

## ABSTRACT

“*Tools and the Man*”: Samuel Smiles, *Lives of the Engineers*,  
and the Machine in Victorian Literature

Courtney Salvey, M.A.

Mentor: A. T. Stephen Prickett, Ph.D.

While Victorian responses to the machine varied greatly, a distinct literary strain emerged with Carlyle and ran through Ruskin and Dickens which understood the machine as a threat to human agency. In their fear, they focused on machinery itself as sublime or horrible. Samuel Smiles’s series of engineering biographies, entitled *Lives of the Engineers*, argues against this position by highlighting the engineer, the human element, who creates and controls the machine. Interacting with concepts from Carlyle, Smiles’s biographies show engineers as Captains of Industry, dynamic men who shape themselves and lead others. By combining a narrative of these self-made men with a narrative of technological history, Smiles shows that machines are products of human agency rather than threats to it. This presentation facilitates the inclusion of engineers in subsequent works by Elizabeth Gaskell, Charles Kinglsey, George Eliot, and Rudyard Kipling.

*“Tools and the Man”*: Samuel Smiles, *Lives of the Engineers*,  
and the Machine Question in Victorian Literature

by

Courtney Salvey, B.A.

A Thesis

Approved by the Department of English

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Dianna M. Vitanza, Ph.D., Chairperson

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Approved by the Thesis Committee

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A. T. Stephen Prickett, Ph.D., Chairperson

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Jay B. Losey, Ph.D.

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Susan E. Colón, Ph.D.

Accepted by the Graduate School  
August 2009

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J. Larry Lyon, Ph.D., Dean

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## LIST OF ABBREVIATIONS

- IB* *Industrial Biography*
- LBW* *Lives of Boulton and Watt*
- LE* *Lives of the Engineers*
- LGS* *Life of George Stephenson*
- MII* *Men of Invention and Industry*
- OH* *On Heroes, Hero-Worship, and the Heroic in History*
- PP* *Past and Present*
- SOT* "Signs of the Times"

## ACKNOWLEDGMENTS

Unlike Smiles's engineers, I am not powerful enough to achieve success singlehandedly, but have relied on the help of others with this project. I would especially like to thank Professor Stephen Prickett for suggesting that I look at Smiles and then for supervising the project which grew out of that look. He has commented both helpfully and quickly on my drafts and has provided much appreciated encouragement. Doctor Susan Colón and Doctor Jay Losey have graciously advised and reassured me. Last but not least, my husband not only established my interest in engineers but has provided invaluable inspiration, technical knowledge, and personal support while making sacrifices of his own so I could complete this project.

## CHAPTER ONE

### Introduction

In 1855, the already famous Charles Dickens sent a note to the secretary of the South-Eastern Railway: “*Thanking the South Eastern Railway Company* for their courteous renewal of my pass-ticket” (*Letters* 7: 774). Little did he know that the secretary, Samuel Smiles (1812-1904), would emerge two years later as one of the most popular authors of the mid-nineteenth century, selling volumes by the hundred thousand. More than a blasé prosopographical artifact, this note highlights an often-ignored area of study: how literature and new technological systems connect through the people responsible for them. Samuel Smiles embodies this connection, writing and publishing his most successful works, *Life of George Stephenson* (1857), *Self-Help* (1859), and *Lives of the Engineers* (1861-62) while a railway secretary. Yet the connection between literature, humanity, and technology is not just background for Smiles. Instead technology’s relationship to humanity is central to his biographies’ themes, especially in the *Lives of the Engineers* series, which funnel together disparate channels of the Victorian era: Christian values, technology, literature, anthropology, and history.

By placing Smiles’s biographies of engineers in the *Lives of the Engineers* series into their literary and cultural contexts, I hope to achieve three goals. First, to see Smiles as a literary figure whose works relate to other literary works, instead of seeing him as the spokesperson for the Victorian stereotype. Second, to give another dimension to critical studies of Smiles, which often only assess *Self-Help* and its values. Finally, to use Smiles as an anchor point for considering the shifting nineteenth-century opinions about

technology, industrialism, and the machine in order to break down the critical binary understanding of the relationship of culture and technology in the Victorian period.

The ghost of Samuel Smiles has haunted the British cultural consciousness from his day to the twenty-first century. His contemporaries, especially socialists, often thought him a celebrator of vulgar success and wealth (Travers, *Samuel* 290). Although he protested (*Autobiography* 325-326), the conception stuck. As the twentieth-century began, he became a representative of Victorian values, and was thus rejected in the backlash against Victorianism. In 1983, Margaret Thatcher depended on Victorian values, whose bible was *Self-Help*, as “both a diagnosis and a recommended cure for the ills of British society” (Day 1-7).<sup>1</sup> Beyond the popular conception of Smiles, a staggering number of historical studies mention him. He is invoked as the carrier of Victorian values in critical works on the history of education (Harrison, *Learning* 54-57), intellectual history (Houghton xvi; Newsome 64; Wiener 81-82), history of attitudes to art (Altick 44), history of masculinity (Loftus 69), history of engineering (Marsden and Smith 6), political history (Pettit, *Patent* 67; Brantlinger, *Spirit* 120; Collini 95), cultural history of technology (Briggs, *Iron* 84; Freeman 68; Otter 571), and leisure studies (Harper). Yet this scholarship considers only a geographically limited portion of his relevance. Since *Self-Help* was translated into over a dozen languages and appeared on at least five continents (Europe, North America, South America, Australia and Asia), tracing his historical bearing would require knowledge of tens of languages and several

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<sup>1</sup> Wandering into a London secondhand bookshop looking for *Lives of the Engineers*, I wandered unwittingly into the complexity of the British cultural relationship to Victorian values as communicated through Samuel Smiles. When I asked if they had anything by Samuel Smiles, the shopkeeper responded: “Oh, we British have moved beyond that kind of thing now. But I can see how an American would need *Self-Help*.”



circumnavigations of the globe.<sup>2</sup> Unfortunately, these critical works, especially the older ones, often treat Smiles negatively, reducing his importance and his meaning to a cursory reading of *Self-Help*. Recent scholarly work mentioning Smiles, but not focusing on him, is more generous, due partly to the slowly accumulating critical attention on Smiles.

Like the passing references to Smiles in wide-ranging historical studies, the focused critical studies on Smiles are scattered across disciplines from literary studies to the history of technology. Asa Briggs's chapter, "Samuel Smiles and the Gospel of Work," in *Victorian People* (1954), is an introduction to Smiles, to *Self-Help*, and to the body of criticism inspired by the chapter, raising topics which later scholars pursued in-depth. Kenneth Fielden (1957) and J.F.C. Harrison (1967) expanded on Briggs's masterful foundation, the first seeing Smiles within the genre of success literature and the second within middle-class Victorian economic ideas. This developing critical interest in Smiles instigated reprints of some of his books, including *Industrial Biography*, *Lives of the Engineers*, and *Self-Help* in the late 1960s. Complementing Smiles's own tolerance, few of the approximately twenty critical projects on Smiles since 1954 fundamentally disagree. Instead they develop topics introduced by Briggs and explore Smiles's life and work historically. A major question raised by Briggs is the nature of the relationship between Smiles's radicalism during his Leeds journalistic days and the creed of *Self-Help*. Articles by Alexander Tyrrell (1970), T.H.E Travers (1977), R.J. Morris (1981), and Karen Boiko (2002) assess the ideological content and historical contexts of *Self-Help* to agree that it grew out of Smiles's early radicalism, presenting the shift as a continuity rather than a break, although they differ in the characterization of the shift.

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<sup>2</sup> This project has been started by Earl Kinmonth in his study of *Self-Help* in Japan: "Nakamura Keiu and Samuel Smiles: A Victorian Confucian and a Confucian Victorian," *American Historical Review* 85 (1980): 535-556.

This understanding contradicts the popular notion that Smiles was a smug middle-class writer lauding *laissez-faire* and selfish individualism, and instead presents Smiles as a reformer, focusing on collective reform through individual reform. The two critical books on Smiles, Travers's *Samuel Smiles and the Victorian Work Ethic* (1987) and Adrian Jarvis's *Samuel Smiles and the Construction of Victorian Values* (1997), also agree on the relationship of Smiles's mature ideas to his youthful, radical ones, although Travers sees the shift as the result of failure to affect social change through reforming society directly while Jarvis sees it as the result of the success of social reform in the late 1840s. A few other notable works on *Self-Help* are Alex Tyrrell's article on Smiles and the Woman Question (2000), Anne Baltz Rodrick's article on class and *Self-Help* (2001), and Gary Day's article on character and the self in *Self-Help* (1998).

This survey of criticism reveals that Samuel Smiles's name is now associated, outside of the history of engineering and technology, only with the *Self-Help* series, which includes *Self-Help, Character* (1871), *Thrift* (1875), and *Duty* (1880). This would have surprised Thomas Mackay, writer of the preface to Smiles's *Autobiography* (1905), who suggests that the value of Smiles's work rested in his engineering biographies rather than in *Self-Help*, believing that Smiles will be remembered for them, rather than for his didactic works (vii-viii). After all, Smiles was a prolific—and successful—biographer. Of his approximately thirty works, most of them are either full biographies or collections of illustrative anecdotal biographies. Smiles wrote the following full biographies: *Life of George Stephenson* (1857), *Lives of the Engineers* (1861-62, 1874), *Lives of Boulton and Watt* (1865), *Life of a Scotch Naturalist: Thomas Edward* (1876), *George Moore, Merchant and Philanthropist* (1878), *Robert Dick, Baker of Thurso, Geologist and*

*Botanist* (1878), *A Publisher and his Friends. Memoire and Correspondence of the Late John Murray* (1891), *Jasmin. Barber, Poet, Philanthropist* (1891), and *Josiah Wedgwood, his Personal Story* (1894). He edited (read: heavily re-wrote) James Nasmyth's autobiographical notes into a publishable form in *James Nasmyth, Engineer* (1887) and also wrote an *Autobiography* edited for publication by Mackay. Although the *Self-Help* series was largely a collection of instructive anecdotes, he also wrote less didactic collections of short biographies: *Brief Biographies* (1860) published in the United States, *Industrial Biography* (1863), and *Men of Invention and Industry* (1884). He was a prolific biographer indeed, but he rejected offered subjects if he did not feel "specially attracted" (sic) to them and refused to create a biography factory, as Dumas created a "novel factory" (*Autobiography* 323).

Although Mackay misjudged the cultural priority of the biographies and *Self-Help*, he correctly identified the most important biographies: the *Life of George Stephenson* and the *Lives of the Engineers* series which grew out of it. Just as with *Self-Help*, the *Lives of the Engineers* books have been misunderstood by popular and scholarly readers alike. Perhaps the most common perception is that they are merely illustrations for *Self-Help*. R.A. Buchanan, a well-known historian of engineering, suggests that they "provided [Smiles] with excellent illustrative material for his thesis" of self-help (*Engineers* 16), while Eric de Maré, an industrial archaeologist, suggests that they are "pure hagiography" (8), providing the "biographical facts and entertaining anecdotes to illustrate and enliven an endless sermon on the Gospel of Toil" (9). Even when scholars do not make the series subservient to *Self-Help*, they reduce it to didactic biographies whose main goal is explication of certain values rather than historical

accuracy. One suggests that they are “told as part of an ideology of self-help, promoting the distinctively petty-bourgeois virtues, and narrated with a strong element of class pride” (Dentith 50), another suggests that they are mere “stylized portraits” of “archetypal Smilesian hero” (Collini 111), and yet another suggest that they were skewed by the “emotional overburden” of *Self-Help* (Jarvis, *Samuel* 81).<sup>3</sup> While Smiles openly acknowledges that his subjects were selected to “furnish subject of interest as well as instruction” because they were “strongly self-reliant, diligent in self-culture, and of indomitable perseverance” (*LGS* vi), to reduce the biographies to this function ignores their other ideological and cultural implications.

The little scholarship there is on Smiles’s biographies focuses on *Lives of the Engineers*.<sup>4</sup> A. O. J. Cockshut’s foundational study of nineteenth-century British biography, *Truth to Life* (1974), devotes an entire chapter to Smiles, but apologizes for including a figure who has a “more historical than literary” value (105). Cockshut’s structural and topical study reveals that with his “perfectly candid but limited vision” (111) Smiles is not sharp enough to recognize the tensions implicit in his views. Cockshut dissects these tensions to access the interior of Victorian middle-class intellectual life. In another survey on biography, *Biography: Fiction, Fact and Form* (1984), Ira Bruce Nadel uses Smiles to illustrate a chapter on biography as an institution,

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<sup>3</sup> This complaint is heard especially from historians trying to sift through Smiles’s factual misconstructions, whether they were purposeful ones or not. In “The Story of the Story of the Life of George Stephenson,” Adrian Jarvis discusses the factual errors made by Smiles in the *Life of George Stephenson* and considers their impact on later scholarship. He shows that up until the last few decades of the twentieth-century, historians took Smiles’s facts at face value, thereby allowing his errors (or myths) to become the dominant historical view of Stephenson’s life.

<sup>4</sup> The exception is Anne Secord’s excellent article on the cultural construction of the working-class autodidact in Smiles’s *Life of a Scotch Naturalist: Thomas Edward*, “‘Be what you would seem to be’: Samuel Smiles, Thomas Edward, and the Making of a Working-Class Scientific Hero,” *Science in Context* 16 (2003): 147-173.

especially the Plutarchian model of biography as didactic corrective, but makes no further claim for the value of Smiles's work. Like these treatments by Cockshut and Nadel, which function as introductions to Smiles's biographies, Adrian Jarvis's first chapter on *Lives of the Engineers* in *Samuel Smiles and the Victorian Work Ethic*, explicates the important themes of progress and triumph over nature and then discusses the reliability of the *Life of George Stephenson*. Moving on, he argues through two more chapters that *Lives of the Engineers* participates in the genre of the saint's life, serving that function which saint's lives fill for the church and thereby contributing to Smiles's "secular religion in which he included what he considered to be the essential points of Christianity while discarding those parts which he saw as leading to intolerance and hatred" (xiii), the existence of which is Jarvis's basic thesis about Smiles. There are two other sources on *Lives of the Engineers*, both papers presented at a one-day conference at the Merseyside Maritime Museum, and later collected and published under the title *Perceptions of Great Engineers* (1994). Adrian Jarvis, in "The Story of the Story of the Life of George Stephenson," explores the pervasiveness of falsities of engineering history begun by Smiles. In "Samuel Smiles and the Nineteenth-Century Novel," Simon Dentith explores the novelistic techniques used by Smiles to construct sympathetic characters.

Considering the small number of studies, much scholarship remains to be done on works that were extremely popular in their day and which continue to affect the current understanding of the engineering past. With both the biographies and the *Self-Help* series, critics either use Smiles as a historical litmus test or focus on Smiles's works in isolation. I wish to move beyond the introductory and cursory remarks about Smiles's engineering biographies made by previous scholars to investigate the relationship of

*Lives of the Engineers* to cultural anxieties and literary genres hitherto ignored, because of subject matter, in scholarship on Smiles's biographies. As texts, Smiles's biographies take on cultural lives of their own, revealing ideas different from those in *Self-Help* and interacting differently with contemporary culture.

The *Lives of the Engineers*' publication history and relationship to previous works and genres provide the background for the cultural work accomplished by the series. Like *Self-Help*, it is rooted in Smiles's days as the "rational radical" editor of the *Leeds Times* (1838-1842). During this period, Smiles contributed to various educational institutions for working men. Although he was critical of Mechanics' Institutes with their system of patronage<sup>5</sup> and preferred associations like the Woodhouse Temperance Society which were formed by working men for themselves (Morris 101), Smiles attended "soirees," as he called them, at the Leeds Mechanics' Institute, where he met George Stephenson and heard him speak on his great text—"PERSEVERE!"—in 1840 (Smiles, *Autobiography* 135).<sup>6</sup> This meeting greatly influenced Smiles, shaping his values and inspiring him to write *Self-Help* (222). In 1849, Smiles wrote his first short biography of Stephenson for *Eliza Cook's Journal* at the prompting of James Kitson, mayor of Leeds and personal friend of the Stephensons (*LE* 3: vii). Smiles was struck with the value of the life of Stephenson, both for teaching and for the "wonderful impulse which he had

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<sup>5</sup> Smiles disparagingly told the Bradford United Reform Club that the Leeds Mechanics' Institute was really just "a society of persons belonging to the middle class" (qtd. in Tyrrell, "Class" 120-121). For more on the paternalistic system of Mechanics' Institutes, and the ideological ends they served for their middle-class leaders, see Steven Shapin and Barry Barnes, "Science, Nature, and Control: Interpreting Mechanics' Institutes," *Social Studies of Science* 7 (1977): 31-74.

