“As Remorseless as Nature”: Experimental Ethics and Scientific Community in H.G. Wells

Mia Renaud

Department of English, McGill University, Montreal

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Abstract

Dr. Moreau declares "Sympathetic pain" to be "a thing I used to suffer from years ago"; he is famously "as remorseless as nature" (127). As this passage makes clear, late Victorian authors such as H.G. Wells connected the mad scientist to popular fears about the ethical implications of scientific research, the newly social role of the professional scientist, and the moral dimensions of scientific objectivity. Focussing on four of Wells's early Victorian fictions, *The Island of Dr. Moreau* (1896), *The Time Machine* (1895), *The War of the Worlds* (1898), and *The Invisible Man* (1897), this thesis explores how Wells's fiction simultaneously represents the formulation of new concepts of scientific and non-scientific community and his era's anxieties about the ethical and moral aspects of scientific experimentation. Towards this end, my research explores Wells's ethical critique of the incipient Victorian-era discourse of objectivity as it relates to science and scientific practice, as well as the ways in which Wells's fictional portrayals of the professional scientist draw on the social criticism of figures such as Charles Darwin, T.H. Huxley, and Frances Power Cobbe. This thesis also examines how early Wellsian representations of the figure of the masculine scientific resonate with theories of feminist science, Darwinian evolutionary theory, and nineteenth-century anti-vivisection and anti-science discourse. In turning to science fiction, Wells hypothetically portrays the period's contemporary anxieties and concerns, challenging nineteenth-century definitions of science and scientific community, while also simultaneously seeking to reimagine his day's governing scientific methodologies and philosophies as more inclusive, unbiased, and socially accountable.

Résumé

Dr Moreau déclare que la « souffrance par sympathie » est « une chose dont j'ai souffert il y a bien des années. » ; il est fameusement « aussi impitoyable que la Nature » (127). Comme le montre clairement ce passage, les auteurs de la fin de l'époque victorienne, tels que H.G. Wells, associaient le savant fou aux craintes populaires liées aux implications éthiques de la recherche scientifique, au nouveau rôle social du scientifique professionnel et aux dimensions morales de l'objectivité scientifique. Se focalisant sur quatre des premières fictions victoriennes de Wells, *L'île du Docteur Moreau* (1896), *La Machine à Explorer le Temps* (1895), *La Guerre des Mondes* (1898), et *L'Homme Invisible* (1897), cette thèse explore les manières dont la fiction de Wells représente simultanément la formulation de nouveaux concepts de communauté scientifique et non-scientifique et les anxiétés de son époque sur les aspects éthiques et moraux de l'expérimentation scientifique. À cette fin, ma recherche explore la critique éthique, faite par Wells, du nouveau discours d'objectivité de l'ère victorienne en regard à la science et la pratique scientifique, ainsi que les façons dont les portraits fictifs du scientifique professionnel de Wells s'inspirent de la critique sociale de personnages tels que Charles Darwin, T.H. Huxley et Frances Power Cobbe. Cette thèse examine également la manière dont les premières représentations de Wells de la figure du scientifique masculin résonnent avec les théories de la science féministe, la théorie évolutionniste darwinienne et le discours contre la vivisection et la science du dix-neuvième siècle. En se tournant vers la science-fiction, Wells dépeint hypothétiquement les anxiétés et les préoccupations contemporaines de l'époque. Par le fait même, il remet en question les définitions de la science et de la communauté scientifique du dix-neuvième siècle, tout en cherchant simultanément à réimaginer les méthodologies et les philosophies scientifiques de son époque comme étant plus inclusives, impartiales et socialement responsables.

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Introduction

> But the stories of mine collected here do not pretend to deal with possible things; they are exercises of the imagination in a quite different field.
> –H.G. Wells, *Preface to the Scientific Romances*

As countless scholars have noted, Herbert George Wells has long been identified as one of the pioneers of modern science fiction. His widely influential scientific romances popularized many of the dominant science fiction tropes still in vogue today, from time travel to alien invasion narratives. According to Darko Suvin, "both the proliferation and the changed status of SF begin with and at the time of H.G. Wells" (230). However, as Wells has noted in his *Preface to the Scientific Romances*, his early narratives were not attempts to depict "possible things," but rather imaginative explorations aimed to entice "natural reactions of wonder, fear or perplexity" (13). Wells's romances endeavoured and encouraged readers to reflect on the societal and cultural understandings of various concepts, such as the definition of humanity, of science, of nature, and of otherness.

Early Wellsian science fiction memorably responded to late nineteenth-century anxieties surrounding the rise of modern science and Darwin's theory of natural selection. Wells's narratives, however, also played a crucial role in the development of the "mad scientist myth" and contemporary characterisations of mad scientists. While the trope was first introduced by Mary Shelley's novel *Frankenstein* (1818), Wells's depictions were innovative due to the author's unique scientific knowledge and background, something most of his contemporaries lacked. Science fiction scholars such as Brian Aldiss, Anne Stiles, Roslynn Haynes and Suvin have emphasized Wells's often unsympathetic representations of the scientist and his well-known depictions of the so-called mad scientist who conducts brutal vivisections, organizes failed self-experiments, and pursues anti-social scientific research. Wells's infamous mad scientist Dr. Moreau declares "Sympathetic pain" to be "a thing I used to suffer from years ago";

he is notoriously "as remorseless as nature" (*Moreau* 127). As this passage makes clear, late Victorian authors such as Wells connected the mad scientist to popular fears about the ethical implications of scientific research, the newly social role of the professional scientist, and the moral dimensions of scientific objectivity. While scholars have long critiqued the figure of the mad scientist in Wells's early works, they have generally overlooked the alternative scientific ethics and practices that his fiction imagines. Focussing on four of Wells's early Victorian fictions, *The Island of Dr. Moreau* (1896), *The Time Machine* (1895), *The War of the Worlds* (1898), and *The Invisible Man* (1897), this thesis explores the formulation of new concepts of scientific community, examining how Wells's representations of the new figure of the scientist relate to the period's anxieties about the ethical and moral aspects of scientific experimentation.

While Wells is often credited for having shaped and concretized the future of modern science fiction, the genre's origins notably precede him. While the roots of science fiction arguably include Jonathan Swift's anticipatory satirical depictions of scientist-like figures[1] and lost worlds in *Gulliver's Travels* (1726), and Margaret Cavendish's utopian kingdom in *The Blazing World* (1666), science fiction scholars most often identify Mary Shelley's *Frankenstein* as constituting the first genuine work of science fiction; Aldiss, for example, famously argues that Victor Frankenstein's mad experiment gives birth to the genre itself. The critical importance of Shelley's novel in the most well-known accounts of the genre illustrates the central role that the mad scientist has played in the development and literary history of science fiction. While Shelley's Frankenstein may not have been the first depiction of a mad scientist – Christopher Marlowe's *The Tragical History of Doctor Faustus* (1604) comes to mind, for example – *Frankenstein*'s post-Enlightenment scientific context and unique depiction of science and the

[1] The emergence of the word "Scientist," coined by William Whewell, only occurred in the 1830s, long after Swift wrote and published *Gulliver's Travels.* (Meadows 2)

scientist positions Victor Frankenstein as an "archetype in his own right" (*Faust to Strangelove* 92). Despite its gothic aspects, the novelty of Shelley's narrative derives from her fiction's avoidance of "supernatural terrors," her insistence on terrorizing readers "by natural means involving science" (Alkon 2).

Following Shelley's seminal novel, literary depictions of mad scientists proliferated, in part as a result of the nineteenth-century's vast scientific and technological developments. If, as Judith Merril states, "Art at any time can achieve validity only if it is rooted in the accumulated human experience of its day, and touches somewhere on the nerve center of the culture from which it springs" (23), then the figure of the scientist touched the "nerve center" of a late-Victorian public immersed in the rise of Darwinian science and modern geology. The period's fictional depictions of scientists reflected popular attitudes and suspicions regarding the increasingly professionalizing figure of the scientist, and a new corollary concept of specialized scientific community. George Elliot's *Middlemarch* (1871), Wilkie Collins's *Heart and Science* (1882), Robert Louis Stevenson's *The Strange Case of Dr. Jekyll and Mr. Hyde* (1886), Richard Marsh's *The Beetle* (1897), and Bram Stoker's *Dracula* (1897) are but a few of the era's countless well-known works representing and critiquing this emerging Victorian figure. Among the most influential of these texts, H.G. Wells's scientific romances solidified cultural understandings and conceptions of the mad scientist from the Victorian era to the present day. Publishing his first novel, *The Time Machine*, in 1895, Wells quickly gained popularity amongst late nineteenth-century readers with his simultaneously unsettling and wonderful narratives of time travel, alien invasion, and questionable experimentation. Over the course of the next five years (1895-1900), Wells published his most acclaimed novels, including *The Invisible Man*, *The*

Island of Dr. Moreau, and *The War of the Worlds*, all three of which feature mad scientists or depictions of unethical experimentation.

