J. de Solla Price, ‘Automata and the Origins of Mechanism and Mechanistic Philosophy’ *Technology and Culture* Vol. 5, No. 1 (Winter 1964), pp. 9-23 (p. 10).

<sup>68</sup> Stone, p. 313.

<sup>69</sup> Wood, pp. xviii-xix.

<sup>70</sup> Aldiss, p. 39; Mary Shelley, *Frankenstein* (London: Penguin, 1994), p. 87.

<sup>71</sup> Shelley, *Frankenstein*, p. 162.

<sup>72</sup> O’Brien, *The Wondersmith*, p. 130.

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- <sup>73</sup> Stone, p. 319.
- <sup>74</sup> Shelley, *Frankenstein*, p. 95.
- <sup>75</sup> *Hard Times*, pp. 200-1.
- <sup>76</sup> E. S. Dallas, review in *The Times*, 17 October 1861, in *Dickens: The Critical Heritage*, pp. 430-4, (p. 433); Robin Gilmour, *The Idea of the Gentleman in the Victorian Novel* (London: George Allen & Unwin, 1981), p. 116.
- <sup>77</sup> Gilmour, p. 116.
- <sup>78</sup> Strange, p. 303.
- <sup>79</sup> Stone, p. 311.
- <sup>80</sup> Shelley, *Frankenstein*, pp. 116-117.
- <sup>81</sup> Gillian Beer, *Darwin's Plots* (London: Routledge, 1983), p. 110.
- <sup>82</sup> La Mettrie, p. 49; O'Brien, *The Wondersmith*, pp. 84-5; Hoffmann, *The Sandman*, p. 117.
- <sup>83</sup> Lederer and Ratzan (citing the thoughts of Lee Sterrenburg), p. 463.
- <sup>84</sup> Stone, p. 311; Q. D. Leavis, 'How we must read *Great Expectations*' in F. R. Leavis and Q. D. Leavis, *Dickens the Novelist* (London: Chatto and Windus, 1970), p. 324.
- <sup>85</sup> Van Ghent, p. 131.
- <sup>86</sup> Shelley, *Frankenstein*, p. 139.
- <sup>87</sup> Inglis, p. 32.
- <sup>88</sup> Hollington, p. 223; Gilmour, p. 134.
- <sup>89</sup> Čapek, Act 1, p. 25.
- <sup>90</sup> Tambling, p. 34.
- <sup>91</sup> Steven Connor, cited in *Charles Dickens: Great Expectations*, ed. by Nicholas Tredell (Cambridge: Icon Books, 2000), p. 131.
- <sup>92</sup> Brooks, p. 134; Carolyn Brown, 'Great Expectations: Masculinity and Modernity' *Essays and Studies*, 40 (1987), 60-74 (p. 71).
- <sup>93</sup> Wood, p. xiv.
- <sup>94</sup> Stone, p. 311.
- <sup>95</sup> La Mettrie, p. 74.
- <sup>96</sup> Stableford, p. 46.
- <sup>97</sup> Martin Meisel, 'The Problem of the Novel's Ending' (1965) in *Charles Dickens: Hard Times, Great Expectations and Our Mutual Friend*, ed. by Norman Page (London: Macmillan, 1979), pp. 125-129 (p. 126).
- <sup>98</sup> *Charles Dickens: Hard Times, Great Expectations and Our Mutual Friend*, p. 129.
- <sup>99</sup> Stone, p. 311.
- <sup>100</sup> Leavis, p. 290.

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<sup>101</sup> Stableford, p. 56.

<sup>102</sup> Isaac Asimov, *The Complete Robot* (London: HarperCollins, 1995), p. 9.

<sup>103</sup> William Gibson, *Neuromancer* (London: HarperCollins, 1995), p. 315.

<sup>104</sup> Čapek, Act 3, p. 101.

<sup>105</sup> Brian Cheadle, 'The Late Novels: *Great Expectations* and *Our Mutual Friend*' in Jordan, pp.78-91 (p. 79).