<sup>6</sup> Incidentally, this is five years before Smiles even began to give his self-help lectures to working men. Smiles later says that "My object in writing out *Self-Help* [. . .] was principally to illustrate and enforce the power of George Stephenson's great word – PERSEVERANCE" (*Autobiography* 222), suggesting the priority of *Life of George Stephenson* over *Self-Help*. Stephenson's lesson dominated Smiles's mind and he wrote in later life to his son regarding his grandson: "Instill the great word of George Stephenson in Jack's mind – Perseverance. It is a grand word for a boy to remember" (qtd. in Travers, *Samuel* 170-171)

given to civilization” (*Autobiography* 162). Immediately, he contacted Robert Stephenson about the idea, but received a discouraging response. In the limited vision of a man whose life had been consumed by engineering projects, Robert Stephenson was skeptical that anyone, other than engineers, would be interested in such a work because of the technical nature of the subject. Smiles replied that it would be a great biography if it treated “his character as a Man as well as an Engineer” (163). After receiving Robert Stephenson’s permission, Smiles began research, but quickly realized that to do it satisfactorily would require residence in Newcastle and, since he did not live there, laid the project aside (161-164). But in 1854 Smiles moved to Newcastle for his job and he began the project again, carefully interviewing men who knew George Stephenson and visiting the places where he lived and worked (178-191). Although he had been re-shaping the *Self-Help* lectures into book form, Smiles stashed that project in a drawer and pursued the Stephenson biography with full-steam (221). Although he worked intermittently on the project because of the increased demands on his time when he became the secretary for the South-Eastern Railway in late 1854 (207), Smiles finished and submitted the book to John Murray, thinking that he might as well start with the best publisher. In 1856, Murray agreed to publish the book on half-profits and the first editions were released in June 1857 (217-219).

While reviews of the biography were generally favorable, Smiles needed no more encouragement than the popularity of the work. The first edition of 1,000 copies sold quickly and a second edition of 1,500 copies was soon printed (220). This popularity gave Smiles confidence and he replaced the anecdotes which his hired editor had removed, saying that “personal anecdotes, when characteristic, greatly enliven the pages

of a biography” (*Autobiography* 218). Two thousand copies of a third revised edition with additions were printed for September 1857 (219-220). Two more editions were released by 1858, a fourth edition with no changes from the third and a fifth with more revisions and additions, totaling 3,000 printed copies.<sup>7</sup> In summary, by 1858, 7,500 copies of the *Life of George Stephenson* had been printed, and Smiles considered himself a “successful author at last!” (209). Yet if the biography was going to be helpful for working men, as an anonymous reviewer in the *Examiner* and J.R. Leifchild in the *London Quarterly Review* pointed out, a cheaper edition needed to be published. So in 1859, an abridged edition, the *Story of the Life of George Stephenson* was issued, with many of the technical passages removed, leaving the backbone of the story of Stephenson.

In his *Autobiography*, Smiles does not say how it happened, but once he began with George Stephenson, he continued writing engineering biography and the *Lives of the Engineers* was born, becoming a biographical powerhouse and cultural institution. In 1861, he published the two volume *Lives of the Engineers with an Account of their Principal works; comprising Also a History of Inland Communication in Britain*, well-illustrated by images from Percival Skelton, R.P. Leitch, and James Cooper. Volume one contains a history of embankment and drainage; a biography of Sir Hugh Myddleton; a history of roads and transportation; a history of bridges, harbors, and ferries; and a biography of James Brindley. Volume two consists of biographies of John Smeaton, John Rennie, and Thomas Telford. In 1862, he published volume three, a yet again

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<sup>7</sup> For the details and implications of these revisions, see A.E. Jarvis “An Attempt at a Bibliography of Samuel Smiles,” *Industrial Archaeology Review* 13 (1991): 162-171. See also the fourth chapter, “Lives of the Engineers,” in Adrian Jarvis’s *Samuel Smiles and the Construction of Victorian Values*, especially pages 81-91, on the pressure exerted by the Institution of Civil Engineers on Smiles to tone down his criticism of engineers’ actions in the railway mania of 1845.



revised biography of George Stephenson with a biography of Robert Stephenson woven into it. To Smiles the lives of these two men were inseparable, and he therefore refused to publish a separate biography of the son (*Autobiography* 254-255). The 6,000 copies of the first two volumes sold quickly, despite the price of a guinea each. The same number of copies of the third volume was printed and also sold quickly (256). In 1863, Smiles offered *Industrial Biography: Iron-Workers and Tool-Makers* as “a continuation, in a more generally accessible form, of the Series of Memoirs of Industrial Men introduced in his *Lives of the Engineers*” (v). In 1865, a fourth volume was added containing the lives of Matthew Boulton and James Watt, under the title *Lives of Boulton and Watt*.

*Principally from the Original Soho MSS. Comprising also a History of the Invention and Introduction of the Steam-Engine*, and sold in the same numbers at the same price. The biography of George and Robert Stephenson still remained the most popular and was republished in 1868 with more revisions. Finally, in 1874, the final publication of the series took place with a revised five-volume edition. This final set, sold at a much reduced price from the 1861-65 volumes, was revised so each volume focuses on the biography of the man, with less of the technological history.<sup>8</sup> Finally, *Men of Invention and Industry*, which Smiles saw at least partly as “a continuation of the memoirs of men of invention and industry published some years ago” (iii), was published in 1884 (and a revised edition in 1890) discussing ship-building, William Murdock, the steam-printing press, the industry of Ireland, and astronomers. The most important work of this series and of his biographical works in general is the *Life of George Stephenson* because of its

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<sup>8</sup> Volume one is about embankment and canals with biographies of Vermuyden, Myddleton, Perry, and Brindley; volume two is about harbors, lighthouses, and bridges with biographies of Smeaton and Rennie; volume three is about roads with biographies of Metcalfe and Telford; volume four is about the steam-engine with biographies of Boulton and Watt; and volume five is about the locomotive with biographies of George and Robert Stephenson.

immense popularity: by the mid-1880s, 60,000 copies, in its various evolutions, had been printed (Smiles, *Autobiography* 221).

This popularity partially stemmed from its catering to public fascination with the railway and with technological innovation and from its participation in existing—and popular—genres. An anonymous reviewer in the *Literary Gazette* noted that “it would be mere trifling with the time of the reader to say one word upon the incalculable advantages the world has derived from the application of steam to locomotive purposes” (631), highlighting the already established confidence in the railway. Another anonymous reviewer in the *Scottish Review* betrays the contemporary imaginative fascination with the railway: “we are being whirled faster than the wind through county after county, over deep rivers, and through steep hills, that interpose no barrier to our progress” (34). Although skeptical at first, thousands of people attended the Rainhill trials of the locomotive in 1829 where George and Robert Stephenson’s “The Rocket” travelled a mind-boggling twenty-nine miles per hour, besting three competitors. A 21-year old Fanny Kemble begins a letter written in 1830, and published in her *Records of a Girlhood* (1883), “a common sheet of paper is enough for love, but a foolscap extra can alone contain a railroad and my ecstasies” (281). The letter tells all about her ride in a car behind a locomotive engine on the Liverpool and Manchester line a few months before its grand opening, describing in detail the railway and the locomotive. Finally, she discusses the great engineer, George Stephenson himself: “now for a word or two about the master of all these marvels, with whom I am most horribly in love” (283). Kemble’s letter, although dramatic, reflects both the fascination with the railways and its subservient fascination with the engineer. The Stephensons’ celebrity by 1857 (MacLeod, *Heroes*

198-211) is underscored by reviews of Smiles's biography: both G.P. Bidder's *Quarterly Review* article and the review in *Tait's Magazine* mention that Smiles was not establishing the fame of George Stephenson, but only facts of his life. Smiles's biography both catered to and cashed in on the dual popularity of the railway and its titular father, George Stephenson.

Part of the biography's success was rooted in its participation in established genres: the technical history or treatise, the biography of a heroic figure, and the genre of "industrial success literature" (Brantlinger, *Spirit* 120).<sup>9</sup> Many books and articles had been written about the new technologies; among the sub-genres were technical discussions, engineering textbooks, and technological histories. Nicholas Wood's *Practical Treatise on Railroads* (1825), Andrew Ure's *Philosophy of Manufactures* (1835), Charles Babbage's *On the Economy of Machinery and Manufactures* (1832), John Bourne's *Treatise on the Steam Engine* (1846), and John Curr's *Railway Locomotion and Steam Navigation* (1847), are examples of technical discussions,<sup>10</sup> while Neil Arnott's *Elements of Physics* (1827) and William Fairbairn's series of *Useful Information for Engineers* (1856, 1860, 1866) are examples of textbooks. Technological histories, especially about the railroad itself, abounded, like Henry Booth's *An Account of the Liverpool and Manchester Railway* (1830), John Rennie's *An Outline of the Progress of Civil Engineering in Great Britain since the Time of Smeaton to the Present Day* (1846), John Francis's *A History of the English Railway* (1851), and articles filling

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<sup>9</sup> Jarvis claims that Smiles's *Lives of the Engineers* are also updated fairy tales (*Samuel* 92-128).

<sup>10</sup> The tedium of these works is captured in the title of one by Harry Scrivenor, secretary of the Liverpool Stock Exchange: *The Railways of the United Kingdom Statistically Considered, in Relation to their Extent, Capital, Amalgamation, Debentures, Financial Position, Acts of Parliament by which Regulated, Creation and Appropriation of Shares, Calls, Dividends, &c., Concisely Arranged, from Authentic Documents* (1849).

periodicals on railway history, accidents, and extensions. Yet very few of these works discussed the lives of the inventors. Thomas Telford's 1838 autobiography failed dismally due to its technicality, and, therefore, its boringness. It reads as a daily diary of dull engineering projects. Robert Stuart, a civil engineer, did publish a *Historical and Descriptive Anecdotes of Steam-Engines, and of their Inventors and Improvers* (1829), but it also failed. Whether successful or not, this genre concerned with technology provided both a source and pattern for Smiles's discussions of the history and technicality of the railway which is intertwined into the story of Stephenson. Yet, as a review of *Lives of the Engineers* in *The Reader* notes, "there existed works on engineering before the appearance of Stephenson's biography and the 'Lives of the Engineers;' but they were all learned and heavy, overrunning with technical terms and phrases, and written evidently more for the *savans* within than the Knownothings without the sacred circle of science" (65).

Smiles's biography also participates in the nineteenth-century biographical tradition, identified by A.O.J. Chockshut, whose goal was establishing the heroism of the subject (16). While the best biographers presented nuanced personalities, according to Chockshut, biographies which are part of this tradition are Robert Southey's *Nelson* (1813), John Gibson Lockhart's *Life of Robert Burns* (1828) and *Life of Sir Walter Scott* (1838), and Arthur Penrhyn Stanley's *Life and Correspondence of Thomas Arnold* (1844). Smiles's *Lives of the Engineers* joined the plethora of biographical collections following Plutarch's model of serial, didactic biography which was concerned, in the Victorian mind, with concentrating on the personality of the subject, showing the heroism of the subject, and using the biography as a moral lesson (Nadel 17-18). Smiles openly

declared that he was inspired by work from this Plutarchian tradition: Craik's *Pursuit of Knowledge under Difficulties* (*Autobiography* 222). While modern critics complain about the didacticism of Smiles's biographies, his contemporaries recognized, and usually shared, the belief in the importance of the moral lesson of biography, often commenting how valuable the *Life of George Stephenson* would be to working men studying in places like Mechanic's Institutes and circulating libraries (Leifchild 510; Galton 397; rev. of *LGS* in *Westminster Review* 234). Indeed, like the translation of Biot's *Newton* which was folded into the Society for the Diffusion of Useful Knowledge's *Lives of Eminent Persons* (1833), Smiles' biographies were used in working-class, adult education (Higgitt 30-35).

Considering the celebratory instead of the didactic dimension of the biography, Smiles did not have to establish a new narrative genre to tell Stephenson's story. The *Life of George Stephenson* participates in what Patrick Brantlinger calls the "industrial success literature" of the 1850s, which, after the achievement of free trade in 1846 and the decay of the Chartist movement in 1848, began to "celebrate the coming industrial millennium" (*Spirit* 119) through "rags-to-riches" stories of industrial success (120). This genre, with sub-genres for men, women, and boys (Harrison, "Victorian" 157), included novels like Dinah Mulock Craik's *John Halifax, Gentleman* (1856) and Charlotte Bronte's *Shirley* (1849) and collections like the anonymous *Success in Life; a Book for Young Men* (1851). Even Dickens celebrated industrial, self-made men, like Rouncewell of *Bleak House* (1852-53) and Daniel Doyce of *Little Dorrit* (1855-57), although he satirized them (and the genre) in Josiah Bounderby of *Hard Times* (1854). Even though considering novels published before *Self-Help*, both Brantlinger and Clare

Pettit invoke Smiles's *Self-Help* as the apex and representative of this attitude and genre, although published at the end of the period (Brantlinger, *Spirit* 120; Pettit, "Every Man" 164). Smiles's biographies of engineers, especially the *Life of George Stephenson*, tell the same stories as these novels which celebrate the same values and the same industry, providing an industrial variation of the *bildungsroman*.

Yet, while the *Life of George Stephenson* grows out of previous genres, it is doing something different and new, which his reviewers recognized. J.R. Leifchild hailed the biography, in the *London Quarterly Review*, "because it affords an opportunity of doing justice to a large and neglected class of men" (505). Echoing a similar sentiment, the anonymous reviewer for the *Westminster Review* claimed that

we cannot imagine a more interesting series of subjects for biography than that which is afforded in the lives of the men who, during the last hundred years, have distinguished themselves, more especially in Great Britain, as mechanical inventors and chiefs of mechanical industry. [. . .] if the muse of modern British biography is in quest of subjects that she can regard as peculiarly her own, let her turn her attention rather to that order of men, recently notable among us, of which Brindley, Watt, Hargreaves, Arkwright, Crompton, Heathcoat, and the two Stephensons may be taken as representatives. We consider it an excellent sign of a right direction of literature in this respect that here, within ten years of the death of the elder Stephenson, we should have so good a biography of him. (214)

Reviewers of the later *Lives of the Engineers* (1861-62), continued to comment on Smiles's development of a new direction in biography. The *British Quarterly Review* reviewer asserted that "great credit is due to the author for the skill with which he has contrived to make a whole department of biography generally interesting which had been accounted as hardly susceptible of attraction except to professional men" (243). The *London Review* reviewer suggests that Smiles "has discovered almost unbroken ground" and then ponders that "it is somewhat curious that the biographies of eminent engineers

have never been written” until Smiles did so (713). *The Reader’s* reviewer eulogizes Smiles as “the Herodotus of the history of engineering; and so neglected was the field of labour that it required no little courage even on his part to undertake the task” (65). So while there were biographies of engineers before Smiles’s, like Mary Strickland’s *A Memoir of the Life, Writings, and Mechanical Inventions, of Edmund Cartwright* (1843) and James Patrick Muirhead’s *The Origins and Progress of the Mechanical Inventions of James Watt* (1854), they did not create a generic tipping point. Instead Smiles’s reviewers could claim that, by writing a biography of an industrial hero, Smiles was moving British biography in a new direction.

But Smiles’s triumph was not just in bringing a new subject to biography, but in his combination of biography, the industrial success story, and the technical treatise and history into one 517-page narrative. In its reliance on established forms, Smiles’s composition is conservative and a product of its age, but in the combination of the forms and application of them to a new subject, the *Life of George Stephenson* is innovative and a force that shaped its age. What did this new genre look like? What did it accomplish? In what way did it answer the exigencies of its age and therefore become so popular? In this project, I am concerned with answering these questions, beginning with the specific exigency of the machine question, moving on to the text itself and its combination of genres, and concluding with its cultural impact.