As several critics have argued, the trope of the "mad scientist" evokes a distinct image of cultural exclusion. In *From Faust to Strangelove: Representations of the Scientist in Western Literature*, for example, Roslynn Haynes calls attention to surveys from the 1950s examining children's drawings or descriptions of scientists. The results were "almost invariably male (99.4 per cent), middle-aged or older, either bald or having a large mass of hair in the style of Einstein … nearly always depicted as working alone and in isolated laboratories; and where the object of their research is indicated it is usually conspicuously labeled as 'secret' or 'dangerous'" (1-2). This image of the disheveled and aging male scientist, who works secretively in isolation toward nefarious ends remains the stereotypical depiction of the "mad scientist" to this day. The trope Wells helped to inaugurate thus continues to touch on our present-day "nerve center" in the age of digital technology, bioengineering, and artificial intelligence. Yet, while this character trope might be well established, the figure continues to be defined in various, even contradictory ways – as intimidating or befuddled, for example – making it necessary to specify how this thesis specifically defines and applies the trope.

Anne Stiles, for instance, represents "mad science" as rooted in, or equivalent to, nineteenth-century definitions of "insanity," describing Wells's narratives as exploring the "plight of the mad genius" (137). However, the "diagnosing" of the mad scientist as "insane," or as reflecting individual struggles with mental illness, neglects notable science fictional elements appearing in these texts. According to Suvin's definition, a crucial distinction between science fiction and other literary genres is that science fiction does not center around the individual or hero's experience, focussing instead on the exploration of potential futures, the definition of the

human, or the social application of technological or speculative novums: "The world of a work of SF is not a priori intentionally oriented toward its protagonists, either positively or negatively" (121). Echoing Suvin, Haynes argues that "What mainly interests Wells, and thus what his characters discuss and think about at great length, is the application of science to society" (*Discoverer of the Future* 213). In Wells's fiction, the mad scientist character powerfully represents the impacts of unethical, selfish, and flawed science on society. Through this character, Wells reflects on the ethical implications of narcissistic scientists and their experimental methods, the role and impact of a quickly professionalizing scientific community known for its exclusionary and objectifying tendencies, and the nineteenth-century's resulting troubled scientific discourse occurring between the scientific community and those standing outside of it.

Arguing that the mad scientist's scientific practice and methodologies are caused by "insanity" overlooks these ethical concerns and social issues. More specifically, choosing to focus the analysis on the impact the developing science of psychology has on the figure of the scientist and societal depictions of the scientist orients the focus of these narratives towards the individual experience of the mad scientist, rather than towards broader questions of scientific ethics, scientific community, and the societal impact of unethical science. This type of analysis, which considers the role and significance of psychology in Victorian literature, has already been accomplished extensively by numerous scholars, such as Jane Wood, Peter Melville Logan, Christopher Lane, and Ed Block.[2] Pivoting away from Stiles' reading of the "mad scientists" as

[2] Jane Wood, *Passion and Pathology in Victorian Fiction* (Oxford University Press, 2001); Peter Melville Logan, *Nerves and Narratives: A Cultural History of Hysteria in Nineteenth-Century British Prose* (University of California Press, 1997); Christopher Lane, *The Burdens of Intimacy: Psychoanalysis & Victorian masculinity* (University of Chicago Press, 1999); Ed Block, *Rituals of Dis-Integration: Romance and Madness in the Victorian Psychomythic Tale* (Garland Pub, 1993).

defined by individual mental illness, my thesis focuses instead on the mad scientist as a figure representing problematic and unethical forms of science. Towards this end, my research explores the origins of the mad scientist in Victorian culture, and how the figure and work of the mad scientist contacts, impacts, and affects diverse social and ecological actors. Consequently, my thesis accents the ways in which the mad scientist practices anti-social, self-serving forms of science.

As "the first significant writer who started to write SF from within the world of science, and not merely facing it" (Suvin 245), Wells provides nuanced depictions of mad scientists engaging with the period's spirited, if troubled, scientific discourse. In the introduction to his scientific romances, Wells states: "My early, profound and lifelong admiration for Swift, appears again and again in this collection, and it is particularly evident in a predisposition to make the stories reflect upon contemporary political and social discussions" (14). Aware of his predecessors, Wells's scientific romances newly reflect on Darwin's theory of natural selection, Victorian vivisection debates, emerging scientific concepts of objectivity and subjectivity, and relations between experimenters and experimental subjects; his early novels interrogate the interactions of individual scientists, the burgeoning scientific community, and a suspicious Victorian public.

Exploring nineteenth-century understandings of scientific objectivity and subjectivity, my first chapter focuses on Wells's depictions of problematic subjectivity in his scientific romances. Defining unethical science while also identifying objective and subjective scientific practices within Wells's early novels, this chapter seeks to replace the inaccurate, stereotypical trope of the dangerously objective mad scientist with a better understanding of late nineteenth-century science, early scientific community, and Victorian understandings of objectivity. As Lorraine

Daston and Peter Galison explain in *Objectivity*, nineteenth-century scientists typically praised a "new epistemic virtue," "the search for that new form of unprejudiced, unthinking, blind sight we call scientific objectivity" (16). Fictional representations, such as the nameless time traveler's preferential and prejudiced treatment of the Eloi race, call into question the results of scientists who fail to strive for "knowledge unmarked by prejudice or skill, fantasy or judgment, wishing or striving" (Daston and Galison 17). Wells's multifaceted portrayal of scientists here points to the pitfalls of self-centered subjectivity, scientific secrecy, selfish motivations and biases, and isolation.

My second chapter explores the Wellsian mad scientist's interpretation of, and relationship to, Darwin's theory of natural selection and Victorian theories of evolution. Towards this end, this section juxtaposes Wells's early scientific romances to the works of Victorian scientists Charles Darwin and T.H. Huxley, while also attending to Wells's own non-fiction scientific writing. As Gillian Beer notes, Darwin's "evolutionary ideas proved crucial to the novel during that century" (6) and Darwin's discoveries and Victorian literature had long since been intertwined before Wells would publish his scientific romances. A closer look at the Wellsian mad scientist's interactions with evolutionary theory – which are strongly influenced by this character's problematic forms of subjectivity – exposes a scientific practice rooted in anthropocentric desires to dominate and appropriate, and a hazardous misunderstanding of the relationship between human beings and their fellow organisms.

Building on the previous two chapters, my third and final chapter juxtaposes the Wellsian mad scientist to his Victorian social context by considering the scientist's relationship to the scientific community, the experimental subject, and the general public. This chapter explores the relationship between the scientific experimenter and the experimental subject in relation to the

period's antivivisectionist movement and critiques of urban scientific experimentation as presenting a public "risk of contamination" (Boddice 55). Taking into consideration the Wellsian scientist's problematic subjective methods and dangerous interpretation of natural selection, this chapter examines how these concepts are applied to the social role of the scientist in the Victorian city. Furthermore, this chapter also considers the ethical responsibility of all participants in late-nineteenth-century scientific discourse, including the scientific community and the general public. *The War of the Worlds*, for example, offers through its alien a significant reversal of roles between "observer and observed," between experimenter and experimental subject (Rieder 10). Moreau's semi-human animal subjects, on the other hand, call into question the use of animal subjects in scientific experimentation. As prominent antivivisectionist Frances Power Cobbe's extensive writing and activism demonstrates, the ethics surrounding scientific subjects, both animal and human, were a common concern during the late Victorian period, leading to significant public debate. Wells's depiction of unethical scientists responds to these concerns, while simultaneously anticipating later feminist and social critiques of science; in the twentieth century, Evelyn Fox Keller, Donna Haraway, Bruno Latour, and others would theorize new forms of scientific objectivity, similarly advocating the development of a more sympathetic, feeling, and humanistic science.

Through the analysis and exploration of the figure of the mad scientist and forms of unethical science in Wells's early scientific romances, this thesis demonstrates how Wells turns to science fiction to hypothetically represent contemporary Victorian anxieties and concerns. Wells's early scientific romances presciently challenge new nineteenth-century definitions of science and scientific community, while simultaneously seeking to reimagine his day's

governing scientific methodologies and philosophies as more inclusive, unbiased, and socially accountable.

Chapter 1:

"That Mean Instinct": Objectivity, Subjectivity, and the Scientific Romances of H.G. Wells

From Faust, to Frankenstein, to Moreau, when considering the trope of the mad scientist, certain key characteristics come to mind. Obsessive, amoral, unfeeling, relentless in his scientific pursuits, and typically engaging in unethical and questionable acts in the name of science, the literary mad scientist is depicted as unsympathetic towards the pain and suffering of others, as isolated, and as antisocial. H.G. Wells's early depictions of the scientist are no exception. One of the defining characteristics of the Wellsian mad scientist is his problematic relationship to objectivity and subjectivity in scientific experimentation. While the scientist-protagonist of Wells's scientific romances may appear to follow the stereotypical trope of the dangerously objective mad scientist, a better understanding of nineteenth-century science, its scientific community, and their understanding of objectivity reveals Wells's portrayal of scientists to be a complex and nuanced depiction of the dangers of subjectivity, scientific secrecy, problematic motivations and biases, and isolation.