## CHAPTER TWO

### Men, Machines, and Authors

*The Life of George Stephenson* succeeded not only by indulging the public's fascination, but also by answering the exigencies of an age unsettled by constant technological change. By the mid-1850s, Victorian Britain had resolved many of its labor issues, was over the birth pangs of the Industrial Revolution, and had celebrated its technological supremacy in the 1851 Great Exhibition. The railroad, although of recent origin, permeated British culture as discussions of them checkered periodicals. Still there was no stasis: while progress was celebrated by many, it also meant constant flux. How to deal with constant technological progress without becoming lost in or bewildered by it became a major question facing Victorian intellectuals. As Maxine Berg has argued, the "machinery question" was a central policy debate in the first third of the nineteenth century and was concerned with "the sources of technological progress and the impact of the introduction of the new technology of the period on the total economy and society" (9).<sup>1</sup> As part of technological progress, the machine loomed large in the high-cultural literature of the period, which disputed machinery's value and described it as a threat to culture and humanity. For example, in *Sir Thomas More, or Colloquies on the Progress and Prospects of Society* (1829), Robert Southey suggests that the industrialist who "uses his fellow-creatures as bodily machines for producing wealth, ends not unfrequently in

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<sup>1</sup> She formulates some of the forms of the question: "Would it bring wealth only to those who owned it, or to society as a whole? Would it make work or create unemployment? Would it unite society and foment class conflict?" (2).



becoming an intellectual one himself, employed in continually increasing what it is impossible for him to enjoy” (sic) (1: 170).

Until recently, Victorian literary studies have exhibited the same aversion to industrialism and nineteenth-century technology which its literary subjects often held, agreeing with William Blake’s early characterization of nineteenth-century factories as “dark Satanic Mills” (“Jerusalem” 8). Revising yet retaining the ideas of Matthew Arnold that those who like machinery are Philistines, Raymond Williams’s *Culture and Society* (1958) suggests that the idea of “culture” was a reaction to the industrial revolution, therefore seeing industrialism and culture as binary opposites. While this may be an accurate historical description,<sup>2</sup> it was also a prescription to scholars to vilify nineteenth-century technology or ignore it altogether as separate from “culture.” Yet Williams was only restating an entrenched intellectual position. In a 1959 Rede Lecture at Cambridge University, C.P. Snow lamented the thriving existence of two cultures, “literary intellectuals at one pole—at the other scientists, and as the most representative, the physical scientists” (4). Trying to account for the division, which Williams assumed, Snow recognized that in the nineteenth century,

almost none of the talent, almost none of the imaginative energy, went back into the revolution which was producing the wealth. The traditional culture became more abstracted from it as it became more wealthy, trained its young men for administration, for the Indian Empire, for the purpose of perpetuating the culture itself, but never in any circumstances to equip them to understand the revolution or take part in it. (24-25)

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<sup>2</sup> Critics questioning this historical narrative are Joseph Bizup in *Manufacturing Culture*, Clare Pettit in *Patent Inventions*, and Tamara Ketabgian in “‘Melancholy Mad Elephants’: Affect and the Animal Machine in *Hard Times*.”

The division, rooted in nineteenth-century thought, also shapes the way scholars look at nineteenth-century literature: only anti-industrial texts and authors are read.<sup>3</sup> In the section on industrialism in the eighth edition of the *Norton Anthology of English Literature* (2006), the only pro-industrial viewpoint included is Macaulay's praise of progress produced by industrialism in his review of Southey's *Colloquies* while there are several anti-industrialism passages. This scholarship and its curriculum create a conception of Victorian literature—and the period if literature represents popular opinion—as entirely anti-industrial.

Yet accounting historically for such technological forward leaps in the nineteenth century would be impossible if everyone was so anti-machine. Instead, as Herbert Sussman points out, many Victorians were fascinated by machines, appearing by thousands to witness railroad openings and bridge liftings (1). Contradicting the Arnoldian tradition of Williams, there was an extremely broad landscape over which Victorian responses to technology were scattered, a space so large it is impossible to generalize about any view of the "Victorian response to technology." Limiting the critical focus to literary responses to technology, a pattern emerges, or rather a stream of thought flowing through the landscape of opinion, collecting strength as it moves along. The spring of this response is Thomas Carlyle's "Signs of the Times" (1829) with tributaries from his later works *On Heroes* (1841), *Past and Present* (1843), and "Hudson's Statue" (1850). Other tributaries, which both swell and modify the course of the rivulet, emerge in John Ruskin's "The Nature of the Gothic" (1853) from *Stones of Venice* and Charles Dickens's *Hard Times* (1854). The sound of this stream, ranging

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<sup>3</sup> For more on this trend, see Herbert Sussman's "Machine Dreams: the Culture of Technology," *Victorian Literature and Culture* 28 (2000): 197-204.

from whispering to roaring, which attracts contemporary literary scholars, is its framing of the machine question in terms of human agency, exploring the possibility that machines and mechanistic philosophy may rob humans of their most essential element: the Dynamic, the imaginative, and the ability to act and live meaningfully.

Although outside of this stream because first published in 1818, Mary Shelley's *Frankenstein* provides a frame for considering the relationship of machines and humanity. Often critically related to scientific knowledge and discovery and to artistic invention, the novel also relates to technological invention. In her introduction to the 1831 edition of the novel, Shelley carefully builds a metaphor of invention which likens her creation of the text and the creation of the monster to the construction of a machine (21-23). The narrative explores the relationship between the inventor and the invention—and who is responsible for what the invention does. Once the invention is completed, it takes on a life of its own, with actions which are not under the direct control of the inventor. So while Frankenstein feels like he murders William, Justine, Clerval, and Elizabeth, he also blames the monster. This tension between the guilt of the inventor and the guilt of the invention is replicated in the struggle for sympathy between Frankenstein's narrative and the monster's inner narrative. Are readers to sympathize with inventor or invention? Which one is responsible for controlling his actions? Does the creation have agency or is he determined? Although the text leaves these questions unanswered, it does provide at least two insights into the relationship between the invention and inventor. First, it suggests that the inventor is partially responsible for the actions of his creations. But second, and more popularly, it suggests that the invention itself may have some limited agency not attributable to its creator and which may conflict

with the inventor's agency. The monster threatens Victor: "I am thy creature, and I will be even mild and docile to my natural lord and king, if thou wilt also perform thy part, the which thou owest me" (90). What was created to be subservient suddenly becomes the master. This foreshadows the reaction to machinery I trace in this project: the invention can control and destroy the creator. The story of Victor Frankenstein's creation can be read not only as a warning, but also as an allegory of the British response to the invention of industrial machinery. Immediately on its creation, the intellectual man reeled back in horror, labeling his national workmanship a monster. Just as in the cultural responses to *Frankenstein* in which the invention completely overshadows the inventor,<sup>4</sup> so Victorian responses to technology are absorbed with machines themselves to the exclusion of their relationship to their creators.

In 1795, Thomas Carlyle was born into a world unbalanced by the first industrial revolution and just five years before James Watt's retirement with the expiration of his steam engine's patent. Although Carlyle's home town of Ecclefechen, Scotland, was not a center of mechanical industry, Carlyle's Britain was. Carlyle matured along with Britain's technological complex, including manufacturing and transportation technologies, and Carlyle's writing reflects this industrial growth. In an 1824 letter written from Birmingham to his brother John, Carlyle describes that "city of Tubal Cain"<sup>5</sup> as an ugly jumble of industrial construction, capitalists, and operatives. In Birmingham,

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<sup>4</sup> If you ask an average people who Frankenstein is, they confidently answer that he is the monster who was created and brought to life by a mad scientist. In this way, the inventor continues to be marginalized in fascination with the horrifying, technologically sublime monster.

<sup>5</sup> Tubal Cain, the son of Biblical Lamech and Zillah and the inventor of metal working, was a common trope in the Victorian era for the source of industry involving iron. In his autobiography, *Passages from the Lives of a Philosopher*, Charles Babbage humorously suggests that he is a descendent from Tubal Cain, "who was a great worker in iron [. . .] for I, too, work in iron" (1: 3). *Passages from the Life of a Philosopher*, 2 vols., London: Longman, 1864.

torrents of thick smoke, with ever and anon a burst of dingy flame, are issuing from a thousand funnels. 'A thousand hammers fall by turns.' You hear the clank of innumerable steam-engines, the rumbling of cars and vans, and the hum of men interrupted by the sharper rattle of some canal-boat loading or disloading [. . .]. I have seen their rolling-mills, their polishing of teapots, and buttons, and gun-barrels, and fire-shovels, and swords, and all manner of toys and tackle. I have looked into their iron works where 150,000 men are smelting the metal in a district a few miles to the north; [. . .] and the whole is not without its attractions, as well as repulsions. (qtd. in Froude 231-232)

Like his Romantic predecessors, he recognizes the ugliness of the industrial landscape, but differs in his fascination with the sheer power and energy of the industrial works.

Like his non-intellectual contemporaries, he was attracted and repulsed by machines.

In 1829 the railway revolution began with the Rainhill trials of the steam locomotive engine and Carlyle published his "Signs of the Times," an essay examining the physical and intellectual status of the nation of "Tubal Cain" and exerting an enormous impact on literary and popular culture. According to a biographer, Carlyle "died the most influential man of letters of his day" and "it is impossible to understand the Victorians without understanding Carlyle first" (Heffer 1). Although this may be the enthusiasm of a person who has spent several years writing a four-hundred page biography, George Eliot corroborates this evaluation of Carlyle's importance in *The Leader*, 1855: "there is hardly a superior or active mind of this generation that has not been modified by Carlyle's writings; there has been hardly an English book written for the last ten or twelve years that would not have been different if Carlyle had not lived" (1035). Although Carlyle influenced all types of thinking people, "it was in literature that he made his greatest impact" (Heffer 1). Most contemporary literary journals responded to Carlyle's writings, ranging from "eulogy to denunciation" (Siegel 1). On his eightieth birthday in 1875, he received an encomium signed by many literary personages,

including Browning, Tennyson, the Martineaus, Tyndall, and Trollope (Heffer 377). Many authors responded to Carlyle, but John Clubbe's collection of essays, *Carlyle and his Contemporaries*, includes essays connecting Arnold, the Leweses, Trollope, Ruskin, Meredith, Browning, and Froude to Carlyle. One of Carlyle's specific topical influences was on responses to technology and "industrialism," a word he coined in *Sartor Resartus* (96). Positively, as Christine MacLeod points out, Carlyle's presentation of "the steam engine's epochal role entered the wider consciousness. Carlyle, a radical Tory, may have dreaded its consequences, but he caught the emotional charge, the almost sexual urgency, of steam-powered industry" (*Heroes* 130). Negatively, Carlyle's "Signs of the Times," served as the inspiration and intellectual framework for Ruskin's "Nature of the Gothic" and Dickens's *Hard Times*. Carlyle's great influence on his literary contemporaries and the respect with which they treated him, whether positive as with Dickens and Ruskin or negative as with Trollope, makes him an appropriate starting place for tracing responses to technology in mid-nineteenth-century literature.

Industrialism's progress and the growing agitation for political reform comprise the context for Carlyle's publication of "Signs of the Times" in the *Edinburgh Review*, a turning point in his career which established ideas he elaborated in later works (Heffer 103-106). Examining the "distinctive characters and deeper tendencies" of his age to determine "our own relations to it, our own true aims and endeavours in it," Carlyle thunders that it is "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" (59). The rest of the essay responds to the outward industrialized and mechanized world, like the

Birmingham he described in the letter, and to the inward intellectual systems and political economies which both grew out of industrialism and fostered it, establishing a reaction continued in the works of Ruskin, Dickens, and Arnold (Sussman 16). Concerned with how mechanism relates to men and how it *should* relate to men, Carlyle recognizes that the mechanical is not inherently bad but that its value depends on service to the organic, dynamic part of man, thereby registering an anxiety about the relationship of the machine and the human mind.

Although concentrating on repudiating inward mechanism, Carlyle first discusses outward technologies but does not condemn them outright, displaying the ambivalence about them expressed in his 1824 description of the sinister yet sublime Birmingham industrialism. In the essay, he responds negatively to machines at first, complaining that “nothing is now done directly, or by hand” and that “calculated contrivance” replaces workers as “the living artisan is driven from his workshop” (59), reflecting the Luddite conception of the machine as replacing the worker, depriving him of his livelihood. But within the same sentence, Carlyle’s attitude shifts toward the positive as the artisan is excluded “to make room for a speedier, inanimate” process (59). Here the pros of speed outweigh the cons. Then he venerates steam, the “unwearied servant” (60), propelling ships without effort from sailors and concludes the paragraph with an unbridled celebration of man’s increased power with these tools: “we remove mountains, and make seas our smooth highways; nothing can resist us. We war with rude Nature; and, by our resistless engines, come off always victorious, and loaded with spoils” (60). Within a single paragraph, Carlyle vacillates from conceiving machinery as the destroyer of human labor to the ultimate tool for human advancement. So although Sussman, in *Victorians*

*and the Machine*, suggests that Carlyle displays a “straightforward delight in technological power” (25), this paragraph betrays ambivalence about physical machinery and its impact on humanity.

But it quickly fades away when Carlyle considers the inward meaning of the Age of Machinery. After critiquing institutional machines for education and religion, Carlyle comments that while “the Genius of Mechanism [helps] us in all difficulties and emergencies, and with his iron back bears all our burdens” (61), people have become dependent on mechanical institutions and have “lost faith in individual endeavour, and in natural force, of any kind” (63). Forecasting his later critique of democracy, Carlyle worries that dependence on institutional mechanism destroys human freedom to act individually, basically that mechanism jeopardizes human agency. Advancing to his central argument, Carlyle denounces the mechanistic philosophy of mind, matter, and man exhibited by Adam Smith, William Paley, Jeremy Bentham, and Robert Owen, who “by arguing on the ‘force of circumstance,’ [. . .] have argued away all force from ourselves” (79).<sup>6</sup> Carlyle contends that the inward life “cultivated on such principles, [. . .] is found to yield no result” (66), understanding that mechanical philosophy can endanger meaningful life. While industrialism’s machines serve as the pattern, machines are not inherently rejected in Carlyle’s rejection of mechanical philosophies.<sup>7</sup> Yet the

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<sup>6</sup> Adam Smith’s *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776), Jeremy Bentham’s *The Principles of Morals and Legislation* (1789), William Paley’s *Principles of Moral and Political Philosophy* (1785), and Robert Owen’s *A New View Of Society, Essays on the Formation of Human Character* (1813).

<sup>7</sup> J.R. McCulloch’s *Discourse on the Rise, Progress, Peculiar Objects and Importance of Political Economy* (1824) connects the views of mechanistic political economists with the capitalist context, arguing they could not have arisen otherwise while Traves Twiss’s *View of the Progress of Political Economy in Europe* (1847) ties political economy directly to an industrial context. While Carlyle does not make an explicit claim for a causal connection between industrialism and mechanistic political economy, his



implications of the metaphor reflect back on the source of the metaphor: Carlyle's connection of loss of human agency with physical machines permeates the thought of his intellectual successors.

Moving beyond criticism, Carlyle suggests an alternative to philosophical mechanism: the subordination of the Mechanic to the Dynamic, as he calls it. Recognizing that the mechanical metaphor is useful, Carlyle he suggests that the Mechanic is "a limited portion of man's interests, and by no means the highest portion" (68). The other portion is the Dynamic "in man's nature and fortunes" which he defines as "the primary, unmodified forces and energies of man, the mysterious springs of Love, and Fear, and Wonder, of Enthusiasm, Poetry, Religion, all which have a truly vital and *infinite* character" (68). In Carlyle's system, the Dynamic does not destroy the Mechanic, but subordinates and controls it: "only in the right coordination of the two, and the vigorous forwarding of *both*, does our true line of action lie" (73). After discussing the results of an imbalance, Carlyle diagnoses his own time: "by our skill in Mechanism, it has come to pass, that in the management of external things we excel all other ages; while in whatever respects the pure moral nature, in true dignity of soul and character, we are perhaps inferior to most civilized ages" (73). While not reducing the decline of the inner life to the presence of the Mechanic specifically, he connects it to faith in Mechanism which eschews the Dynamic. Instead, eras in which the Dynamic controls the Mechanic receive Carlyle's stamp of approval. He hopes that "Mechanism is not always to be our hard taskmaster, but one day to be our pliant, all-mastering servant" (81). This relationship between the Dynamic and Mechanic pervades his later writings—in the hero

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sandwiching between McCulloch and Twiss suggests that he and his readers could have been aware of the connection which would have damned machinery for spawning mechanistic political economy.

of *On Heroes* accessing the inner truth of life and in the Captain of Industry of *Past and Present* leading from within the industrial complex.