H.G. Wells's scientific romances introduce scientist-protagonists who are lacking in empathy, are unnecessarily cruel, and who possess a scientific monomania that comes at the expense of ethical and sympathetic considerations. These dangerous personality traits are often read as the consequence of an objective scientific philosophy that separates the subjective, feeling individual from the emotionless objective reality of science, an "objectivist ideology, prematurely proclaiming anonymity, disinterest, and impersonality and radically excluding the subject" (Keller 12). As Roslynn D. Haynes remarks, Wells's early depictions of scientists "have been increasingly reprehensible characters," suggesting that "at this juncture [in his literary career] the young Wells had scant respect for the profession" (*Discoverer of the Future* 204).

And yet, being scientifically educated and trained, having studied directly under T.H. Huxley, and having authored scientific textbooks himself, Wells was entrenched in the scientific community and his written work serves as a clear indicator of his respect and fascination with the field of science. While unlikely that Wells lacked respect towards the profession of the scientist, Haynes's comment does point to an important and intriguing feature of his early novels, which is the indisputably troubling and problematic behaviour of his depicted scientists.

The cold and unfeeling Dr. Moreau from *The Island of Dr. Moreau* (1896) is a great example of the literary trope of the mad scientist. Described by Darko Suvin as "indifferent to human suffering" (*Wells and Modern Science Fiction* 20), the exiled vivisectionist practices cruel and grotesque experiments on a variety of animal subjects in an attempt to surgically transform them into human-like beings – a biological variation on the metal to gold transmutations of the alchemist. Describing his work to his visitor in the "tone of a man supremely bored" (*Island of Dr. Moreau* 123), Moreau states "sympathetic pain – all I know of it I remember as a thing I used to suffer from years ago" (*Island of Dr. Moreau* 127). When considering Dr. Moreau, Haynes describes his criteria as impersonal; "here again Wells expresses his reservations about the scientific perspective, namely, that by its standards of objectivity, human feelings, sympathy, and ethical values are indeed irrelevant" (*Faust to Strangelove* 156). As a result, Moreau seems to perfectly embody the trope of the mad scientist through his "standards of objectivity" in scientific experimentation.

The mysterious Dr. Griffin from Wells's *The Invisible Man* (1897) provides another classic example of the mad scientist trope. Described by Sussman as illustrating "the potential for cruelty in the purely scientific intellect" (179), the novel follows a scientist who discovers, through his scientific experimentation, a way of making himself invisible to the human eye.

Having made this discovery and employed it on himself, Griffin terrorizes a small English village and its inhabitants through various crimes, eventually culminating in murder and grandiose threats of a "Reign of Terror" (*Invisible Man* 176). Envisioning "the mystery, the power, the freedom" (*Invisible Man* 137) that invisibility could grant him, Griffin exposes his selfish and self-interested motivation throughout the novel. "My head was already teeming with plans of all the wild and wonderful things I had now impunity to do." (*Invisible Man* 150) Additionally, like Moreau, Griffin shows a concerning lack of sympathy and feeling for others, as demonstrated by his lack of empathy for his deceased father who died as a result of Griffin's actions. Griffin's admission that he does not feel sorry for his father who "seemed to me to be victim to his own foolish sentimentality" strengthens his following declaration that "I appreciated my loss of sympathy" (*Invisible Man* 140). Griffin views sympathy and emotion as an unnecessary weakness. Both Griffin and Moreau can acknowledge their own lack of sympathy, while simultaneously refusing to view this lack as problematic, demonstrating their selfish, unfeeling, and pitiless ways to be a conscious choice.

Interestingly, while both scientists knowingly make these unsympathetic and problematic choices, both novels do present their circumstances as requiring this type of unethical action in order for them to engage in scientific experimentation. Being exiled from his home country, Moreau seemingly has no choice other than to practice his experiments in secrecy and isolation. As Martin Willis suggests, Moreau's exile from London may actually stem from concerns regarding public image and not actual moral outrage, which would justify Moreau's own criticism and resentment of the scientific community. "The scientific community turns its back on Moreau for tarnishing the reputation of scientific investigation. For the most part, scientists were firmly in favor of the principles of vivisection, and it was left to those in other professions

to oppose it." (214-15). Similarly, because of his financial situation, Griffin is limited in his scientific endeavors in a way that someone more privileged would not be. While Kemp and Griffin have both received the same education and are seemingly equally qualified, Griffin finds himself without the financial support necessary for his research. While Griffin's actions towards his father remain reprehensible, the novel offers no alternative solution to his dilemma, almost suggesting this type of unethical choice to be the price Griffin must pay to succeed in his scientific endeavors. While this does not absolve either Moreau or Griffin from the consequences of their actions, it does suggest Wells's early novels critique not only the unethical scientist, but also the flaws and corruption within a problematic scientific community that allows for, and to a certain extent, endorses this type of behavior. This demonstrates Wells's nuanced but realistic portrayal of science and its community.

Alternatively, the time traveler from Wells's *The Time Machine* (1895) offers a morally ambiguous representation of the nineteenth-century scientist. While the "well-intentioned time-explorer" Sussman describes as the counter to the "homicidal scientist of *The Invisible Man*" (163) does not demonstrate the same cruel lack of sympathy, his methods and experimentation still prove themselves to be problematic and harmful to others. As Haynes describes, the nameless time traveler is "almost a passive spectator, provoked to action only in self-defense" (*Discoverer of the Future* 199). Unlike Griffin, the time traveler's exploration does not appear motivated by selfish or personal gains, and unlike Moreau, he appears to show more concern for the harm and pain he causes to others. In an attempt to remain a passive and objective observer, the time traveler declares upon meeting Meena that he has not "come into the future to carry on a miniature flirtation" (*Time Machine* 49), and yet this is exactly what he does. While demonstrating an intention to remain objective and detached, the time traveler shows a clear

partiality for the Eloi, the beautiful and delicate race that most resembles his own, and develops a personal relationship with one of the subjects he is examining. In effect, he exposes his inability to remain objective and distance himself from his subject. And yet, flawed as he and his methodologies are, the time traveler seems to emerge as a kinder, more ethical alternative to Wells's other early depictions of the scientist. When considering Haynes's earlier statement regarding Moreau's "standard of objectivity," this would suggest that scientific objectivity itself could be seen as one of the prominent toxic characteristics of the mad scientist, characterized by a lack of emotion, sympathy, or ethical concern for the wellbeing of others.

However, this assumption is based on a definition that understands scientific objectivity to be a character trait or characteristic that dictates behavior – as something one can attain and possess, which in turn affects the possessor's personality, actions, and worldview. In reality, the idea of objectivity in science is and has been viewed and understood quite differently, and this even in the nineteenth century when this concept was initially popularized. Debates surrounding objectivity in science are still alive today, with many questioning the value or plausibility of objectivity in science. As Jonathan Y. Tsou, Alan Richardson, and Flavia Padovani explain, it has become generally accepted that total objectivity cannot be achieved and that scientific experimentation is always influenced, to a certain extent, by the subjective individuals conducting it (3). A counter to the questioning of scientific objectivity as an ultimate goal is presented by Ian Hacking who argues we should define objectivity as an adjective. "Don't talk about truth, talk about the word 'true' and its uses. Mutatis mutandis, we should attend to the adjective 'objective,' and not to objectivity" (24). Interestingly, while this debate continues today, Hacking's definition is not a novel way of seeing objectivity, but one many within the nineteenth-century scientific community had also accepted.

The historical emergence and development of what we now understand as scientific objectivity has been meticulously mapped and explored by Lorraine Daston and Peter Galison in their book *Objectivity* (2007). Explaining objectivity to be an epistemic virtue that guides a scientist's actions and practice of science, Daston and Galison argue that, like any other abstract idea, objectivity and subjectivity are "historically located," emerging "together as mutually defining compliments" (5). This is evidenced, in part, by the first appearance in dictionaries of our current definition of both words in the 1820s and 1830s (Daston and Galison 31), around the same time as the coining of the word scientist by Whewell (Meadows 2) – a result of the vast scientific developments occurring throughout the nineteenth century.