If “Signs of the Times” contains Carlyle’s understanding of his *zeitgeist*, his series of lectures entitled *On Heroes, Hero-Worship, and the Heroic in History*, delivered over a two-week period in May 1840 but published in 1841, traces the Dynamic in history. To solve problems created by an inward Mechanical Age, Carlyle depicts the great heroes, men not produced by cosmological mechanism but who shaped themselves and led men and meaningful lives through the Dynamic. Celebrating the world tree, Igdrasil, and rejecting “the ‘*Machine* of the Universe’” (19) and the reduction of “this God’s-world to a dead brute Steam-engine” (65), Carlyle describes the universe as a “Force, and thousandfold Complexity of Forces; a Force which is *not we*. [ . . . ] Force, Force, everywhere Force; we ourselves a mysterious Force in the centre of that” (9). The hero, “a great soul, open to the Divine Significance of Life” (99), sees the Dynamic, “the Inner Fact of things” (40) and becomes the Dynamic in history himself. In contrast is the man

who discerns nothing but Mechanism in the Universe, [who] has in the fatalest way missed the secret of the Universe altogether. [ . . . ] but this worships a dead iron Devil; no God, not even a Devil!—Whatever is noble, divine, inspired, drops thereby out of life. There remains everywhere in life a despicable *caput-mortuum*; the mechanical hull, all soul fled out of it. (149)

This anti-hero talks of “Forces of Nature, Laws of Nature; and does not figure [them] as a divine thing; not even as one thing at all, but as a set of things, undivine enough,—saleable, curious, good for propelling steam-ships!” (60). Ultimately, the hero sees the Dynamic in nature, accesses the Dynamic of his own person, and acts as the Dynamic force of history.

Where “Signs of the Times” and *On Heroes* deal with philosophical mechanism, *Past and Present* deals with life in an increasingly mechanized world, offering a solution rooted in the concept of the Dynamic from the earlier works. Part of the background is the Chartist agitation, whether using moral or violent force, for greater privileges for the working class through increased suffrage. Carlyle responded directly to it in *Chartism*, a shorter work published in 1840, which coined the phrase “Condition-of-England question” (Ulrich 59) and which inspired novels like Benjamin Disraeli’s *Sybil* (1845), Charles Kingsley’s *Alton Locke* (1850), and Elizabeth Gaskell’s *North and South* (1854-55). Opening *Past and Present* with “The condition of England” (1), Carlyle gets right to the point: dealing with the specific challenges facing England which he identifies as the problem of working men and poverty. Carlyle characterizes the plight of England as an enchantment: workmen and masters are captives under wealth’s spell. He asks “who has got hold of it [wealth], to make it fetch and carry for him, like a true servant, not like a false mock-servant; to do him any real service whatsoever? As yet no one” (6). Slavery implies loss of agency and while Carlyle blames this loss on avarice not on mechanization, it is connected with mechanization because the wealth is produced by industrialism. As he suggests later in the work, “Fire is the best of servants; but what a master!” (90). Using a past Dynamic leader as pattern, Carlyle suggests a solution to the Condition-of-England problem: a new type of hero, the Captain of Industry, who will make industrial wealth the “pliant, all-mastering servant” (SOT 81)

Still, technology is not inherently harmful to workers for Carlyle. In *Past and Present* Carlyle celebrates the “Gospel of Work,” defining all work as noble and reiterating the monastic concept that *laborare est orare*. Even industrial work is

potentially noble for Carlyle. Arkwright, Watt, and Brindley, inventors of the Industrial Revolution are celebrated as Shakespeare, Goethe, Odin, and Saint Mungo. For Abbott Samson, his historical example, “the Earth’s business [is] all a kind of worship” (116). As Sussman points out, Carlyle’s “straightforward delight in technological power became morally justified for Carlyle by the principle that he shared with his age and, indeed, articulated for it, the doctrine of work” (Sussman 25). Yet Carlyle’s awareness of the “monstrous pitchy City” (SOT 66) of “Sooty Manchester” (PP 228) and recognition that “Industrial work, [is] still under bondage to Mammon, the rational soul of it not yet awakened” (207) tempers his enthusiasm. Additionally, he acknowledges the limitations of machinery: “we shall never, by all the machinery in Birmingham, discover the True and Worthy” (83).<sup>8</sup> While celebrating them, he recognizes that machines cannot decide moral values.

To make wealth a servant rather than a master, Carlyle returns to the method outlined in *On Heroes*: “thou shalt descend into thy inner man, and see if there be any traces of a soul there” (PP 26). But in *Past and Present* Carlyle tailors his solution to the industrial context: “the Working Aristocracy must strike into a new path: must understand that money alone is not the representative either of man’s success in the world, or of man’s duties to man; and reform their own selves from top to bottom” (177). Continuing the characterization from *On Heroes* of the hero as a captain of troops fighting against evil forces, Carlyle calls the hero of the “Industrial Ages” (250) a “Captain of Industry” who will form “an actual new Sovereignty, Industrial Aristocracy, real not imaginary Aristocracy” (250). The “Industrial Ages” are compatible with human

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<sup>8</sup> There is no technological Millenarian impulse here. For a discussion of technology and Millenarianism, see David F. Noble, *The Religion of Technology: the Divinity of Man and the Spirit of Invention*, New York: Alfred A. Knopf, 1997.

agency, but so far lack a Dynamic hero. While Carlyle ends his essay on a hopeful note that such a man will emerge, the work betrays anxiety about an industrial world not regulated by the Dynamic. This anxiety, connected to his juxtaposition of machines and loss of agency, is developed and pushed further by his literary successors.

Concluding *Past and Present*, Carlyle asserts that the epic of his age is “*Tools and the Man*” (249), rewriting the opening lines of the *Aeneid* and hoping for the foundation of an industrial nation as great as Troy. MacLeod observes that while Carlyle celebrates Watt, Arkwright, and Brindley, he excludes them from his “inner sanctum” of *On Heroes* but sees them as admirable figures who should be “honoured but culturally not integrated” (*Heroes* 121-22). Yet Carlyle’s conception of a “*Tools and the Man*” history suggests that Carlyle wanted to tell the story of a hero of the Age of Machinery, a man able to master the technological tool as the martial heroes mastered their weapons, but that there was none to tell—except one that would emerge in the future, which was “more than usually impossible to prophesy” (*PP* 249). In 1850, Carlyle takes up the same themes in “Hudson’s Statue” in *Latter-Day Pamphlets*, but registering disillusionment in technology, men, and the age. Echoing *Past and Present*, Carlyle grieves that “our first want, which includes all wants, is that of a new real Aristocracy of fact” (“Hudson’s” 263). Carlyle’s hope has been disappointed: no Captain of Industry has emerged. Instead “men’s minds have fallen hebetated, stupid, that their hearts are dead, awakening them only to some life about meal-time and cookery-time” (277). His growing anger with the working-class (Bosshe 138) for failing to produce a Captain of Industry is reflected in the essay’s anti-democratic message based on the public’s celebration of the money-grubbing George Hudson, the “Railway King.”

Carlyle's disappointment spreads to his attitude toward machinery. Looking for any worth which Hudson contributed, Carlyle considers the value of the railway but "cannot pretend to say. [. . .] From my own private observation and conjecture, I should say, Trifling if any worth" ("Hudson's" 265). But he softens when he sees the railway in the context of his readership: "much as we love railways, there is one thing undeniable: Railways are shifting all towns of Britain into new places" (266), a movement in which towns are "confusedly waltzing, in a state of progressive dissolution, towards the four winds" (266). Without discipline by a real hero, technology has become destructive, encouraging the disorder which Carlyle understood technology to fight in *Past and Present*. Finally, he bitterly complains, "I do not want cheaper cotton, swifter railways; I want what Novalis calls 'God, Freedom, Immortality': will swift railways and sacrifices to Hudson, help me towards that?" (277). Despite warnings beginning with "Signs of the Times" against following false heroes and against putting complete faith in either inward or outward machines, Carlyle's age failed to follow his advice, a failure revealed in their worship of Hudson. The essay registers the righteous wrath of a sage whose advice had not been taken, whose hopes in men has been disappointed, and whose incorporation of machines into the transcendental system founded on the Dynamic had not been completed.

Yet not all of Carlyle's contemporaries were deaf to his message, especially among literary people. As noted, Carlyle's influence pervaded the intellectual and literary realms. John Ruskin, understood to be a disciple of Carlyle's (Cate 227), was among those inspired by Carlyle to respond to the Mechanical Age. In the third volume of *Modern Painters* (1843), Ruskin claims that he owes more to Carlyle "than to any

other writers” and that he read Carlyle so often that “without willfully setting myself to imitate him, I find myself perpetually falling into his modes of expression” (*Works* 5: 427). In letters growing out of their friendship which began in the early forties, Ruskin sometimes addressed Carlyle as “Dearest Papa” (“Ruskin to Carlyle” 177). Yet Ruskin was too brilliant to merely regurgitate Carlyle’s ideas. Instead, suggests George Allen Cate, his discipleship was complex and personal. Consequently, Ruskin’s works are not simple explications of Carlyle’s ideas but reactions to and modulations of them, even while carrying “Carlyle’s banner above his own” (Cate 256).

Ruskin’s the “Nature of the Gothic” in the third volume of his *The Stones of Venice* (1851-53), is an amalgamation of Ruskinian art criticism and Carlylean social criticism. Traces of Carlyle permeate the work, but the most prominent is the celebration of the transcendental side of man in Ruskin’s concept of the Grotesque. Ruskin himself connected the Grotesque and the Carlylean transcendental in a lecture entitled “On Decorative Colour” in which he claimed that Carlyle was celebrating the exercise of the Grotesque in *On Heroes, Hero-Worship, and the Heroic in History* (*Works* 12: 507). In the “Nature of the Gothic,” Ruskin identifies aesthetic forms which express Carlyle’s celebration of the transcendent soul in the architecture of the old Venice: “we shall find that Gothic architecture has external forms and internal elements” (*Works* 10:183).

Yet Ruskin faced challenges which Carlyle’s socially-focused criticism did not address: what to do with the art and architecture of the Age of Machinery? While the “The Nature of the Gothic” has been praised as the greatest essay on art in the English language (Unrau 33), it has also been hailed as “the most influential nineteenth-century discussion of the machine” (Sussman 85). John Ruskin vehemently opposed the Age of

Machinery for multiple reasons: aesthetic, environmental, moral.<sup>9</sup> The moral objection, rather than the aesthetic one, concerns Ruskin most in “The Nature of the Gothic.” Evaluating a work of art partly by the circumstances under which the workman created it, Ruskin inveighs against art created by slaves. Where Egyptian, Assyrian, and Renaissance architecture was constructed by slaves who had no latitude for independent creativity, Christian (Gothic) works were constructed under systems which recognized the “individual value of every soul” and fostered creativity (*Works* 10: 190). He sees in this contrast a solution to the Condition-of-England problem. With Carlyle he agrees that work itself is essential for remaining human, lamenting the “fatal error of despising manual labour when governed by intellect” (*Works* 10: 201) and claiming that “it is only by labour that thought can be made healthy, and only by thought that labour can be made happy” (*Works* 10: 201).<sup>10</sup> Yet Ruskin cannot agree with Carlyle that all work is good: “it is not that men are ill fed, but that they have no pleasure in the work by which they make their bread, and therefore look to wealth as the only means of pleasure. [. . .] they feel that the kind of labour to which they are condemned is verily a degrading one, and makes them less than men” (*Works* 10: 194). Ruskin agrees with them.

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<sup>9</sup> Like Carlyle, Ruskin objects to philosophically limiting the human being to and by the mechanical metaphor. In *Unto This Last* (1862), Ruskin reiterates Carlyle’s objection to the mechanistic political economy of Jeremy Bentham and Adam Smith and outlines a radical political and economic system independent of self-interest and founded on appreciation of other human beings and valuable work.

<sup>10</sup>Ruskin’s more active compassion on working men is evident through his participation in F.D. Maurice’s Working Men’s College in which Ruskin lectured and for which “The Nature of the Gothic” was reprinted with the sub-title *And herein of the True Function of the Workman in Art* in the mid 1850s (Leon 226-227). Leon, Derrick, *Ruskin: the Great Victorian*, London: Routledge & Kegan Paul, 1949.



Factory work is not only ugly and dissatisfying, but is destructive to the workman for Ruskin. In the essay, Ruskin shifts the terms of Carlyle's "Tools and the Man," considering humans as the tools under the current system:

you must either make a tool of the creature, or a man of him. You cannot make both. Men were not intended to work with the accuracy of tools, to be precise and perfect in all their actions. If you will have that precision out of them, and make their fingers measure degrees like cog-wheels, and their arms strike curves like compasses, you must unhumanize them. All the energy of their spirits must be given to make cogs and compasses of themselves. All their attention and strength must go to the accomplishment of the mean act. The eye of the soul must be bent upon the finger-point, and the soul's force must fill all the invisible nerves that guide it, ten hours a day, that it may not err from its steely precision, and so soul and sight be worn away, and the whole human being lost at last [. . .]. (*Works* 10: 192)

Unlike Carlyle, Ruskin defines the problems facing England as the physical machines: "it is verily this degradation of the operative into a machine, which, more than any other evil of the times, is leading the mass of the nations everywhere into vain, incoherent, destructive struggling for a freedom of which they cannot explain the nature to themselves" (*Works* 10: 194). And unlike Carlyle who perceives the possibility of making machines serve men, Ruskin believes that at best machines are neutral to human good and at worst are directly destructive of the very core of humanity.

Another famous sermon on Carlyle's text is Charles Dickens's *Hard Times* (1854), clothing Carlyle's conception of the Dynamic and Mechanic in satire. Like Ruskin, Dickens met Carlyle in the early forties and had a disciple's attitude toward the older man (Goldberg 1), writing to Carlyle that "I am always reading you faithfully and trying to go your way" (*Letters* 3:348). Scholarship recognizes the connection between these two eminent Victorians; there are two books just about it, rather creatively titled *Carlyle and Dickens* and *Dickens and Carlyle*, by Michael Goldberg and William Oddie,

respectively. While, like Ruskin's, Dickens's overall relationship to Carlyle's ideas is complex and shifting (Oddie 6), *Hard Times* presents a fairly straightforward expression of Carlyle's ideas. Responding to the Condition-of-England question as updated by the Preston strike, Dickens provides in *Hard Times* what he himself thought was a Carlylean novel (Goldberg 78). Oddie suggests that "Signs of the Times" can be read as "a summary of a general attitude to society which strongly attracted Dickens" and which he expressed in *Hard Times* (119). Indeed, the novel explores both inward and outward mechanism, although focusing on the inward, by juxtaposing them in an industrial town. The descriptions of Coketown, "fact, fact, fact, everywhere in the material aspect of the town; fact, fact, fact everywhere in the immaterial" (*Hard Times* 17) sound like an imaginative rewriting of Carlyle's declaration that "it is the Age of Machinery, in every outward and inward sense of that word" (SOT 59). Through its industrial setting, Dickens goes beyond Carlyle on the danger of machinery in this novel, which Sussman calls the "finest imaginative account of the mechanized world" (72) from a man who, according to Carnall, was connected more than any other person to the solution of the "Two Nations" problem in the public consciousness (32)

By setting the novel in an industrial town populated with factories, "the Hands," and some equally mechanical men and philosophies, Dickens cannot avoid a negative presentation of machines. Indeed, Dickens portrays machines as destructive forces in two ways: through their ability to injure the bodies of men and through the monotony which can scar men's psyches. These two elements are included in the famous first description of Coketown

where the piston of the steam-engine worked monotonously up and down like the head of an elephant in a state of melancholy madness. It

contained several large streets all very like one another, and many small streets still more like one another, inhabited by people equally 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. (*Hard Times* 17)

Throughout, Dickens returns to “the day’s monotony” (53) and the “direful uniformity” (69) of the factories which Stephen Blackpool recognizes on his deathbed as “awlus a goin, an how they never works us no nigher to onny dis’ant object—ceptin’ awlus, Death” (114). This monotony is connected to the mechanized environment of the work: the novel emphasizes that “the attributes of Coketown were in the main inseparable from the work by which it was sustained” (17). By considering the effect of this environment on individual characters, Dickens appeals to his readers’ emotions. When Stephen leaves the factory, he still has the “odd sensation upon him which the stoppage of the machinery always produced—the sensation of its having worked and stopped in his own head” (49). Invading the mind, this monotony destroys the operative’s ability to act individually as he becomes ever more like his fellows with whom he “went in and out at the same hours, with the same sound [ . . . ], to do the same work.” Like Ruskin, Dickens understands that contact with machines can jeopardize the ability to act.

Surpassing Carlyle and Ruskin, Dickens recognizes that machines can take on lives of their own, like Frankenstein’s monster, becoming *actively* destructive forces, emphasizing the struggle for agency between humanity and machines, characterized as “melancholy mad elephants” throughout the book. Tamara Ketabgian points out that elephants were considered usually docile and obedient animals which could occasionally erupt into insane and extraordinarily dangerous fury (664). The actively destructive capacity of these elephantine machines reflects Dickens’s fear of industrial accidents. He

bitingly satirizes Coketown factory owners who object when inspectors “considered it doubtful whether they were quite justified in chopping people up with their machinery” (84). In an early draft of the novel, Dickens footnoted this passage with Henry Morley’s “Ground in the Mill” article for *Household Words* which addressed industrial accidents and deeply resonated with Dickens own feelings (Ford and Monod 279).<sup>11</sup> Morley reiterates the machine-as-master discourse when talking about the little boy killed by “his stern master, the machine” as “he was fully punished when the machine he served caught him by one arm and whirled him round and round till he was thrown down dead” (224). Although a factory accident does not kill Stephen Blackpool, the complicity of mechanistic political economy with the industrialism—mill and mine and rail—devours him as he falls among ghosts of colliers past into a pit which “ha’ been wi’ th’ Fire-damp crueller than battle” (207).

Despite his negative presentation of industrialism, Dickens is not condemning the mechanical as inherently bad, but illustrating the danger of reducing the world to the mechanical. As Patrick Brantlinger points out, Dickens “can veer from extreme hostility to industrialism to extreme approval without fully realizing his inconsistency, vacillating uneasily in a dim borderland in which the new machinery sometimes seems infernal and sometimes heavenly, sometimes threatens the destruction of life and sometimes promises utopia” (“Dickens” 284). Similarly, scholarship schizophrenically differs on Dickens’s attitude toward machines in general and within *Hard Times*. But in *Hard Times* his answer to the machine question is set in a specific context: physical machinery becomes destructive when it is driven and controlled by mechanistic political economy. But for

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<sup>11</sup> Ironically, Dickens sent *The Life of George Stephenson* to Morley for review in June 1857 (*Letters* 8:78). This evidence suggests that Morley was the author of “Inch by Inch Upward,” the *Household Words* review of the Smiles’s biography of Stephenson published in July of that year.

Dickens the machine does not destroy the Dynamic altogether, but maims it, as the industrial complex kills the best part of the working population, Stephen Blackpool. If life is reduced to the Mechanic, the Dynamic will be irretrievably twisted and may erupt into destructive fury. Ultimately, he is not campaigning for elimination of the machines, but tries to change the way they are used. At the end of the novel, he returns to his Carlylean roots with a challenge to his readers: “it rests with you and me, whether, in our two fields of action, similar things shall be or not” (227).

Thus the stream of responses to technology concerning human agency swelled and meandered. Carlyle recognized the condition of his age and Dickens and Ruskin expounded on how men were to act in it. Through their responses to technology runs an ever deepening current of fear that the machine, physical and otherwise, threatens to rob man of his agency by becoming the master. Rarely, if at all except in Carlyle, is the machine celebrated as a tool which increases rather than decreases human agency. As Shelley recognized, the invention could take on a life of its own. Yet this stream of opinion was not to continue unimpeded; there was a dam ahead in Samuel Smiles which dramatically shifted the course of this river of opinion.

## CHAPTER THREE

### The Constructive Hero and the Docile Machine

Lines from Alexander Pope's "Epistle 4 to Richard Boyle, Earl of Burlington"

comprise the epigraph of Smiles's *Lives of the Engineers*:

Bid Harbours open, Public Works extend;  
Bid Temples, worthier of God, ascend;  
Bid the broad Arch the dang'rous flood contain,  
The Mole projected, break the roaring main;  
Back to his bounds their subject sea command,  
And roll obedient rivers through the land.  
These honours, Peace to happy Britain brings;  
These are imperial works, and worthy kings.

To John Ruskin, Lord Burlington's constructions, like Chiswick House which displays the Palladian qualities of balance and proportion, were "wholly virtueless and despicable" because they enslaved their workmen (*Works* 5: 93-94). Transferring this to the nineteenth century, Ruskin saw industrial workers suffering the same enslavement. By including this poem Smiles seems to align himself with industrial enslavers.

In his attitude toward Burlington, Smiles joins the popular celebration of industrialism which Ruskin condemns. Yet despite their disagreement, both attitudes towards machinery are channels of the river whose headwaters are Carlyle. Where Ruskin sees himself as swelling the river, Smiles creates eddies in it, redirecting it by redefining the relationship between man and machine. Fulfilling his purpose of bringing engineers to literary attention, Smiles provides a pro-industrial answer to the machinery question within the Carlylean banks by characterizing the engineer as a hero, presenting

the machine as a servant, and combining the personal with the technological narrative to form a dual narrative dominated by the human engineer.

*“Dressed up by others in various forms”: the Question of Carlyle’s Influence on Smiles*

Smiles’s Carlylean notions are often mentioned but seldom discussed. Many agree that Carlyle’s influence permeates Smiles (Bradley 23; Houghton xvi; Briggs, “Samuel” 117; Harrison, Royden 265; Nadel 22)<sup>1</sup> while others contest it (Travers, *Samuel* 169; Tyrell, “Origins” 348).<sup>2</sup> Some suggest that Smiles modifies Carlyle’s ideas on work (Travers, *Samuel* 168; Turner 144),<sup>3</sup> heroism (Dentith 52; Brantlinger, *Spirit* 120),<sup>4</sup> and the Condition of England problem to fit his own ideology (Jarvis; *Samuel* 55).<sup>5</sup> Yet only the book-length studies, by Travers and Jarvis, are supported by critical readings of both Smiles and Carlyle. Therefore, an analysis of Smiles’s relationship to Carlyle and his

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<sup>1</sup> Bradley characterizes Smiles as “trailing wisps of Carlyle” (23) while Houghton and Briggs note that Carlyle’s heavy influence on Smiles is apparent in the appearance of Carlyle’s ideas throughout Smiles’s works (Houghton xvi; Briggs 117). Royden Harrison suggests that Smiles’s genre of industrial biography is a fusion of “the two great themes found in Carlyle: work and the hero” (265). Nadel and Briggs agree that Smiles was announcing the existence of achievements Carlyle prophesied (Nadel 22; Briggs 117).

<sup>2</sup> Travers observes that the similarities can be explained biographically: both grew up in Scottish Calvinist homes, were encouraged to enter the church, and retreated from Calvinism in adulthood (*Samuel* 168). Travers and Tyrell trace many of Smiles’s ideas to Emerson and Channing rather than Carlyle (Travers, *Samuel* 169; Tyrell, “Origins” 348).

<sup>3</sup> Travers contrasts Carlyle’s understanding of labor as emerging from within the soul to order the environment with Smiles’s understanding of labor as reforming the interior soul from without (*Samuel* 168). Turner contrasts Carlyle’s moral vision of work with a false conception of Smiles’s vision of work as merely “a means to respectability and personal self-sufficiency” (144).

<sup>4</sup> Dentith claims that Smiles was not trying to make his engineers into heroes while Carlyle was concerned with the emergence of industrial heroes (52). Brantlinger suggests that Smiles creates democratic heroes out of Carlyle’s aristocratic ones (*Spirit* 120).

<sup>5</sup> Jarvis sees Smiles as agreeing with Carlyle on the root of the problem (the rulers were not fit to rule) and on the value of work, but disagreeing about the solution and about who should rule (*Samuel* 55).

ideas is necessary to understand both Smiles's *oeuvre* and his position on the machinery question.

In his *Autobiography*, Smiles identifies only one factual connection with Carlyle: Smiles and Jane Welsh were from Haddington, which Jane labeled "the dimmest, deadest spot in the Creator's universe" (qtd. in Smiles, *Autobiography* 6). The only ideological connection refers to his own success: he is thankful for his modest intelligence coupled with the perseverance to develop it, for perseverance, "as Carlyle says 'is the hinge of the virtues'" (384).<sup>6</sup> This neglect of Carlyle in the *Autobiography* could imply that Smiles did not consider the sage a shaping influence. Yet direct quotations both show that Smiles read many of Carlyle's works and disclose his reading list: *The Life of Friedrich Schiller*, *Sartor Resartus*, *The French Revolution*, *On Heroes, Past and Present*, *Latter-Day Pamphlets* ("Model Prisons" and "Hudson's Statue"), *The Life of Sterling*, *Frederick the Great*, *Miscellanies* ("Biography," "Boswell's Life of Johnson," "Corn-law Rhyme," and "Voltaire"), and various letters.

For reading so much Carlyle, Smiles is surprisingly ambivalent towards him in *Brief Biographies* (1860). Probably because it was published only in the United States, this collection presents its subjects less diplomatically than his other works (Jarvis "Engineering"). Smiles's short biography of Carlyle begins:

it is difficult to form a proper estimate of the influence of Carlyle on modern literature. Doubtless it has been very great. [. . .] The influence which his writings have exercised upon others has been of a latent kind, almost a silent influence, notwithstanding the great *éclat* with which his works have been received. You very often find his ideas reappearing, dressed up by others in various forms [. . .]; but it is easy to recognize the

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<sup>6</sup> This is from a Carlyle letter included in A. J. Froude's *Thomas Carlyle: the First Forty Years of his Life* published in 1882.



traces of his thoughts in the most remarkable works in modern English literature. (284-85)

He proves his familiarity with Carlyle's railings against sham, creed, machinery, materialism, and Hudson's statue and with Carlyle's celebration of "the Divine in man's soul [. . .], the nobility of work, and the duties of being and doing" (270). The biography lauds Carlyle as a self-helper and autodidact but criticizes his pessimism: "the revolutionary and destructive genius is stronger in Carlyle than the conservative and constructive" (271). Discussing Carlyle's work, adding *Oliver Cromwell* and *Chartism* to the reading list, Smiles declares that Carlyle "struck the key-note to which all earnest minds were ready to give an echo" (281) with "Signs of the Times" and that "there is scarcely a writer of note in England or America now, who has not, to a greater or less extent, been influenced by these remarkable writings" (sic) (281). Smiles must have recognized that he was not exempt from Carlyle's influence.

Whether he recognized it or not, Smiles's ambivalence prevented him from discipleship to Carlyle. Instead, his incorporation of Carlylean quotes suggests that Smiles saw himself as a colleague of Carlyle's. He uses Carlyle's *Life of Sterling*, *Frederick the Great*, "Voltaire," and *The French Revolution* as historical sources for *Brief Biographies*, *Life and Labour*, and *The Huguenots* and adds Carlylean epigraphs to *Industrial Biography* and *Thrift*. His other invocations of Carlyle, especially in *Character and Duty*, are appeals to an expert witness. Against the generalization that Smiles's industrial biographies are merely examples of self-help, the *Lives of the Engineers* series and the *Self-Help* series use Carlyle differently: Smiles never quotes Carlyle in his full biographies while the *Self-Help* series contains most of his direct quotes of Carlyle.

Smiles depends on Carlyle in two instances: first, Smiles directly patterns *Industrial Biography* on Carlyle's "*Tools and the Man*" idea and second, Smiles summarizes and depends on Carlyle's notion of history in *Character*. After using two long quotes from *Sartor Resartus* about tools' importance for mankind in *Industrial Biography*, Smiles assumes a narrow definition of tools (as industrial implements) and writes an epic of inventors who make the machine self-acting. In *Character*, Smiles does not call Carlyle as a corroborating witness to his conception of history but as an oracle: "Mr. Carlyle has broadly stated that Universal History is, at bottom, but the history of Great men. They certainly mark and designate the epochs of national life. Their influence is active, as well as reactive. Though their mind is, in a measure, the product of their age, the public mind is also, to a great extent, their creation" (22).

Yet Carlylean ideas, like the celebration of labor, adoration of heroes, and the recommendation of self-help, permeate Smiles's works. How should this agreement be evaluated? Previous critics have depended on what Stephen Greenblatt calls "conventional pieties of source study" (165), but Smiles's ambivalence towards Carlyle plus his own testimony suggest that the agreement's significance is not in direct influence. Instead, its importance resides in the interaction between Smiles's engineering biographies and Carlyle's thought and what that interaction accomplishes. Smiles's texts are not isolated descendents of Carlyle's because "the protective isolation of those texts gives way to a sense of their interaction with other texts and hence to the permeability of their boundaries" (Greenblatt 165). His reviewers disclose this permeability when they note that Smiles was filling a Carlylean mold in celebrating the "godlike" engineer who "has groped through the darkness of the world, mastered any one of the great mysteries"

(Rev. of *LGS* in *Athenaeum* 749), in “placing a living personage before his readers” (qtd. in back matter of 1874 *LE* IV), and in providing a biography of a man like those from “the heroic ages” (Galton 397). In this chapter, I will investigate how Smiles and Carlyle concur, how Smiles seems to borrow from Carlyle, and how this borrowing changes the course of the flow of opinion about machines and agency.

*“True leaders of men and lords of industry”: the Engineer as Hero*

Critics disagree about the heroism of Smiles’s engineers: some reduce Smiles’s engineers to Carlylean heroes (Buchanan, “Lives” 12; Harrison, Royden 265), one suggests they modify that heroism (Brantlinger, *Spirit* 120), and others deny their heroism (MacLeod, *Heroes* 176-179; Dentith 52-53; Cantor 183). Yet Smiles’s hero-making is unmistakable in the text: George Stephenson carved “his name deep on the world’s records” (*LGS* 148)<sup>7</sup> and later generations, “looking at their gigantic traces, [. . .] may be found ready to declare of the engineer and of his workmen, that ‘there were giants in those days’” (260). They best Napoleon and Columbus, building things more impressive than the Pyramids. The *Lives of the Engineers* series provides a parade of heroes replacing the Hero as Divinity or Man of Letters with the Hero as Man of Construction. Yet Smiles’s engineering heroes both fulfill and re-shape Carlylean heroism, offering insight into the human element of the machinery question.

While Carlyle did not establish Victorian hero-worship, he gave the hero a specific shape in *On Heroes* (MacLeod, *Heroes* 21).<sup>8</sup> What Carlylean heroic qualities do

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<sup>7</sup> Unless otherwise noted, references to *LGS* are to the first 1857 edition and references to *LE* are to the 1861-62 edition.

<sup>8</sup> See also Houghton’s chapter on “Hero Worship” in *The Victorian Frame of Mind*, 305-340.

Smiles's engineers display? They are brave, honest, unsordid, earnest, and strong.<sup>9</sup> George Stephenson does an "enormous amount of physical and mental labour" (*LGS* 3<sup>rd</sup>: 359). With "intrepid nerve and manly courage" (*LGS* 104), he thrashes a bully and defeats parliamentary opposition. He rescues men from explosions of fire damp, while bystanders "gazed on the heroic man with breathless amazement" (98). His earnestness insights quarrels with disagreeing engineers (*LE* 3: 472).<sup>10</sup> He rejects "scamping" and "stock-jobbing" because he is honest (*LGS* 421, 471). The other featured engineers display identical Carlylean heroic characteristics.

Yet they lack something: the transcendental sight "through the shews of things into *things*" (sic) (*OH* 48). This weakness leads Geoffrey Cantor to suggest that Smiles's subjects are not Carlylean heroes in the transcendental sense (183). However, not all Carlylean heroes are obviously transcendental. In *Past and Present* Carlyle tailors the heroic pattern to fit the Mechanical Age, characterizing the hero in terms of practice rather than theory: "it might seem [. . .] as if he had his eye all but exclusively directed on terrestrial matters, and was much too secular for a devout man. But this too, if we examine it, was right. For it is *in* the world that a man, devout or other, has his life to lead, his work waiting to be done" (115). Smiles's engineers are practical men in constant action. Smiles rarely addresses their religious beliefs, a silence criticized by reviewers in the *Eclectic Review* (of *LGS*) and *The Rambler* (of *LE*). Describing their deaths, Smiles states the facts then describes the funeral and mourners, resisting the "holy

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<sup>9</sup> Carlyle includes these qualities in *On Heroes*: "Thought; the genuine Thought of deep, rude, earnest minds, fairly opened to the things about them" (18), "valour" (29), "*sincerity*, a deep, great, genuine sincerity" (48), and "homely truthfulness and rustic strength" (18).

<sup>10</sup> Jarvis observes that "the engineers with whom Stephenson quarreled would fill a small biographical dictionary" ("Story" 36).

death formula” identified by Cockshut (43). So the practical nature of the engineers does not exclude them from heroism, but indicates a tension in Carlyle’s thought. While critics note the heroism of the engineers, they do not notice their specific type of heroism: Smiles’s engineers are “Captains of Industry,” characterized as soldiers and workers who order nature and self through perseverance.