According to Daston and Galison, to be objective is "to aspire to knowledge that bears no trace of the knower – knowledge unmarked by prejudice or skill, fantasy or judgement, wishing or striving. Objectivity is blind sight, seeing without inference, interpretation, or intelligence" (17). This understanding of objectivity emerged as a direct response to the perceived "temptations of aesthetics" caused by the previous scientific philosophy of "truth-to-nature," characterized by its attempt to capture ideal representations of scientific subjects (Daston and Galison 120). "Men of science began to fret openly about a new kind of obstacle to knowledge: themselves." (Daston and Galison 35)

Mechanical objectivity, rooted in physical actions, tools, and methodologies that attempted to distance the subjective self and "minimize the impact of the will," emerged as a methodology and technique aimed at achieving a more objective scientific view (Daston and Galison 38). Through mechanical objectivity, "fierce self-regulation" was required when observing the scientific subject. "To be resisted were the temptations of aesthetics, the lure of seductive theories, the desire to schematize, beautify, simplify." (Daston and Galison 120)

However, this self-regulation was not meant to alter the personality, feelings, or emotions of the scientist, and in fact, "emotion per se was no disqualification … But passionate preference for one's own theories and speculations … or even for one's own sensations and intuitions … count as dangerous expressions of subjectivity" (Daston and Galison 380). The emergence of scientific objectivity in the nineteenth century had a clear purpose – to eliminate through the use of mechanical tools and practices the influence of one's own biases and opinions from scientific research and discovery in an attempt to attain the most accurate representation of the scientific subject – a sort of "blind sight." This erasure of the self from scientific study in no way required the elimination of the self from other aspects of the scientist's life, neither did it require a lack of subjectivity or empathy in the researcher. Additionally, scientists of the period understood that attaining perfect objectivity was impossible. Instead, the quest for objectivity was meant to improve the accuracy and epistemic virtue of their work.

While this concept of a scientist without bias or prejudice towards its subject, who sees with "blind sight," was widely accepted by the scientific community when Wells wrote his early novels, the concept of objectivity in science had been evolving for quite some time. In fact, in Mary Shelley's seminal novel *Frankenstein* (1818), the nineteenth century's earliest depiction of the mad scientist, the creature asks his creator to "hear me, before you give vent to your hatred on my devoted head" (Shelley 102), asking that Frankenstein judge him based on his story and his actions rather than his physical appearance. In effect, the creature is asking the scientist to adopt a more objective approach towards his scientific subject. Of course, Frankenstein, who is continuously influenced and swayed by his clear preference for beauty and "temptations of aesthetics," fails to do this and fails to view the creature as anything other than hideous. "I compassionated him and sometimes felt a wish to console him; but when I looked upon him,

when I saw the filthy mass that moved and talked, my heart sickened and my feelings were altered to those of horror and hatred." (Shelley 149)

In the latter half of the nineteenth century, as a response to developments in sensory physiology and psychology, the concept of structural objectivity emerged in parallel to that of mechanical objectivity in an attempt to "resist the urge to believe in the contents of one's own consciousness" (Daston and Galison 260). Individual reality was now understood to vary from individual to individual as it was interpreted by the subjective self. Instead, the focus was placed on "structural relationships," and objectivity became rooted in shared, communicable views and information, and the importance of a collective scientific community which was quickly professionalizing.

As a member of the scientific community, this ideal of scientific objectivity was something that H.G. Wells himself embraced. In his non-fiction essay *Scepticism of the Instrument* (1904), Wells explains his skepticism towards the "Instrument of Thought," the subjective human mind and the methods we use to arrive at knowledge (*Scepticism* 387). While arguing against the generalities of classification as a "departure from the objective truth of things," and describing the "unlimited universe of objective uniques" to be observed in the world (*Scepticism* 383, 385), Wells is describing the very concerns the scientific community held towards the truth-to-nature ideology that aimed to classify and identify ideal representations of its surroundings. In effect, Wells's criticism of classification argues for the value of mechanical objectivity in research, a process that acknowledges the individuality and uniqueness of each observed subject. Wells also talks of knowledge as "the relation of a conscious being to something not itself, that the thing known is defined as a system of parts and aspects and relationships, that knowledge is comprehension," and laments the incommunicability of certain

words or concepts, echoing the concerns of communicability and community in structural objectivity (*Scepticism* 388). Evidently, Wells had a good understanding of the nineteenth-century scientific community's conception of objectivity and agreed with its perceived value.

Taking into consideration this contextual information, a closer look at Wells's early depictions of scientists reveals that the problematic nature of his mad experimenters does not stem from their overly objective nature, but rather, in a way reminiscent of Frankenstein's own "temptations of aesthetics," from a lack of scientific objectivity as it was understood by the late nineteenth century. In reality, the characters of Moreau, Griffin, and the time traveler demonstrate extreme subjectivity in their scientific methodologies and experimentation through their own personal biases, their selfish motivations, and isolation from their peers. Considering Daston and Galison's statement that the "subjective self of nineteenth-century scientists was viewed as overactive and prone to impose its preconceptions and pet hypotheses on data" (187), and that "self-indulgence, impatience, partiality to one's own ideas, sloth, even dishonesty" were viewed as serious character flaws in scientists and a clear indicator of problematic subjectivity (203), the Wellsian scientist-protagonist – who possesses many, if not all of these flaws – emerges as a blatant embodiment of the dangerously subjective scientific experimentation the late nineteenth-century scientific community hoped to avoid through the application of concepts like mechanical and structural objectivity.

In *The Island of Dr. Moreau,* Moreau convincingly presents himself as an objective scientific researcher, accusing his visitor Edward Prendick, who himself is part of the scientific community, of being a "materialist" for expressing concern for the pain felt by Moreau's animal subjects (*Moreau* 126). When Prendick voices his disagreement with Moreau's theories on the physiological differences between humans and monkeys, Moreau "with a certain incivility"

ignores his objections, repeats his own theory, and continues his explanation of his work, demonstrating his failure to accept criticism and communicate with others (*Moreau* 125). The irritation he later displays at having to explain and justify his methods to Prendick also exposes his antisocial tendencies. “And here I have wasted a day saving your life, and am now wasting an hour explaining myself!” (*Moreau* 126) Clearly incapable of working within a community and of cooperating or communicating with others, these failures expose Moreau’s lack of structural objectivity.

Additionally, while Moreau claims to have chosen to transform animals into humans “by chance,” his language betrays his own partiality for the aesthetics of the human form. “I suppose there is something in the human form that appeals to the artistic turn more powerfully than any animal shape can.” (*Moreau* 126) Moreau’s attempts to cover up his inherent bias demonstrates his awareness of the impropriety of subjectivity in scientific experimentation. However, simply declaring a decision to have been made at random is no proof of scientific objectivity, especially when working alone and making all decisions himself, reinforcing the real value of structural objectivity and scientific community. Moreau’s own biases are also exposed through his, language when he counters Prendick’s objections with the words “In my view – in my view” and declares to have sought God’s laws “in *my* way” (*Moreau* 126, 127). Clearly, Moreau’s experiments are heavily influenced by his own personal interpretations and his refusal to take into consideration the criticism or input of other scientists. This bias is further revealed when Moreau admits to having felt offense at the fear expressed by his workers upon seeing one of his earlier creations. “They were horribly afraid of him at first, somehow – which offended me rather, for I was conceited about him.” (*Moreau* 129) While claiming no personal or emotional connection to his subjects, Moreau clearly has an emotional reaction to criticism of his work,

demonstrating pride for his accomplishments. When considering these strong subjective biases, his proclaimed lack of "sympathetic pain" is exposed as being a lack of empathy for experimental subjects and apathy towards the pain he inflicts upon them that is completely unrelated to actual scientific objectivity.

While Moreau attempts to conceal his own subjectivity, Dr. Griffin from *The Invisible Man* and the time traveler from *The Time Machine* are much less subtle in their lack of scientific objectivity. Additionally, unlike Moreau who appears quite capable and organized in his experimentation, Griffin and the traveler display a concerning lack of foresight and planning, resulting in avoidable missteps. For Griffin, this lack of foresight comes as a result of his problematic motivation – the power he believes he will hold over others once his experiment is successful. As he explains to Kemp, a fellow scientist: "The more I thought it over, Kemp, the more I realized the helpless absurdity an Invisible Man was, – in a cold and dirty climate and a crowded civilized city. Before I made this mad experiment, I had dreamt of a thousand advantages. That afternoon it seemed all disappointment." (*Invisible Man* 171-72) Griffin, who had only considered the advantages he would hold over his fellow human once invisible, fails to consider the obvious downsides to being naked, alone, and invisible to the world. Interestingly, while Griffin's newfound invisibility seems to be a great opportunity for objective scientific observation – a great tool to distance oneself from the scientific subject and limit one's influence on it – Griffin never seems to consider the scientific applications of his discovery, instead choosing to focus on the personal and selfish benefits it grants him. His result-driven scientific experimentation is conducted for selfish and self-interested reasons, creating a clear bias in his methodology and going against any criteria for mechanical objectivity.

Additionally, Griffin also acknowledges the weakness of his experimentation caused by his isolation and lack of cooperation with others. When conversing with Kemp he states he has made "a huge mistake, in carrying this thing through alone. I have wasted strength, time, opportunities" (*Invisible Man* 175). After having worked alone and in complete secrecy, Griffin seems to understand, to a certain extent, the value of scientific community in scientific experimentation and the limitations caused by isolation. Of course, his following statement, "Alone – it is wonderful how little man can do alone! To rob a little, to hurt a little, and there is the end" (*Invisible Man* 175), further exposes his logic as being tainted by self-interest, greed, and the goal of gaining power over others. While one could argue that Griffin does reach out for community when reaching out to a fellow scientist, his wish to enlist Kemp is based solely on his goal of putting into place a "Reign of Terror." In other words, Griffin attempts to enlist Kemp as a "confederate" who will help him murder his fellow man, and not in the hope of forming a scientific community (*Invisible Man* 176). Similarly to Moreau, Griffin's isolation and inability to work with others, and his problematic selfish interests and bias result in a serious lack of both structural and mechanical objectivity.