Carlyle characterizes this type of hero martially: “Captains of Industry are the true Fighters [. . .] against Chaos, Necessity [. . .]; and lead on Mankind in that great, and alone true, and universal warfare” (*PP* 271-272). Brindley models those who “close with it, wrestle it: sheer obstinate toughness of muscle; but much more, what we call toughness of heart, which will mean persistence hopeful and even desperate, unsubduable patience, composed candid openness, clearness of mind” (160). Likewise, Smiles presents his engineering heroes as soldiers locked in battle. George Stephenson fights “the battle of the locomotive engine” (*LGS* 3<sup>rd</sup>: 260-261) and does so “almost single-handed” (290) against parliament, professional engineers, and public opinion. The engineers of the first two volumes of the 1861 *Lives of the Engineers* battle the forces of nature and “the harassing opposition” of the public (1: 120). John Metcalfe battles blindness to become a road builder (*LE* 1). Matthew Boulton and James Watt struggle against financial crises, spies, and Watt’s low spirits and ill-health to build the steam engine. They are united by their campaign against the ignorance and self-interest of the public. Carlyle foresees this opposition and exults, “how one loves to see the burly figure of him, this thick-skinned, seemingly opaque, perhaps sulky, almost stupid Man of Practice, pitted against some light adroit Man of Theory” (*PP* 159). This is George Stephenson battling lawyers and professional engineers in parliamentary committees for

the Liverpool and Manchester Railway (*LGS* 231). He leads the charge: “probably no military chiefs were ever more beloved by their soldiers than were both father and son by the army of men who, under their guidance, worked at labours of profit” (464).

With the Captain as a worker, this warfare is not destructive but constructive. Smiles’s engineers embody the Carlylean principle that all work is noble: Stephenson began as a ploughboy and collier, Brindley as a wheelwright, Rennie as a millwright, and Telford as a Scottish shepherd and stonemason. Even when they graduate to mental labor, they willingly undertake manual labor to model for their workmen. Stephenson astonishes French navvies when he shows them how to load their wheelbarrows more efficiently, filling and dumping several of them himself. They are “accustomed to incessant application” (*LE* 1: 377) and have an “insatiable appetite for work” (*LE* 2: 80). Retirement is difficult: Stephenson had “so active a temperament, and had been so long inured to habits of industry” (*LGS* 388) that he retired to incessant activity in mining and gardening; Myddleton was a man “with whom work was become a habit, he could not be idle, and an active pursuit seems to have become necessary to his happiness” (*LE* 1: 148), Brindley “to the last [. . .] was full of projects, full of work” (474); Smeaton’s, “industry was the necessity and habit of his life” (*LE* 2: 87); Rennie “held that life was made for work, and he could never bear to be idle. Work was with him not only a pleasure,—It was almost a passion” (279); Telford “felt the same pleasure in useful work that he had ever done. It was, therefore, with difficulty that he could reconcile himself to the idea of retiring from the field of honourable labour” (479). Manual labor is essential to their success: “unless eyes and hands be disciplined by experience in skilled work, and inspired by intelligence, they are comparatively useless” (*LBW* 34).

As Captains of Industry, their fundamental trait is perseverance. For Carlyle perseverance is the “universal principle” of human society under the Captains of Industry who “persist in spite of hindrances, discouragements and ‘impossibilities’” (277). Smiles highlights the “patient purpose” (*LGS* 461) and perseverance of his engineers time and again, ensuring that they were recognized as Captains of Industry. In an 1863 letter to Smiles, Richard Cobden predicts, of Smiles's *Lives of the Engineers*, that not “only an enduring but an increasing renown will attach to the memoirs of these ‘Captains of Industry’ whose biographies you have recorded” (qtd. in Smiles, *Autobiography* 259). Smiles employs the concept of perseverance to highlight the human control over and power behind industrialism. By making perseverance their most prominent quality, Smiles highlights their boundless agency: when they decide to do something, they accomplish it. For example, Myddleton “took courage, and showed what one strong practical man, borne forward by resolute will and purpose, can do” (*LE* 1: 109). They are not products of their environments but actively shape themselves and civilization. Where Carlyle mourns that “men are grown mechanical in head and in heart, as well as in hand” (*SOT* 63), Smiles shows in his engineers’ perseverance that men not only have “faith in individual endeavour” but also are full of “natural force” (*SOT* 63).

Persevering, Smiles’s engineers fulfill the Carlylean mandate to order the external world. Carlyle presents this project in terms of control: nature “is as a heavenly bride and conquest to the wise and brave, to them who can discern her behests and do them; a destroying fiend to them who cannot” (*PP* 7). Echoing Carlyle, Smiles notes that “water was, from the first, the chief element which English skill and industry had to fight against; and in effectively resisting it, or in subjugating and controlling it, the engineer’s

talent was first displayed” (*LE* 1: 17). Under the engineers “the powers of nature were laid under contribution, and wind, water, and steam became the allies and servants of man” (16). Where Carlyle expostulates that “fire is the best of servants; but what a master!” (*PP* 90), Smiles says that “water, like fire, though a bad master, is a most valuable servant; and it is the engineer’s business, amongst other things, to render the element docile, tractable, and useful” (*LE* 1: 85). In Smiles’s biographies, the engineer controls the natural world instead of the environment determining humans.

While control through perseverance contradicts mechanistic philosophy and political economy, perseverance’s development of the self contradicts early nineteenth-century Romanticization of inventors and scientists. In patent and copyright debates, engineers were constructed as poor, Romantic geniuses with “disenfranchised creativity” (Pettit, *Patent* 45). To sidestep the inventor’s anxiety of influence, his ideas were described as original because produced by imaginative genius (74-77). Popular fascination with macro-inventions denied incremental development (Mokyr 15) thereby fostering an understanding of the engineer as Prometheus stealing fully-developed technology from heaven. This trend permeated scientific biography (Cantor 176; Holmes xvii): David Brewster, although skeptical, includes the story of the immediate discovery of gravity when the apple dropped in the *Life of Sir Isaac Newton* (1831), constructing discovery as an “intuitive inspired instant of invention” (Holmes xvii). This Romanticization compromises human agency by implying that the inventor does not control the inventive process, but waits for his fairy godmother to wave her magic wand.

Smiles seems to follow this convention by mentioning the innate abilities of his engineers: Stephenson’s “mechanical genius” (*LGS* 8), Brindley’s “mechanical bias” (*LE*



1: 311), Smeaton's "innate genius for construction" (*LE* 2: 4), Rennie's "strong inclination for mechanical pursuits" (*LE* 2: 119), Telford's "genius [. . .] in building and engineering" (*LE* 2: 329), and Watt's "irrepressible instinct to invent" (*LBW* 151). Yet this is not Romantic genius. George Stephenson "was no precocious genius" (*LGS* 22) but was "gradually perfecting his own mechanical capacity" through perseverance (14). While trying to explain his ability by saying that it "came natural-like," Brindley's "whole secret consisted in [. . .] working with his head as well as with his hands" (*LE* 1: 351). Smeaton "being permitted to follow his own bent, his force of character and strong natural ability, diligently cultivated by study and experience" lead to his success (*LE* 2: 4). Smiles even corrects Watt's explanation of his inventions as solutions which "flashed upon his mind" by saying that "there was no accident in the discovery. It had been the result of close and continuous study" (*LBW* 129). The source of invention is not magic but perseverance, indicating human agency.<sup>11</sup>

The Romantic construction in biography and in the patent/copyright debate of the inventor as an imaginative genius waiting for instantaneous inspiration caused misreading of the *Life of George Stephenson*. J.R. Leifchild's<sup>12</sup> objection to Smiles's identification of Stephenson with James Watt (511) is based on the Romantic understanding of Watt's invention popularized by John Farey's *Treatise on the Steam Engine* (1827) (MacLeod, *Heroes* 145). Leifchild claims that "Stephenson did not possess, in any eminent degree, the inventive or creative faculty" but merely collected the ideas of others (511). Smiles

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<sup>11</sup> Dentith (48) and MacLeod (*Heroes* 176) both misread Smiles's meaning of genius here: Dentith suggests that he means Romantic genius and MacLeod recognizes a tension between Smiles's supposed view of Romantic genius and his radicalism.

<sup>12</sup> Leifchild, colliery owner and author of *Our Coal Fields and Our Coal Pits* (1856), wrote a brief biography of George Stephenson published before *LGS* for *The Odd-Fellows' Magazine* so he felt qualified to argue with Smiles (Jarvis "Story").

could not agree more. Smiles de-Romanticizes Watt's invention by suggesting that Watt combined "in a complete form the separate plans of others, embodying with them such original inventions and adaptations of his own" (*LGS* 82). For Smiles, neither of them is a Romantic genius, but part of a long tradition of men making incremental improvements. Like Carlyle who says that "all past inventive men work there with him" (*OH* 84), Smiles says that "progress in this, as in all departments of mechanics, [. . .] was not the invention of one man, but a succession of men" (*LE* 3: 8). By presenting the engineer as a Captain of Industry who succeeds through perseverance, Smiles rewrites the popular understanding of the engineer so that he controls both the outer and inner worlds, rather than being at the mercy either of the fairy-godmother of genius or a deterministic world. This characterization addresses the anxiety about machines and human agency which had become a standard point in responses to the machine question.

Smiles modifies Carlyle's hero by making him everyman, indicating the agency of the industrial workman. In the engineers, Smiles celebrates the British working class, "the ancient and honourable family of Workers—that extensive family which constitutes the backbone of our country's greatness—the common working people of England" (*LGS* 2). His insistence on personal development through perseverance both demystifies invention and suggests to the working-class readers that they can better themselves. The caveat of "genius" tempers this thought by suggesting that not everyone can become a heroic engineer, but suggests that anyone can become a hero through industry, perseverance, and honesty. While Carlyle believes that it is possible that "the dullest daydrudge kindle into a hero" (*OH* 61) if he is shown the way, Smiles shows in the

biographies that “the dullest daydrudge” can—and will “kindle into a hero” through his own hard work, self-education, and perseverance.

Where Carlyle pessimistically juxtaposes the worship of false-heroes with an industrial system based on acquisition of wealth in “Hudson’s Statue,” Smiles tells a different story of industrialization in the *Life of George Stephenson* by rejecting George Hudson and the railway mania’s “Fast School of Engineers,” who would design railroads they knew would fail just to collect the fees. Beginning with the third 1857 edition, the *Life of George Stephenson* ends with a description of the various statues erected to the father of the railway including one by John Lough near the High Level Bridge in Newcastle-upon-Tyne. Fully believing that “the golden calf was found to be of brass, and hurled down,” Smiles hails George Stephenson as the hero for the Age of Machinery:

the statue appropriately stands in a very thoroughfare of working men, thousands of whom see it daily as they pass to and from their work; and we can imagine them, as they look up to Stephenson’s manly figure, applying to it the words addressed by Robert Nicoll to Robert Burns, with perhaps still greater appropriateness:--

“Before the proudest of the earth  
We stand, with an uplifted brow;  
Like us, thou was a toiling man,—  
And we are noble, now!” (*LE* 3: 460)<sup>13</sup>

Like engineers, working men can become the Dynamic for the Mechanical Age.

### *Engineers and the “pliant, all-ministering servant”*

Smiles’s biographies describe new technologies along with their inventors: the railway and the locomotive engine in the *Life of George Stephenson*, the nation’s

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<sup>13</sup> Christine MacLeod suggests that after the railway mania and the exposure of Hudson, Smiles’s biography of Stephenson did much toward restoring the reputation of the railway (“Nineteenth-Century”). Jarvis also suggests that Robert Stephenson perceived of the importance of the biography in its ability to restore this reputation (and therefore help his own career) and that he manipulated the information to fulfill this goal (“Engineering” 181-183).

“internal communication”<sup>14</sup> in the 1861 *Lives of the Engineers*, iron tools and tool-making machines in *Industrial Biography*, the steam engine in *Lives of Boulton and Watt*, and technologies from ships to silk mills to steam printing presses in *Men of Invention and Industry*. Despite the civil engineering focus in some biographies, Smiles’s engineers all pursue mechanical engineering. But the *Life of George Stephenson*, *Lives of Boulton and Watt*, and *Industrial Biography* deal directly with the principal engineers and machines of the Industrial Revolution.<sup>15</sup> The foundational importance of these machines compels Smiles to examine their qualities and their value, an examination which, while it does something new, also participates in established discourses. First, it assumes the Whig historical notion of inevitable progress as one invention leads to another and to “increase indefinitely the mass of human comforts and enjoyments” (LGS 466). Second, it participates in what Joseph Bizup calls the “proindustrial rhetoric predicated upon the subversion of the antithesis between industry and culture” (4). But it also redirects established discourses: from within the Carlylean discourse on work, Smiles demystifies the machine and so dismantles the Carlylean technological sublime and destabilizes the Ruskin-Dickens fear of the machine reliant on it.

Addressing a facet of the machinery question, Smiles contradicts Ruskin and Dickens by assuming the value of industrial labor and showing the positive effect of the machine on the operative. In the *Life of George Stephenson*, the

daily contemplation of the steam-engine, and the sign of its steady action, is an education of itself to the ingenious and thoughtful workman. It is certainly a striking and remarkable fact, that nearly all that has been done for the improvement of the steam-engine has been accomplished, not by

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<sup>14</sup> What would be called civil engineering works today like roads, canals, and harbors.

<sup>15</sup> Divisions between types of engineering in Britain did not emerge until the 1847 establishment of the Institution of Mechanical Engineers (Buchanan *Engineers* 76).

philosophers and scientific men, but by labourers, mechanics, and enginemen. (*LGS* 13)

William Fairbairn, an eminent Victorian engineer, echoes this perception: “a well-constructed machine, neatly executed, has a wonderful effect upon the mind of its keeper. It only requires a few months to accustom him to habits of cleanliness and order” (Fairbairn 167). Throughout Smiles’s series, factories facilitate human development rather than destruction. For example, Rennie’s “manufactory was indeed a school, in which some of the best mechanics of the day received a thorough training in machine work; and many of his workmen, like himself, eventually raised themselves” (*LE* 2: 281). A factory owned by one of Smiles’s engineers becomes a “school of skilled industry” (*LBW* 480) which produces not only superior products, but also superior operatives and engineers.

Yet Smiles’s understanding of the relationship of work and the machine is fraught with tension originating in his youthful radicalism while a Leeds journalist in the early 1840s when the “Condition of England” problem subsumed the machinery question. He worked in Leeds when “out of 4752 families examined, consisting of 19,936 individuals, only 3780 person were in work, while 16,150 were out of work” (Smiles, *Autobiography* 115). These people were “willing to work, but with no work to do” (114). One understanding of this lack of work, reflected in the plight of Warner the handloom weaver in Benjamin Disraeli’s *Sybil* (1845), was that machines deprived people of their traditional employment. An opponent of George Stephenson’s during a parliamentary application, asks, if the locomotive was adopted ““what was to become of coach-makers and harness-makers, coach-masters and coachmen, innkeepers, horse-breeders, and horse-dealers?”” (*LGS* 251). Instead of denying that machines replace men, Smiles

celebrates the machine's economization of labor. George Stephenson employed "machinery as a substitute for manual labour and horse-power in bringing the coals out of the deep workings of the mine" (*LGS* 51), Brindley "invariably contrived to economise labour as much as possible" (*LE* 1: 384), and Rennie found "an application of steam power as an economist of labour" (*LE* 2: 200). He celebrates strikes in *Industrial Biography* because they stimulate development of labor-saving devices (355). But Smiles also resolves the tension: machines stimulate industry, thereby producing more jobs, although not in the traditional roles. Boulton "created many new branches of industry, which gave regular employment to hundreds of families" in his mills (*LBW* 201), Stephenson's "Newcastle factory continued to flourish and extend, giving regular and remunerative employment to an immense number of mechanics and artisans" (*LGS* 207), Myddleton's textile mill "maintained several hundred families by that trade" (*LE* 1: 103), and Wedgwood's works "proved a source of remunerative employment to many thousand families throughout England" (430-431). But it is not employment under terms like those of the sweatshop tailors of Charles Kingsley's *Alton Locke* (1850). The engineers are good masters who grant a "fair day's work for a fair day's wages" (*LGS* 3<sup>rd</sup>: 354), Smiles carefully reiterating the rallying cry of labor agitation.

This issue of the replacement of men by machines discloses a subtlety of Smiles's understanding of their relationship: the machine itself does not directly replace human power. The early engineers laid "the powers of nature [. . .] under contribution, and wind, water, and steam became the allies and servants of man" (*LE* 1: 16). Specifically, the force of steam in the steam engine was made "to perform the various labour in which the power of men and horses, of wind and water, had before been employed" (*LBW* 400).

Outlining the steam engine's history, Smiles recounts how early philosophers, fascinated with power, dreamed of a motive force stronger than manual labor and discovered steam (4). The machine is only the instrument with which humans control these powers. Once the power of steam was discovered, philosophers asked "was it possible to render so furious and apparently unmanageable an agent docile, and tractable?" (5). The history of engineering thus became how to devise a "machine that would work quietly, docilely, and effectively, in pumping water, discharging bullets, and propelling ships" using steam (35). Because machines have no inherent power, the natural forces of wind, water, and steam deserve the onus for any destruction seemingly caused by machines.

To emphasize the machine's passivity, Smiles highlights the engineer's designing function. Boulton "knew the difficulties Watt had encountered in designing [the steam engine], and he could well appreciate the skill with which he had overcome" challenges (*LBW* 202). Smeaton's "machinery was neatly designed, and he was very particular as to its careful execution and finish" (*LE* 2: 72), allowing a practiced eye to identify which machines were his (77). The perseverance of the designing engineer accentuates the human behind the machine: Andrew Meikle's machines were the product of "study and perseverance" (*LE* 2: 112) and Watt's "steam-engine project [. . .] had been the fruit thus far of noble effort, of persevering self-denial, and unquestionable skill" (*LBW* 28). Machines do not create themselves, but are the product of human will-power and design. Indeed, in Smiles's presentation of engineers and machines, there is no contest of wills between the engineer and the machine as there is between Frankenstein and his creature.

So far, Smiles's conception of the machine's relationship to man has flowed partly from a Carlylean understanding of work. However, Smiles's systematic demystification of the machine corrects the Carlylean technological sublime by gently casting that view as uneducated. In the Romantic understanding of technological innovation, technology had an aura of mystery. Lord Brougham's response to the railway was that he saw "the difficulties of space, as it were, overcome; when I beheld a kind of miracle exhibited before my astonished eyes" (*LGS* 294). Machinery was commonly represented as a spiritual power, like the Devil, not only for the sinister implications but also because forged in fire. Smiles includes several anecdotes about uneducated people mistaking steam engines for the Devil, but one will suffice. Riding in their experimental steam-carriage on a public road, Richard Trevethick and Andrew Vivian crashed to a stop at a closed toll gate. When they inquired about the toll, the "poor toll-man, trembling in every limb, his teeth chattering in his head, essayed a reply [ . . . ] 'No-noth-nothing to pay! My de-dear Mr. Devil, do drive on as fast as you can! Nothing to pay!'" (*LGS* 68). Smiles himself never characterizes machines as supernatural powers. Instead, he clearly explains how machines work, using simple and direct language, avoiding both overly technical prose and the "graphic vigour in Watt's correspondence about engines" (*LBW* 402n). Many reviewers commented on his "singular clearness, modesty, and good sense" (Rev. of *LGS*, *Literary* 632) and his "perfectly unaffected, unpretending and true" language (Rev. of *LGS*, *Edinburgh* 397). Fleeming Jenkin, an Edinburgh University Professor of Engineering, even complimented Smiles on his "sound engineering knowledge" (602). With his biographies, Smiles follows the pattern of Savery who, when he arrived with his steam engine, "proclaimed



that there was no mystery whatever about his machine, and he believed that the more clearly it was understood, the better it would be appreciated” (*LBW* 51). Likewise, Smiles dismantles the technological sublime by explaining how machines work, effectually increasing the appreciation of the machine and transferring the awe away from the machine and onto to the engineer and his hard work.

Far from being uncontrollable supernatural forces, Smiles’s machines are characterized as passive servants, sometimes in human terms, to underscore their value to humanity.<sup>16</sup> For example, the pile driver using Nasmyth’s steam hammer drives pile “with as much ease as a lady sticks pins into a cushion” (*LE* 3: 412). Maudslay’s slide rest for the lathe “supplies the place of the workman’s hand” (*IB* 262) with a “pair of steel fingers which hold the cutting tool firmly in their grasp [and] never tire, and it moves along the metal to be cut with an accuracy and precision which the human hand, however skilled, could never equal” (263).<sup>17</sup> The factories utilizing self-acting machines and engines are “machines with millions of fingers [which] work for millions of purchasers,—for the poor as well as the rich” (399). This characterization implies that machines can relieve people from monotonous or dangerous jobs, something Ruskin could not recognize. To emphasize their creation by humans, Smiles sees the development of machines as taking places in “various stages of birth, growth and

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<sup>16</sup> Travers claims that Smiles vitalizes things in which he found merit (*Samuel* 262), but this claim is not supported by the text. Smiles clearly believes machinery is good, but if we include the first edition of *Life of George Stephenson*, the first two volumes of the 1861 *Lives of the Engineers, Industrial Biography, Lives of Boulton and Watt*, and *Men of Invention and Industry*, Smiles wrote 2,778 pages for the series—and he vitalizes engines a dozen times. While this characterization may hint his appreciation of machines, it is not enough to establish it

<sup>17</sup> The slide rest also protects the workman’s hands because they do not need to get as close to the lathe.

development” (*LBW* 307-308). Vitalizing them also makes them dependent on men, as George Stephenson becomes an engine doctor curing wheezy engines (*LGS* 43).<sup>18</sup>

Throughout his work, Smiles describes machines with humanizing adjectives like docile and tractable. At the beginning of the *Life of George Stephenson*, Smiles says that the engine on which Stephenson worked was “almost sublime in its untiring industry and quiet power; capable of performing the most gigantic work, yet so docile that a child’s hand may guide it” (13). Smiles’s presentation of machines shows that they do not threaten to replace humans altogether, to undermine human agency, to alienate labor, nor to destroy their creators as Frankenstein’s monster had destroyed his. Instead machines are instruments created by and dependent on human agency. Through his *Lives of the Engineers* series, Smiles illustrates that “man is not the creature and product of Mechanism; but, in a far truer sense, its creator and producer” (*SOT* 72) and that, as far as outward mechanism, the machine has already become the “pliant, all-ministering servant” (81).

#### *A Dual Epic: “Tools and the Man”*

Smiles also redirects the Carlylean river of opinion about the machinery question through the form of the biographies which combines a biographical narrative with a narrative history of technology. The popularity of technical treatises and histories before the *Life of George Stephenson* reflects the machinery question’s focus on the machine to

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<sup>18</sup> Smiles rises into the technological sublime once: he says of Penn’s steam ship that “the immense machine began as if to breathe and move like a living creature, stretching its huge arms like a new born giant, and then, after practicing its strength a little and proving its soundness in body and limb, it started off with the power of above a thousand horses to try its strength in breasting the billows of the North Sea” (*IB* 227). Within the sentence the machine is reduced from being a giant to being a thousand horses—animals subservient to humans.

the exclusion of the inventor.<sup>19</sup> The December 1849 *Athenaeum* article calling for a biography of Stephenson “pointed out that although there then existed abundance of railway statistics, these would be found of very little use to the historian [. . .], a century hence, looking to the extraordinary effects of the railway system on the means and manners of Great Britain” (qtd. in *LE* 3: vii). Robert Stephenson also recognized this cultural fascination with the machine to the exclusion of its inventor when Smiles approached him about writing his father’s biography: ““If people get a railroad [. . .] it is all that they want: they do not care how or by whom it is made. Look at the Life of Telford, a very interesting man: it has been published lately, and has fallen still-born from the press”” (*Autobiography* 163). While Carlyle allows the importance of the machine’s inventor, his disciples ignore the inventor and concentrate on the machine and the damage it does. This formal and imaginative separation of machines from their inventors allows the “melancholy mad elephants” to loom large, becoming autonomous like Frankenstein’s monster and threatening to destroy humanity.

To answer Robert Stephenson and the machinery question, Smiles refocuses the understanding of the industrial complex to include the human inventors by writing biographies of them. He tells Stephenson that Telford’s autobiography failed because it “contained very little of human interest”<sup>20</sup> and that if he wrote his father’s biography he would “endeavour to treat of his character as a Man as well as an engineer” (*Autobiography* 163). Instead of merely looking at the mechanisms and effects of the industrial revolution, Smiles uses Stephenson’s story to answer

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<sup>19</sup> MacLeod discusses the obsession with the machine in machinery question discussions (*Heroes* 41).

<sup>20</sup> Telford’s work is really a narrative of his projects, therefore participating in the genre of the technological history, just one organized around his involvement rather than a specific type of technology.

what manner of men were they by whom this great work was accomplished? How did the conception first dawn upon their minds? By what means did railways grow and quicken into such vigorous life? By what moral and material agencies did the inventors and founders of the system work out the ideas whose results have been so prodigious? (*LGS* vi)

Smiles's answer to these questions takes a unique form: a biography of an engineer injected with a biography of a technology. They do not just rehearse dates and facts, but reflect the subject's vitality. Smiles quotes extensively from Brindley's diary, including his atrocious spelling. He allows Stephenson to speak in his own voice in his parliamentary depositions. He includes personal communications between Boulton and Watt about Watt's marriage. Anecdotes pepper each biography, emphasizing the vitality of the engineers.

Although Smiles attributed his success to "not overlaying [the story] with too many engineering details" (*Autobiography* 248-249), his industrial biographies do include histories of technology within the human biographies. His conception of the outline of the *Life of George Stephenson* betrays this fact:

there was the history of the locomotive, which, Robert Stephenson told me, he had written out in full detail. There was next the invention of railways, starting into full life under the eyes of the present generation, and producing the most extraordinary results upon the action and framework of society. Then there was the supersession of the old methods of travelling by means of the locomotive, the development of railway enterprise up to the period of speculation and gambling; the extension of railways to foreign countries, and some account of the principal persons connected with the advance of this great revolution in our commercial interests. (213-214)

Because George Stephenson "has been so closely identified with its origin, progress, and eventual establishment on a sound, practical basis, [. . .] his life may be said to include the history of Railway Locomotion almost down to the present time" (*LGS* vi). In the

same way, the first two volumes of the 1861 *Lives of the Engineers, with an Account of their Principal Works; Comprising Also a History of Inland Communication in Britain* includes not only the biographies of Myddleton, Brindley, Smeaton, Rennie, and Telford, but also long sections on “Early Works of Embanking and Draining,” “Early Roads and Modes of Travelling,” and “Bridges, Harbours, and Ferries.” He combines stories of individual men in *Industrial Biography* to form a narrative of how machines were made self-acting. The *Lives of Boulton and Watt* tells the stories of the men and their partnership, but also describes the steam-engine, its history, and Watt’s inventions. Finally, the 1874 five-volume *Lives of the Engineers* presents the lives of the engineers in tandem with the history of their engineering objects: “Early Engineering. Vermuyden—Myddleton—Perry—James Brindley,” “Harbours—Lighthouses—Bridges. Smeaton and Rennie,” “History of Roads; Metcalfe. Telford,” “The Steam-Engine. Boulton and Watt,” and “The Locomotive. George and Robert Stephenson.”

The life of the engineer and the history of the machine form a narrative double helix, with two separate narratives indivisibly bonded. The nature of the connection between the narratives itself provides an answer to the machinery question. Through the characterization of the machine as docile and the engineer as controller, the narrative of the man subordinates the narrative of the machine. Yet unlike Shelley’s *Frankenstein* in which the narratives and their subjects struggle for the reader’s sympathy, there is no tension between the two narratives of Smiles’s biographies. Even when the “human interest” supersedes the technological interest, the technological narrative offers no resistance. In form, the biographies reinforce humanity’s dominance over the machine. By combining biography with technological history, Smiles shows that engineers are the

“mysterious Force in the centre” of history (*OH* 9). While Carlyle suggests that “we shall never, by all the machinery in Birmingham, discover the True and Worthy” (*PP* 83), Smiles shows that the “True and Worthy” man is in the midst of that Birmingham machinery. Setting out to write of the men behind the industrial revolution, Smiles writes the “true Epic” of his time: “*Tools and the Man*” (*PP* 249).

## CHAPTER 4

### Denouement

If Smiles's *Lives of the Engineers* series formed more than an eddy in the machine question stream, then it must have influenced later works. Who read the *Lives of the Engineers* series? How did that reading affect the portrayal of engineers in literary texts? What did that portrayal accomplish? Whether or not the purchased copies were read, the biographies were popular. Richard Cobden, William Gladstone, George Eliot, George Henry Lewes read the biography of Stephenson while Charles Dickens passed it to Henry Morley to review for *Household Words*. Before 1857 engineers were absent from biography, as Smiles noticed, but they were also absent from novels.<sup>1</sup> While authors often saw engineers as colleagues in invention (Pettit, *Patent*), they excluded engineers from fiction, a symptom of the machinery discussion's focus on the machine itself. The few engineers portrayed in fiction before 1857 are the "stereotype of the inventor" established by the patent and copyright controversies (Pettit, *Patent* 186). Jem Wilson in Elizabeth Gaskell's *Mary Barton* (1848) is an inventor and patentee and the title character of Dinah Mulock Craik's *John Halifax, Gentleman* (1856) invents the machines for his own textile mill. Geraldine Jewsbury's *Marian Withers* and Margaret Oliphant's *John Drayton: Being the History and Early Life of a Liverpool Engineer* both appeared in 1851.<sup>2</sup> Completing its serialization the same year *Life of George Stephenson* was

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<sup>1</sup> Buchanan cannot find any engineers in Victorian literature (*Engineers* 190).

<sup>2</sup> Perhaps the subject matter is why one of the famous engineers of the age, William Fairbairn, who did not often read fiction, enjoyed the novels of Craik, particularly *John Halifax, Gentleman*, George Eliot, and Elizabeth Gaskell, of whom he was a personal friend (Fairbairn and Pole 268-269).

published, Dickens's *Little Dorrit* (1855-1857) includes the most complete figure of an engineer in Daniel Doyce of Bleeding Heart Yard. Yet Doyce's importance is in his struggle to acquire a patent from the Barnacle-encrusted Circumlocution Office, not in his relationship to his machines.<sup>3</sup>

After the publication of the *Life of George Stephenson*, representations of engineers in fiction shift: they appear more prominently in texts that are not explicitly industrial and that have wider ideological relevance, implying the cultural redirection by Smiles's industrial biographies. Engineers appear in John Saunders's *Abel Drake's Wife* (1862), Charles Kingsley's *The Water-Babies* (1862-63), Elizabeth Gaskell's novella "Cousin Phillis" (1870), George Eliot's *Middlemarch* (1871-72), Anthony Trollope's *The Claverings* (1871) and *The Way We Live Now* (1875),<sup>4</sup> Bram Stoker's *The Snake's Pass* (1890), and Rudyard Kipling's "The Bridge Builders" in *The Day's Work* (1898). This chapter will consider Smiles' work in relationship to literary representations of the engineer by Kingsley, Gaskell, Eliot, and Kipling.

Although unsystematically, critics have noticed the influence of Smiles's *Self-Help* on literature. In terms of genre, it is the apex of mid-century success literature (Brantlinger, *Spirit* 119-120; Pettit "Every"), contributes to the adventure genre (Green), and establishes the success and self-help genres stretching forward to Carnegie's *How to Win Friends and Influence People* and contemporary self-help books (Winter).

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<sup>3</sup> As Peter Ackroyd chronicles, Dickens's brother was a civil engineer (324), *Dickens*, New York: Harper, 1990.

<sup>4</sup> Elizabeth Bleicher argues that *The Way We Live Now* bears the traces of the Smilesian values of male chastity expounded in Smiles's *Character* (1871), "'He Knew He was Wrong': Fallen Men in Anthony Trollope's *The Way We Live Now*," Tipping Points: Pivotal Moments in Victorian Culture. Midwest Victorian Studies Association 2009 Conference, Indiana University East, Richmond, IN, 19 April 2009.



Individually, some of G.A. Henty's novels were expositions of *Self-Help* (Richards) while Mrs. Oliphant rewrote its narrative (Pettit "Every") and Dickens rejected it in *Great Expectations* (Meckier). One critic suggests that George Eliot dismantles the Smilesian celebration of individualism and laissez-faire success through *The Mill on the Floss*'s Tom Tulliver (Malcolm).<sup>5</sup> Two critics in 1977 noticed that Eliot's *Adam Bede* depended on the *Life of George Stephenson* for anecdotes about the title character (Moldstad; Wiesenfarth). However, with the exception of Moldstad and Wiesenfarth, critics fail to trace the influence of the *Lives of the Engineers* series on literature or to consider its cultural importance. Beyond the "conventional pieties of source study" (Greenblatt 165), Smiles's influence on the portrayal of engineers in literature cannot be traced directly back to readings of his works but to the myth of the engineer he created.