The selfish nature of Griffin and Moreau's motivation creates an interesting parallel between *The Island of Dr Moreau*, *The Invisible Man*, and *The Time Machine*. Questioning the time traveler's motivation and arguing he uses his scientific discovery for "nothing more than glorified joy-riding," Bernard Bergonzi brings attention to the fact that the time traveler does not view or engage with science "a means of pursuing truth for its own sake, nor as a way of benefiting the human community at large. His attitude to research is purely personal … his main concern is to escape from the immediate confines of his temporal situation" (167). The time traveler's selfishness is not as apparent as Griffin's, for example, who feels no need to disguise

his self-centered and cruel intentions. However, a closer look at the execution of the time traveler's experiment reveals a seriously flawed methodology, proving Bergonzi's argument. While the theatrical way in which the traveler shares his experiment with his peers demonstrates some great showmanship on his part, in no way does it follow the objective scientific practice of publishing discoveries in the usual fashion. The unorthodox and unproductive sharing of scientific discoveries seems to be a shared trait of the Wellsian mad scientist. Moreau and Griffin also share their findings with a select few, but seemingly arbitrary listeners, while neglecting to share these scientific discoveries with the scientific community at large. In the time traveler's case, while exposing his flair for dramatics, this wish to surprise and impress his peers also leads him to conduct his experiment in secret, meaning he has to send himself to the future, recklessly making himself the own subject of his experiment. This secretive self-experimentation violates both structural and mechanical objectivity since it bypasses the scientific community and makes it impossible for the traveler to remove his subjective self from the equation.

Additionally, in his rush to test his invention, the time traveller overlooks various details. "I have thought since how particularly ill-equipped I was for such an experience … I had come without arms, without medicine, without anything to smoke … even without enough matches. If only I had thought of a Kodak!" (*Time Machine* 63) The time traveler, as he himself admits, is very ill-equipped when he embarks on his journey. His excitement at having finished building the machine blinds him to the recklessness of his endeavour, resulting in his rushed arrival to an unknown place with no equipment or tools. His mention of a "Kodak" is also significant since the newly invented camera was often used by scientists to produce what was believed to be objective representations due to its mechanical detail and precision (*Daston and Galison* 125). Without these objective tools to rely on, the time traveler can only rely on himself and his own

subjective interpretation and memory of events. In this sense, his lack of tools does not only inconvenience him in this future world, but also upon his return when he finds himself with no objective proof of his discoveries.

Of course, the time traveler's most blatant display of subjectivity emerges through his interactions with the Eloi and Morlock. From the very first encounter, the time traveler is partial to the "very beautiful creature" who's face reminds him of "the more beautiful kind of consumptive – the hectic beauty of which we used to hear so much. At the sight of him I suddenly regained confidence" (*Time Machine* 25). He immediately identifies with the Eloi, who he continuously describes as beautiful, easily accepting them as his own descendants. The time traveler's identification and relationship with the Eloi creates a clear bias in the way he views and studies them, made obvious when he states that "the Eloi had kept too much of the human form not to claim my sympathy, and to make me perforce a sharer in their degradation and their fear" (*Time Machine* 73). The time traveler not only sympathises with his subject, but he fully identifies with them, appropriating their fear and emotions as his own.

This subjective, biased approach results in dangerous and deadly consequences for Weena, a female Eloi with who he begins a "miniature flirtation" (*Time Machine* 40) that could easily be seen as one of his most disastrous faux pas. Despite his claim against it, their relationship evolves into something quite personal, leading to his admission that she "seemed to me, I fancy, more human than she was, perhaps because her affection was so human" (*Time Machine* 74). Unfortunately, despite his partiality for the Eloi, they remain a species distinct from humans. Biologically, socially, and culturally, Weena differs vastly from the human time traveler, and when he removes her from her home and her peers because of his own attachment and partiality towards her, he becomes complicit in her death. And yet, Weena is not the only

example of the traveler letting his emotions interfere and endanger the Eloi, as shown through his angry and aggressive outburst towards an unnamed Eloi who refuses to show him where his time machine has gone (*Time Machine* 44).

The time traveler's contrasting revulsion towards the Morlocks is yet further proof of his subjectivity. While he eventually recognizes the Morlock as also being his descendants, their unattractive appearance result in his feeling an instinctual bias against them, similar to Frankenstein's instinctual revulsion towards his own creation. "And I longed very much to kill a Morlock or so. Very inhuman, you may think, to want to go killing one's own descendants! But it was impossible, somehow, to feel humanity in the things." (*Time Machine* 78) These feelings demonstrate a striking contrast to the traveler's perception of the Eloi, despite both races being his human descendants. By exploring on his own and forming personal connections and associations between himself and the subjects surrounding him, the time traveler has given up scientific objectivity entirely. His impulse to identify surrounding creatures based on how closely they resemble humans, or on his own aesthetic preferences, results in his perceiving everything he observes through his own subjective opinions of the world. Between this strong internal bias, his self-imposed isolation, and his lack of mechanically objective tools and methods, the time traveler presents himself as an adventurer more than a nineteenth-century scientist. When considering these scientist-protagonists, it becomes clear that the most problematic and dangerous characteristics of the Wellsian mad scientist all result from their inability to overcome their own subjectivity, as demonstrated by their self-centered and selfish motives, their isolation and secrecy, and their problematic methodologies. Where, then, does the pre-conception of the scientist as being problematically objective originate, and why does it remain so prevalent when discussing the trope of "mad scientists?"

As Evelyn Fox Keller makes clear, this is partly due to the very formation of the scientific community and the ideology that surrounds it. The period's male-centric ideology, which had a tendency to view and define reason, science, and objectivity as masculine while viewing nature, emotion, and subjectivity as female, was central to the creation of a professionalized scientific community within the nineteenth century (Keller 7). Heavily inspired by the philosophy of Francis Bacon, this new "objectivist ideology" of science also idealized an aggressive approach to scientific study, one aimed at controlling and dominating its "female" subject (Keller 33-34). This understanding and perception of scientific study not only impacted the creation of modern science, but also society's perception of it. As Keller suggests: "Would not a characterization of science which appears to gratify particular emotional needs give rise to a self-selection of scientists – a self-selection that would, in turn, lead to a perpetuation of that same characterization?" (90) In effect, an inaccurate societal notion of what constitutes objective science will attract people who themselves want to conduct inaccurately "objective" and problematic forms of experimentation. If, as Keller suggests, this depiction of science promotes and encourages a masculine, aggressive, emotionless, and overpowering approach, the people it will attract will be individuals whose personalities fit this type of behavior. "A science that advertises itself by the promise of a cool and objective remove from the object of study selects for those individuals for whom such a promise provides emotional comfort" (Keller 124). This seems to be precisely what occurs in Wells's early novels, where the scientist-protagonists clearly self-identify as capable and objective scientists, but all demonstrate clear signs of toxic subjectivity and toxic masculinity.

Of course, concerns surrounding the ethics and morality of the scientific figure were also prominently featured in other works of nineteenth-century literature. The Romantic portrayal of

the scientist as "cold, inhuman, and unable to relate to others," as exemplified in Mary Shelley's *Frankenstein*, had a strong impact on future representations of scientists in literature (*Faust to Strangelove* 91). In fact, as previously mentioned, this trope of the mad scientist as a problematically subjective scientist who erroneously views himself as objective was first introduced in Shelley's *Frankenstein*, in which Dr. Frankenstein claims to have "pursued nature to her hiding places" (55), a particularly Baconian sentiment. While nineteenth-century authors were attracted to the fictional character of the scientist, their lack of knowledge or first-hand experience with the scientific community resulted in his characterization as a "shadowy, symbolic figure" (Sussman 163). This representation of the scientist was not unique to literature but echoed the common perception of the profession as it became increasingly specialized and professionalized, distancing itself from the rest of the population.[3] While interest in science increased, scientific practice and science as a profession remained inaccessible to those less educated, less wealthy, and less privileged, which meant most of the general public was limited in its ability to fully understand the scientist as a figure, as well as the implications of scientific experimentation and discovery.

As a result, the general public's perception of the scientist by the late nineteenth century was at times quite negative and suspicious. H.G. Wells, however, being himself a trained scientist, was one of the few authors of the period who possessed a good enough understanding to create what Sussman describes as "psychologically believable scientists" (164). While Wells, who was writing during this period of suspicion and uncertainty towards professional science, created characters that follow the late Victorian gothic trends in its depictions of scientists, these

[3] "Even as science became organized, regulated, and therefore 'trustworthy,' its image was also partially opposite one of untrustworthiness and moral insensibility." (Willis 11)

depictions also present a more nuanced criticism about what makes certain types of scientific practice and experimenters dangerous or problematic.