Charles Kingsley joins Ruskin, Dickens, and Smiles as a literary descendant of Thomas Carlyle, learning from him, among other things, the "dignity of work and rest" (Kingsley, *Charles* 244). Like Disraeli's *Sybil* and Gaskell's *Mary Barton*, Kingsley's *Alton Locke* responds to Carlyle's assessment of the Condition-of-England problem, even portraying Carlyle in Sandy Mackaye (Chitty 133), and is often read as an anti-industrial novel. Yet like Smiles, Kingsley can reconcile Carlyle with science as one who "taught men, more than any living man, the meaning and end of science" (Kingsley, *Scientific* 249). After Smiles's 1857 redirecting of the Carlylean stream, Kingsley celebrates the Hero as Man of Construction in his fiction of the 1860s, including *The Water-Babies* (1862-63) and *Hereward the Wake* (1865).

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<sup>5</sup> Meckier and Malcolm misread the importance of success in *Self-Help*, thereby undermining their arguments.

Kingsley wrote *The Water-Babies: a Fairy Tale for a Land-Baby* for his youngest son Grenville Arthur when his wife complained that he had not yet written a book for Grenville and so reflects his wishes for his son's education and future. It is the story of a young chimney-sweep who is turned into a water-baby and experiences an aquatic *bildungsroman*. At the end of the story, Miss Ellie and Tom "were both quite grown up—he into a tall man, and she into a beautiful woman" (154) and he is "a great man of science; and can plan railroads, and steam-engines, and electric telegraphs, and rifled guns, and so forth; and knows everything about everything, except why a hen's egg don't turn into a crocodile, and two or three other little things [. . .]. And all this from what he learnt when he was a water-baby" (155). Like Smiles's subjects, Tom's happily-ever-after is a life of fulfilling engineering labor. The sentence about what Tom learned as a water-baby signals that engineering is not a random reward chosen by a loving father who wants his son to succeed or by a fairy godmother arbitrarily conferring her favors. Instead a specific type of education—the direct experience of the natural world which Smiles celebrated in *Life of George Stephenson*—results in Tom's profession of engineering. Like Smiles, Kingsley does not see the engineer and his products as harmful to men or to nature, but understands that they will be used properly because of the engineer's education. Interacting with the myth created by Smiles, Kingsley introduces the professional engineer, rather than inventor, to the literary world and turns the focus away from the material product of technology toward the human source of it.<sup>6</sup>

Concerned with the past of the nation rather than the future of his son, Kingsley explores in *Hereward the Wake* a historical destructive hero, but begins and ends the

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<sup>6</sup> Coincidentally, Percival Skelton contributed illustrations both to Smiles's *Lives of the Engineers* (1861-62) and to an 1869 edition of *The Water-Babies*.

historical fiction with a meditation on how English constructive ability created the nation's supremacy. Unlike the *Water-Babies*, *Hereward the Wake* "is a straightforward and painstakingly researched story with very few interpolations of the author's own opinions and hobbyhorses" (Klaver 560). While depending on Palgrave's *History of the Anglo-Saxons* and Freeman's *History of the Norman Conquest* (Hartley 151), his discussions of the draining of the fens parallel those in the first volume of the 1861 *Lives of the Engineers* factually and ideologically by focusing on the battle with water, the building of national supremacy, and the heroism of construction. In contrast to the "half-magical background" of mountains which the highland heroes learn they cannot conquer, the lowlanders "find out, soon enough for his weal and his bane, that he is stronger than Nature: and rightly and tyrannously he lords it over her, clearing, delving, dyking, building, without fear or shame" (*Hereward* 2-3). After a long novel about Hereward's resistance to the Normans and his eventual death, Kingsley's last chapter is "How Deeping Fen was Drained." He begins "but war and disorder, ruin and death, cannot last for ever. [. . .] And then the true laws of God's universe, peace and order, usefulness and life, will reassert themselves" (421). Eighty years after Hereward's death, Richard de Rulos built dykes and drained the fens becoming "of that noble class of agricultural squires, who are England's blessing and England's pride" (421). Richard, "the good man, the beginner of the good work of centuries" rebuilds Hereward's tomb and writes on it "'Here lies the last of the old English'" while his wife plans his own tomb to read "'Here lies the first of the new English; who, by inspiration of God, began to drain the Fens'" (424). Thus Kingsley celebrates the destructive heroes of England but shows that a new type of hero has replaced them: the Smilesian Hero as Man of Construction.

In Elizabeth Gaskell's "Cousin Phillis" (1863-64), every major character, except Cousin Holman, is either an engineer or interested in—and capable of—engineering. Although Gaskell herself was "*not* scientific nor mechanical" ("To Anne Robson" 159), she knew many engineers, including James Nasmyth and William Fairbairn (Haldane 224-225; Fairbairn and Pole 460-463), and through her husband's role as minister could arrange tours of many different Manchester factories for her guests (Pettit, *Patent* 219). Whether she met George Stephenson is unknown, but she knew people who knew him: Fairbairn was his lifelong friend and William Turner, a minister with whom she stayed in Newcastle in the winters of 1829 and 1830, was a scientific friend of Stephenson's (Uglow 59).<sup>7</sup> Yet personal acquaintance does not account for the ideological similarities between the engineers in "Cousin Phillis" and Stephenson. While she may have read the *Life of George Stephenson*, which was published the same year as her *Life of Charlotte Bronte*, it is unnecessary to trace the influence directly but to consider how her novella interacts with Smiles's portrayal of engineers, the Stephensons especially, and what that interaction accomplishes.

While Haldane locates Mr. Manning in James Nasmyth, the inventor of the steam-hammer (224-225), the novella's portrayal of Paul and his father is much closer to the story of the Stephensons, redeemed from railway-mania tarnish by Smiles (MacLeod, "Nineteenth-Century"). From the beginning, Mr. Manning fills the Smiles-established Stephenson mold. Paul says his father "was raising himself every year in men's consideration and respect. He was a mechanic by trade, but he had some inventive genius, and a great deal of perseverance, and had devised several valuable improvements

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<sup>7</sup> Turner, as secretary of the Newcastle Literary and Philosophical Society, lent the chemical apparatus to the Stephensons which they accidentally blew up while designing the Geordie Safety Lamp. He graciously continued to help them.

in railway machinery” (Gaskell, "Cousin Phillis" 6). Holdsworth actually sees Mr. Manning as “having the same kind of inventive genius for mechanical invention as that of George Stephenson” (44) and dwells on how much more valuable his isolated self-education was than Holdsworth’s scientific one (53). Appearing as George Stephenson, Mr. Manning has a “plain, sensible face full of hard lines, the marks of toil and thought,—his hands, blackened beyond the power of soap and water by years of labour in the foundry; speaking a strong Northern dialect” (45). Paul’s relationship to his father parallels the relationship of Robert to George Stephenson: Mr. Manning is determined to give his son a good education, apprenticing him to learn railway engineering. Like Robert, Paul eventually enters the management of his father’s factory. But first he builds a railway over a bog just as the Stephensons built a line across Chat Moss: “I told my father of the bogs, all over wild myrtle and soft moss, and shaking ground over which we had to carry our line. [. . .] for the shaking, uncertain ground was puzzling for engineers—one end of the line going up as soon as the other was weighted down” (10). Beyond facts and characterization, Gaskell’s work reflects the Carlylean reverence for practical work applied directly to engineering pursuits in Smilesian fashion.

The novelty of her portrayal of the engineers is not in a moral that Gaskell is trying to drive home about technology, but that Gaskell reveals no anxiety about representing the profession of engineering. Industrialism as represented by the train and Mr. Manning does not threaten the rural landscape but can be integrated into it as Holman combines both scientific and traditional farming techniques. Fifteen years previously, *Mary Barton* included an engineer in Jem Wilson, but the novel focused on industrialism’s victims and the gap between men and their masters. As an engineer, Jem

is in between them in social standing and profession and ultimately his sacrifice is required to begin reconciliation. His fate registers ambivalence about the engineer's social position: Gaskell cannot integrate him into society and therefore banishes him to Canada at the end. By "Cousin Phillis," engineers, like Paul and his father, are integrated into a society in which the industrial and the rural are smoothly woven together and the only person banished is the one with unreliable character.

In this integration, Phillis, the "Wordsworthian figure in a Wordsworthian landscape" (Hopkins 273), is engaged both with new technologies and with older modes of life, becoming an engineer in Gaskell's intended ending:<sup>8</sup> "I find her making practical use of the knowledge she had learnt from Holdsworth and, with the help of common labourers, leveling & draining the undrained village – a child (orphaned by the fever) in her arms another plucking at her gown – we hear afterwards that she has adopted these to be her own" (Gaskell, "To George" 259-260). As Robin Colby points out, Gaskell "is interested in presenting her female characters as powerful; by exploring the process by which they choose a direction for their lives, Gaskell links women's work with their empowerment" (10). Phillis's engineering in the alternate ending, interacting with Smiles's characterization of engineers, is the best possible vocation Gaskell could give Phillis to highlight her agency, independence, and equality with men.

Less overtly, George Eliot's *Middlemarch* (1871-72) includes an engineer in Caleb Garth, a failed builder with the "avocations of surveyor, valuer, and agent" (147). Surveying, although not identical with engineering, was foundational to it from the mid-18<sup>th</sup> century through the railway era as men who were surveyors by trade built many of

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<sup>8</sup> Gaskell wrote to Smith: "I think it is a pity to cut it short but on the other side you will find the ending that I suppose *must* do if you want to end it this year" ("To George" 260).

the major civil engineering accomplishments (Buchanan, *Engineers* 45). Garth is also involved in other domains associated with engineering:

Caleb Garth often shook his head in meditation on the value, the indispensable might of that myriad-headed, myriad-handed labour by which the social body is fed, clothed, and housed. It had laid hold of his imagination in boyhood. The echoes of the great hammer where roof or keel were a-making, the signal-shouts of the workmen, the roar of the furnace, the thunder and splash of the engine, were a sublime music to him; the felling and lading of timber, and the huge trunk vibrating star-like in the distance along the highway, the crane at work on the wharf, the piled-up produce in warehouse, the precision and variety of muscular effort wherever exact work had to be turned out,—all these sights of his youth had acted on him as poetry without the aid of the poets, had made a philosophy for him without the aid of philosophers, a religion without the aid of theology. His early ambition had been to have as effective a share as possible in this sublime labour, which was peculiarly dignified to him with the name of ‘business;’ and though he had only been a short time under a surveyor, and had been chiefly his own teacher, he knew more of land, building, and mining than most of the special men in the county. [. . .] he thought very well of all ranks, but he would not himself have liked to be of any rank in which he had not such close contact with "business" as to get often honourably decorated with marks of dust and mortar, the damp of the engine, or the sweet soil of the woods and fields. (158-159).

Of course, critics have traced Garth to Robert Evans, Eliot’s father, a land agent (Billington 1) whom Eliot described as having “raised himself from being an artizan to be a man whose extensive knowledge in very varied practical departments made his services valued through several counties. He had large knowledge of building, of mines, of plantation, of various branches of valuation and measurement—of all that is essential to the management of large estates” (*Letters* 3: 168). Yet, as Eliot said in her journal about another character based on her father, “but Adam [Bede] is not my father” because there is no “*single portrait*” in the novel “only the suggestions of experience wrought up into new combinations” (*Letters* 2: 502-505), suggesting multiple sources.

Smiles's *Life of George Stephenson* informs both specific plot elements and Garth's characterization and significance. Eliot read the biography with "real profit and pleasure" (*Journals* 281), aloud to George Henry Lewes on June 26, 1857 on a Jersey holiday (Baker 108). A month later, Lewes reviewed it in *The Leader*, praising its "moral lesson," record of progress, championing of invention outside the establishment, and democracy (Rev. of *LGS* 690). He also intended to review *Lives of the Engineers*, but did not receive it in time (Lewes, "Blackwood").

The biography provides the source of at least two plot elements in *Middlemarch*: the laborer's opinions about the railway and the anecdote about the pitchfork attack on railway surveyors.<sup>9</sup> *Middlemarch*'s women, property holders, and laborers parrot Smiles's summary of contra-railway opinion, believing it will break up property, cause calves to miscarry, and "'blow you to pieces right and left'" (342). A group of farm laborers menace the company's agents with hayforks, breaking the theodolite, in order to run them off (344)—an anecdote from the *Life of George Stephenson* about the Liverpool and Manchester line survey in 1821 (*LGS* 344-345).

Ideologically, *Middlemarch* participates, through the characterization of Garth, in the Smilesian refocusing of the literary lens on the men behind the industrial revolution, judging its value according to the character of the man. For many critics, Garth symbolizes the "rural organicism" of a past era and the antithesis of industrialism (Eagleton 118; Shuttleworth 172; Mintz 137). The novel's time frame immediately before the railway boom suggests to them that "her aim as a writer was not to embrace

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<sup>9</sup> Freeman argues that her youth in Warwickshire explains her description of the railway survey (31). Yet since she was born in 1819 and the pitchfork attack happened in 1821, it is unlikely she gained this anecdote as current gossip, although it could have entered local legend. It seems likely that *LGS* provided the reminder for and frame of the story.



the new, *but to make the reader see how the new could seduce and corrupt*" (Karl 63). However, these arguments assume that industrialism and unalienated labor are incompatible, which the characterization of Garth contradicts. According to the long description above, Garth is as much of an engineer as was George Stephenson: he is self-educated, fascinated by machines, not afraid to get dirty, and opposed to rank assessed by anything but work. Garth values "a good day's work and to do it well" (*Middlemarch* 346). Indeed, Eliot called Carlyle's *Past and Present* "that thrilling book" (*Letters* 8:11), and valued Carlyle most when he was "preoccupied with the relationship between ideology, reality and action" (Dodd 144). But connecting this sentiment with an engineer is distinctly Smilesian. Like Stephenson as Captain of Industry, Garth's "virtual divinities were good practical schemes, accurate work, and the faithful completion of undertakings. [. . .] he had a reverential soul with a strong practical intelligence" (*Middlemarch* 159). Although acknowledging the laborer's plight in *Felix Holt*, she does not assume that industrial labor is degrading nor does she oppose technological innovation.

Instead she shows how industrialism can be good when directed by upstanding men like Garth or her father. Indeed, she had a personal reason for vindicating new technologies. By the last installments of *Middlemarch* in 1872, Eliot made £5,000 a year from investments in railways, canals, and gas utilities in Britain and North America (Ashton 332). Although managed by Lewes and John Cross, Eliot must have been aware of the technological foundation of her fortune, so to write disparagingly of new technologies would have been contradictory. Instead, her engagement with the transitional period when the ties of the first major rail lines were laid down points to her

need to defend the value of new technologies. She does this by portraying Garth as a Smilesian engineering hero whose Carlylean work ethic eases the transition into a new era as it makes technology subservient to man and sympathetic values.

Despite a waning confidence in technology from the 1851 Great Exhibition through the end of the century (Wiener), the engineer took center stage in the literature of H.G. Wells and Rudyard Kipling. Kipling's 1898 collection *The Day's Work* is full of stories about plucky engineers and hardworking technologies. His first story "The Bridge-Builders" tells of Findlayson the engineer and his trusty assistant, Hitchcock, building a bridge using the Findlayson truss and Findlayson foot when the river floods. Findlayson's innovations and anxieties parallel Robert Stephenson's in the third volume of *Lives of the Engineers* (1862) when he was constructing the Newcastle High Level Bridge. Although, as Prickett points out, the story "seems to have not one, but many morals, according to the point of view" (209), the engineer is central to all of them. Kipling frames the story as a contest for control between man and water. The first half, in which the engineers prepare for the flood and watch its coming, ends with Findlayson feeling helpless in the face of the river after he has done all he could: "his side of the sum was beyond question; but what man knew Mother Gunga's arithmetic?" (Kipling 19). In the second half of the story, Findlayson's opium-induced dream of the Indian gods, the gods discuss the bridge and technological innovation. Mother Gunga appeals to her fellows about the bridge "They have made it too strong for me. In all this night I have only torn away a handful of planks. The walls stand! The towers stand! They have chained my flood, and my river is not free any more" (26). Like Smiles's engineers, Findlayson has defeated the natural forces, revealing his own agency against the natural

powers using a neutral instrument—technology. The bridge and the train which will go over it never threaten rebellion; they cannot. Just as Kipling's Mother Gunga has been controlled and re-directed by powerful engineers, so has the river of opinion about the machinery question been controlled and re-directed by Smiles's biographies of engineers.

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