This nuanced depiction of nineteenth-century science becomes apparent through Wells's own realistic portrayal of scientists and the scientific community in his early novels. These characters are in strong contrast with his mad scientist protagonists, further exposing the mad scientists' problematic, dangerous nature and their obvious subjectivity. As Wells himself stated, the great success of modern science "lies in its collective character, in the fact that every fruitful experiment is published, every new discovery of relationships explained. In a sense scientific research is a triumph over natural instinct, over that mean instinct that makes men secretive, that makes a man keep knowledge to himself and use it slyly to his own advantage" (*New Worlds for Old* 22). By depicting, in his early scientific romances, how the exact opposite leads to in failure and demise for the subjective, isolated, and selfish experimenter, H.G. Wells is able to prove this exact point. While some critics have argued that Wells's early novels are anti-scientific and pessimistic, a closer look at the history and context of nineteenth-century science, as well as Wells's own scientific views on the matter, reveal that his work is not suspicious or critical of science and scientific practice itself, but rather the misuse of it. This is made most evident through the isolation and rejection his scientist-protagonists experience in his early novels. This exclusion from the scientific community represents more than a lack in structural objectivity, it also depicts modern science's own rejection of the mad scientist and his methods. Wells's inclusion of contrasting scientists in *The Island of Dr Moreau*, *The Invisible Man*, and *The Time Machine* further demonstrates this point.

The scientific community's rejection of Dr. Moreau is the most obvious of the three. Moreau, who is described by Prendick as having been "a prominent and masterful physiologist,

well-known in scientific circles" (*Moreau* 93), had previously had his work published and was considered a valuable member of the scientific community. However, the exposure of cruel experimentation in his laboratory eventually leads to his being "howled out of the country" by British society (*Moreau* 94). While Prendick seems conflicted as to the severity of the public's and the scientific community's reaction to Moreau's indiscretions, he himself cannot deny some of Moreau's experiments to have been "wantonly cruel" (*Moreau* 94). While Moreau attempts to re-create the semblance of a scientific community on his island through the employment of Montgomery and the Kanakas workers, his problematic experimentation leads to these individuals abandoning him as well, or to their suffering deadly consequences. Moreau's literal exile out of England represents not only the scientific community's disapproval of his methods and actions, but also society at large's disapproval. Even if the reader accepts Willis's theory that the scientific community has hypocritically exiled Moreau in an attempt to avoid public outrage and scrutiny (214-15), while painting a particularly pessimistic and disheartening portrait of the scientific community, this would still prove Moreau's methods as being deemed inappropriate and objectionable by society. While Prendick attempts to give Moreau and his justifications the benefit of the doubt, ultimately, he also cannot approve of them.

Griffin, on the other hand, suggests he has himself chosen to leave behind the scientific community due to what he views as "the knavish system of the scientific world" (*Invisible Man* 136). While his self-isolation and refusal to take part in the scientific community demonstrates a lack of structural subjectivity, it does not immediately suggest he has, in turn, been rejected by them. In this case, it is the eventual betrayal of his colleague, Kemp, that solidifies this rejection. *The Invisible Man* only portrays two contrasting professional scientists. While Griffin represents the selfish, aggressive, and anti-social mad scientist, Kemp represents "a personification of the

'normal' or orthodox scientist, a steadfast sober vestigator, quietly working for his F.R.S., in marked contrast to the romantic extravagance of Griffin" (Bergonzi 117). As a representation of the nineteenth-century scientific community, Kemp not only provides an alternative to Griffin's unethical madness, but he represents the scientific community's rejection of Griffin and his methods. When he declares Griffin "mad," "inhuman," and "pure selfishness," as thinking "of nothing but his own advantage, his own safety," and "brutal self-seeking," Kemp is speaking from a scientist's point of view and exposing Griffin as dangerous (*Invisible Man* 179).

Interestingly, while representing the late nineteenth-century scientific community, Kemp himself does not fit the period's stereotypical literary representation of the scientist. When Griffin tells Kemp about his deceased father, Kemp demonstrates strong sympathy for the man's suffering, also showing concern for the safety of his neighbors and for others in general, going against the typical portrayal of the scientist as cold, distant, and uncaring. Kemp attempts to reign Griffin back to the objective, socially accepted ways, reminding him of the "common conventions of humanity," which Griffin dismisses as "very well for common people," and urges him to publish his results and avoid "being a lone wolf" (*Invisible Man* 177). When this fails, however, and Griffin remains a danger to society at large, Kemp must ostracize Griffin and turn him in, resulting in Griffin's ultimate demise. Of course, Kemp himself is not beyond reproach. As suggested by Leon Stover, "Dr. Kemp, M.D., is very keen to be titled F.R.S for the mere prestige of it, empty of any real contribution to Natural Knowledge. Indeed, so vain is he that his paper is based not on experimental research but on old-style philosophical speculation" (*Invisible Man* 113). Kemp's own scientific practice seems to be motivated by a self-interest for status, suggesting that while ideologically the idea of objective scientific practice and methodology was widely accepted, the real and actual scientific community was far from perfect itself. As

previously suggested, this presents the Wellsian mad scientist as a complex and nuanced character who, while highly unethical and fully responsible for his actions, is in some ways responding to circumstances put into place by a flawed system.

In the end, Griffin's alienation is not only from the scientific community, but from the community at large who chases him through the streets. Bergonzi suggests Griffin also becomes increasingly alienated from the reader throughout the novel as the point of view provided to the reader changes from character to character, and as Griffin's actions and words are presented as more and more ridiculous (118). By introducing Griffin as a mysterious stranger at the beginning of the novel and slowly exposing his madness through the point of view of others, his later call for a "Reign of Terror" appears much more ridiculous and unhinged. Isolated from the scientific community, from nineteenth-century British society, and even from the reader, Griffin is unable to accomplish his "Reign of Terror" and is ultimately defeated.

While much subtler than Moreau's or Griffin's, the time traveler's exclusion from the scientific community is also a prominent part of *The Time Machine*. While most of the narrative presents the time traveler as a lone traveler, the novel is framed as a story within a story, with the narrator recounting what has been told to him by the traveler during one of his gatherings. This gathering is significant because it regroups various professional men who represent varying branches of the scientific or British community, from a medical man, to a psychologist, to journalists. In a way, this small group of men, unnamed and simply labelled as their profession, recreates a miniature version of the nineteenth-century scientific community at large. From the very beginning of the narrative, these men are skeptical of the traveler and his invention. As the narrator explains:

> … none of us quite believed in the Time Machine. The fact is, the Time Traveler was one of those men who are too clever to be believed: you never felt that you saw all around him; you always suspected some subtle reserve, some ingenuity in ambush, behind his lucid frankness. Had Filby shown the model and explained the matter in the Time Traveler's words, we should have shown *him* far less skepticism. For we should have perceived his motives; a pork butcher could understand Filby. But the Time Traveler had more than a touch of whim among elements, and we distrusted him. (*Time Machine* 12)

The men's skepticism towards the traveler and his invention is significant because it is not rooted in the invention itself, but rather in their personal distrust of the mysterious experimenter, painting him as someone untrustworthy and already isolated. His label as "Time Traveler" is also significant since it does not represent a real profession or scientific title, suggesting the traveler is not yet recognized as a member of the scientific community, but instead inhabits a unique role he himself has created.

When he returns from his journey, the traveler is unsuccessful in convincing his guests due to his lack of objective evidence. With nothing other than his own word and a dried flower, the traveler has no tangible proof to convince this group of men who already regarded him with distrust and suspicion. Even the narrator, who shows sympathy for the traveler and gets closest to believing his narrative, remains suspicious. In effect, the guests leaving the traveler's home and refusing to believe his narrative represent his rejection from the scientific community and the rejection of his exploration as being scientific. The traveler remains a figure to be viewed with skepticism and suspicion, and his findings remain unpublished and unshared by the community at large. It would be tempting to argue that the narrator's retelling of the story acts as the traveler's findings being published, but the traveler's ultimate fate in the narrative suggests

otherwise. In a symbolic turn of events, the traveler's final voyage to the future, where he remembers to bring a camera to collect actual objective evidence, solidifies his exclusion from the scientific community by having him disappear entirely. Without objective evidence and without the scientific community, the time traveler, his findings, and his time machine all vanish, never to be heard from again. As a result, *The Time Machine* becomes a warning about subjective methodology and experimentation, and not a celebration of the traveler's success as a scientist or explorer. All three "mad scientists" are problematically subjective and, as a result, are isolated and rejected from the scientific community, leading to their eventual failure and demise both as researchers and as human beings. This portrayal of the problematically subjective scientist by Wells clearly demonstrates, once again, the dangers and risks of not following scientific mechanical and structural objectivity.

The one outlier from Wells's early work also happens to be the exception that proves the rule – his alien invasion narrative *The War of the Worlds* (1898). Through its depiction of scientists as an anonymous, united, and communal entity, this book emerges as the only Wellsian scientific romance that provides a positive and credible fictional representation of what late nineteenth-century scientific objectivity in practice hoped to be. In contrast with the previous three novels, the unnamed protagonist from *The War of the Worlds* is not presented to the reader as a scientist-protagonist, or at least, his use of science or experimentation is not central to the plot. While we are told the narrator works in the field of "speculative philosophy," and he appears to be close friends with a renowned astronomer (*War of the Worlds* 8, 144), his potential role as a member of the scientific community is quickly abandoned once he is forced to run away from an alien invasion. The narrator becomes a victim and escapee, along with the rest of the British population, and his own individual actions remain mainly inconsequential to the rest of

the plot. In effect, the narrator becomes a reactive figure, providing a lens for the reader to witness the invasion, but not an active contributor to its events. Instead, the scientific community is included into the novel in a much subtler way.

As the narrator recounts the events of the alien invasion, he often includes "known" facts established through recent research and examination of the alien species. He comments on the aliens' "internal anatomy," which "dissection has since shown" and includes rather detailed descriptions which, "although they were not all evident to us at the time, will enable the reader who is unacquainted with them to form a clearer picture of these offensive creatures" (*War of the Worlds* 103*).* These details, which have all been obtained and confirmed by scientists and researchers after the fictional invasion, represent the scientific community's involvement in the narrative. Not only are these scientific findings shared among the scientific community, but after the bodies of all Martians undergo "anatomical examination," a "magnificent and almost complete specimen" of the alien species is exposed at the Natural History Museum, meaning these scientific findings have also been shared with the public through the appropriate, peer-evaluated channels (*War of the Worlds* 144*).*

While never fully introduced by the narrator as a character in the novel, and serving as more of a background presence, the quantity of information the narrator pulls from scientific observation makes the novel's scientific community a partial narrator to *The War of the Worlds*. Any scientist who is named – such as the anatomist Professor Howes who participates in the naming of the alien's body parts (*War of the Worlds* 102*)* – is vaguely referred to and has no prominent role in the events that take place, or any voiced personal opinion or feeling regarding the aliens or the events that occurred. In effect, the scientist and the scientific community remains a distinct, separate, and objective figure, not through a lack of empathy, feeling, or

emotion, but because they have distanced their subjective, personal selves from the narrative. Professor Howes probably has very strong feelings towards the recent events that destroyed an entire country, but these personal, subjective details are not included in the narrative because they are irrelevant and unscientific.

As Daston and Galison pointed out in their study of nineteenth-century objectivity and as Keller demonstrates in her own work, objectivity should not mean the complete removal or destruction of subjectivity and feeling, but rather the ability to limit, distance, or control the personal, subjective self when engaging in scientific work. As a result, the fictional scientific community represented in Wells's *The War of the Worlds*, by virtue of being presented as an anonymous, distant, and objective group, constitutes the one true depiction of the objective scientific community late nineteenth-century scientists had aimed for. Represented in this way, this objective scientific community is also a successful one when considering the quantity of information they are able to gather. As the narrator states when he first encounters the deceased aliens, many might have foreseen the foreign invaders could be vulnerable to human viruses and infections "had not terror and disaster blinded our minds" (*War of the Worlds* 137). When isolated and placed in a dangerous situation where one cannot distance the subjective self from what is being observed, as is bound to happen when running from human eating aliens, the lack of objectivity can impact scientific observation. By distancing the subjective self from their scientific findings and by working as a community, the scientific community in *The War of the Worlds* can discover significant and useful information that was impossible for the narrator to obtain. However, in the end, scientists are not given the role of savior or hero in the novel, perhaps also commenting on the realistic limitations of science and experimentation.

While cultural and literary tropes concerning scientists have a tendency to portray objectivity as equivocal to immorality, cruelty, and lack of sympathy, Wells's nuanced portrayal of nineteenth-century scientists and scientific experimentation illustrates a much more complex relationship between the scientists and scientific objectivity. Through his familiarity with nineteenth-century science and scientific community, Wells is able to expose, through the "mad science" of Moreau, Griffin, and the time traveler, the dangers associated with being overly subjective. Through their selfish and self-centered motivation, their clear biases, their flawed methodologies, and their isolation, Wells's scientist-protagonists expose their own complete lack of mechanical and structural objectivity, echoing the nineteenth-century scientific community's voiced concerns regarding subjectivity in scientific experimentation. As a result, Wells demonstrates that selfish, problematic, subjective scientists are what have the potential to make scientific experimentation dangerous and unethical, and not science itself.

Chapter 2:

"An Ethical Horror": Evolution, the Mad Scientist, and the Scientific Romances of H.G. Wells

As Roslynn D. Haynes explains, until the theory of natural selection emerged, "the existence of an ultimate basic entity, and the equating of purpose with design" were widely accepted assumptions (*Discoverer of the Future* 12). Darwin's refutation of these commonly accepted ideas sent shockwaves throughout the scientific world, but also throughout Victorian society at large, forcing most to confront the fact that man, "with all his noble qualities … still bears in his bodily frame the indelible stamp of his lowly origin" (Darwin 1248). As a nineteenth-century author fascinated with the scientific world, H.G. Wells was one of the many authors strongly influenced by Darwin's ground-breaking work, as made evident through his depiction scientists who engage in unethical, self-interested, and dangerous forms of "mad" science. While the Wellsian scientist-protagonist's problematic subjectivity is shown to be counterproductive to scientific experimentation and the scientific community itself, his problematic relationship to evolutionary theory – often rooted in that same subjectivity – is shown to be just as dangerous and destructive. From the attempted appropriation and domination of the process of natural selection, to attempts to concretely distinguish and separate man from fellow creatures, to a misunderstanding of the relationship between natural man and civilized man, the Wellsian mad scientist's dangerous understanding of Darwin's theory of natural selection and of evolution ultimately reveals itself as being yet another of his fatal flaws.

While Darwin's work was, and remains, part of the scientific discourse of the nineteenth century, it also held strong ties to the world of literature, exerting a strong influence on the fiction of the period. The widespread and cross-disciplinary influence of Darwin's work was caused in part by the unique nature of Darwin's writing. Gillian Beer describes it as "a form of

imaginative history," explaining that "evolutionary ideas proved crucial to the novel during that century not only at the level of theme but at the level of organization" (Beer 6). Beer argues the influence seems to have been reciprocal, suggesting that Darwin's own writing was strongly influenced by the works of his favorite author, Charles Dickens. Following the publication of *The Origin of Species*, nineteenth-century narratives found themselves following a "new authority to orderings of narrative" which now emphasized plots driven by cause and effect, themes of descent, and allowed chance to determine outcomes as opposed to a pre-ordained design (6).

By virtue of possessing these literary characteristics and connections, Darwin's evolutionary theory offered the possibility for various interpretations, which also meant it offered no one conclusive interpretation. "Darwin's theories not only undermined older orderings but contained *within them* opposing stories" (Beer 106). As George Levine explains, this meant that Darwin's theory "often led to divergent, even contradictory interpretations, so that for example, it was quickly adopted by many clergy as compatible with orthodox religion while often condemned as irrevocably hostile to religion" (9). As a result, a wide variety of competing evolutionary interpretations emerged throughout the nineteenth century, from the eugenics of social Darwinism, to the God-compatible theistic evolution. To add to the confusion, Darwin's work did not provide the only existing evolutionary theory, resulting in what Glendenning describes as the nineteenth century's "entangled bank of evolutionary theories" (577).

As suggested by Glendenning, while H.G. Wells's own biology textbook refrained from taking a stance on the issue, its contents demonstrated that the author was clearly familiar with the various conversations and beliefs surrounding the evolutionary discourse of the period (577). Of course, this textbook is not the only evidence of Wells's familiarity with Darwinian evolution.

Wells studied directly under T.H. Huxley at the Royal College of Science, which proved to be a crucial and influential moment in his life and career, described by Haynes as having an effect similar to that of "religious conversion" (*Discoverer of the Future* 12). In effect, as various scholars such as Bernard Bergonzi and Darko Suvin have noted, the presence and influence of Darwin in Wells's early scientific romances is unmistakable. However, as with his depiction of the scientific community in his novels and in part because of his extensive scientific background and education, Wells's use of Darwin's theory of natural selection is quite unique and, as Suvin points out, in his early exploration of Darwinian evolution "darkness is the basic tonality" (235). Interestingly, while Wells's own relationship with evolution has often been explored, his scientist-protagonist's relationship and understanding of Darwin's theory of natural selection has generally been overlooked. As a result, while Wells's own beliefs and views concerning evolution and natural selection are frequently applied to his work, his characters' individual relationships to evolution are often neglected. And yet, a lot can be discerned from the mad scientist's depicted problematic understanding of, and relationship to, evolutionary theory – a depiction that was clearly influenced by the numerous confounding views and interpretations of Darwin's theory in the nineteenth century.

One reason for the tumultuous impact of Darwin's work on the nineteenth century was its suggestion that evolution had no purpose or ultimate goal, operating instead in an unpredictable and seemingly random manner. Many Victorians felt dismay towards "the apparently random – and so, according to their lights, trivialized – energy that Darwin perceived in the natural world" (Beer 7). While Darwin's writing was a major catalyst to this general feeling of unease, the realization that humans were, in fact, no more important or significant than fellow organisms and lifeforms had been circulating for some time when Darwin published his work, and was echoed

by various authors and scientists of the period.[4] This sentiment of man's trivial and inconsequential influence in the grand scheme of the universe can clearly be felt in Darwin's *On the Origin of Species*:

> How fleeting are the wishes and efforts of man! how short his time! and consequently how poor will his products be, compared with those accumulated by nature during whole geological periods. Can we wonder, then, that nature's productions should be far "truer" in character than man's productions; that they should be infinitely better adapted to the most complex conditions of life, and should plainly bear the stamp of far higher workmanship? (503)

However, while many read evolution and natural selection as operating through random, blind chance, Darwin's theory was anything but random in its process. Darwin himself states that "natural selection is daily and hourly scrutinizing, throughout the world, every variation, even the slightest … silently and insensibly working … at the improvement of each organic being in relation to its organic and inorganic conditions of life" (504). In other words, evolution has reason and purpose, but not one that is centered around, controlled by, or necessarily meant to be understood by human beings. Evolution only seems "random" and "unpredictable" to the creatures who are subject to it – who do not have the distance and scope necessary to fully comprehend its process – a conundrum T.H. Huxley illustrates through the analogy of a death-watch beetle erroneously concluding, through its own subjective interpretation of its surroundings, that the purpose of the kitchen clock it inhabits is merely to tick.

[4] See *Faust to Strangelove*, p. 104

> He, listening to the monotonous 'tick! tick!' so exactly like his own, might arrive at the conclusion that the clock was itself a monstrous sort of death-watch, and that its final cause and purpose was to tick. How easy to point to the clear relation of the whole mechanism to the pendulum, to the fact that the one thing the clock did always and without intermission was to tick, and that all the rest of its phenomena were intermittent and subordinate to ticking! … the only death-watch who would be right would be the one who should maintain that the sole thing death-watches could be sure about was the nature of the clock-works and the way they move; and that the purpose of the clock lay wholly beyond the purview of beetle faculties. (*Genealogy of Animals* 111-12)

And yet, as Beer states, "One of the persistent impulses in interpreting evolutionary theory has been to domesticate it, to colonise it with human meaning, to bring man back to the centre of its intent" (7). While Wells's early fiction depicts mankind as being "at the mercy of a chaotic and uncaring cosmos" with "even the most successful evolutionary adaptations of the future world … unlikely to base themselves upon the dreams of progressive liberalism" (Williamson and Bear 45), his character of the mad scientist clearly falls victim to this problematic anthropocentric view of the world and to this attempted colonisation of evolution. He dangerously views himself as not only fully understanding the natural world around him, but as being in complete control of it. This, like the many aspects of his problematic subjectivity, proves to be one of his fatal flaws.

When we are introduced to Edward Prendick in Wells's *The Island of Dr. Moreau*, the world he inhabits seems dangerous and unpredictable. As Glendening states, the universe this evokes "is largely contingent. On three occasions Prendick finds himself adrift in a small boat caught in so many circumstances of currents and weather that its future is unpredictable" (575).

This underlying theme in the novel is also identified by Bergonzi who explains this depiction of the world fit the popular mindset that emerged following the publication of Darwin's theory of natural selection where "blind chance" was now seen to have substituted the "beneficent attentions of a Deity" (Bergonzi 100). A great counterexample to these new "Darwinian narratives" can be seen in Daniel Defoe's *Robinson Crusoe* (1719) where Crusoe's experience and fate are entirely explained through divine providence and presented as anything but random. Upon his arrival on the island where he will spend 28 years of his life, Crusoe promptly determines he "had so evidently, by uncommon wickedness, provoked the justice of God to lay me under uncommon strokes, and to deal with me in so vindictive a manner" (Defoe 76). In Defoe's narrative of protestant determinism, there is no room for the "blind chance" or the apparent randomness humans experience through Darwin's process of natural selection. Every event is a direct consequence or response to Crusoe's individual choices since "nothing can happen in the great circuit of His works, either without His knowledge or appointment" (Defoe 77). By contrast, through their depiction of a world now ruled by the laws of nature and natural selection, Wells's novels refuse to provide such easy justifications for the events experienced by their characters, providing no religious or moral explanation for their occurrence.

Moreau's island, where various animals are received in crates, carefully and deliberately introduced to the island, and where the gated house and man-made barracks are protected by an "elaborate locking-up" (*Moreau,* 92), is initially presented as a controlled and tamed environment, one where the scientist is dominant over nature. As such, the novel provides a literary depiction of the evolutionary analogy of the garden, a created space where the gardener

works against the process of natural selection to promote the traits he prefers.[5] As David Y. Hughes suggests, this metaphor of the garden was not only significant to Darwin and Huxley, but played a prominent role in Wells's scientific romances.[6] By virtue of being isolated from the rest of the world, Moreau's "garden" becomes his own, personal ecosystem, a smaller version of the process of natural selection where he gets to select which traits are passed on to future generations. Simultaneously, it also represents Moreau's distorted attempts at playing God through his creation of his own subjective garden of Eden. As Fayter suggests, *The Island of Dr. Moreau* can be read as "a horrifying anti-Bridgewater Treatise in which the beneficent God of natural theology is replaced by a cruel parody, a vivisectionist who serves as the evil god of evolutionary 'uplift'" (263). This reading of Moreau, shared by Haynes who describes Moreau as a "a parody of the Old Testament Creator and as an allegory for evolution itself" (*Faust to Strangelove* 155), depicts the mad scientist as an all-powerful and controlling force on his island.

And yet, Moreau's illusion of control is a false one. No matter how hard he works to control the nature that surrounds him, he ultimately fails. As Bergonzi states, "Moreau is not only a nightmarish caricature of the Almighty: he can also be seen as a hypostatized image of the pretensions of science" (106). Moreau's error is in assuming that by taking on the role of creator on the island – by constructing his biological "garden" and attempting to create life according to his own subjective vision – he can also take on the role of evolution itself. When Moreau states that the "study of nature makes a man at last as remorseless as Nature" (*Moreau* 128), he is not only commenting on his lack of remorse and feeling for the experimental subject, but also

[5] "The gardener suspends 'the state of nature' in favor of 'the state of art' […] In the novel Moreau is such a gardener, interfering with natural processes to create an artificial state." (Williamson and Bear 75)
[6] "In the scientific romances, the presiding metaphor is biological: a garden; the self-ordering garden of nature, with or without a niche for man therein. It is a metaphor as significant for Darwin and T.H. Huxley as for Wells: a scientific and didactic metaphor." (Hughes 48)

exposing his believed kinship with nature. Unfortunately, as T.H. Huxley explains in *Evolution and Ethics*, the man-made artificial garden and the process of evolution are always at odds. The garden allows man to redirect or counter the incessant influence of natural selection, but "the limits within which this mastery of man over nature can be maintained are narrow," and are entirely reliant on the "state of nature" remaining "approximately the same" (72). In other words, civilization's artificial garden – while allowing for a limited malleability – only grants humanity the illusion of control over nature.

This conflict between the artificial garden and biological nature is perfectly illustrated in the constant regression of Moreau's creations, "the stubborn beast-flesh grows day by day back again" (*Moreau* 129). It is also clearly shown in the constant inner struggle of the creatures inhabiting the island, as suggested through the grey creature's statement that "For every one the want that is bad" (*Moreau* 115), insinuating through his explanation of the Law of the Beast that the beast people must always fight against their inner desires. As Huxley states, "nature is always tending to reclaim that which her child, man, has borrowed from her and has arranged in combinations which are not those favoured by the general cosmic process" (*Evolution and Ethics* 70). As a result, any progress achieved by Moreau quickly deteriorates once he gives up on his creations and returns them to nature, emphasizing the impermanent quality of his creations. While some remnants of Moreau's imposed changes remain, such as the "dwindling shreds of humanity" Prendick sometimes notices in the Beast People once they have regressed to their previous animal form (*Moreau* 168), these changes are beyond Moreau's, or any human or animal, intention. While Moreau plays a part in establishing a set of "laws" for these creatures, he admits to turning them away "when I begin to feel the beast in them" (*Moreau* 130). This Law of the Beast, the legal system meant to control the inhabitants of his island, initially appears to

work but is quickly exposed as fragile through the Leopard-man's transgression and eventual attack (*Moreau* 142). Wells represents Moreau's refusal to spend the energy and resources required to maintain the progress he has achieved as equivalent to the gardener becoming complacent with his crops, allowing nature and evolution to take back control of what it "loaned" to Moreau. Without the deliberate and controlled influence and structure of the garden, Moreau's creatures can never live up to his goal of creating "a rational creature of my own" (*Moreau* 130).

This is, once again, reminiscent of Mary Shelley's *Frankenstein* where the mad scientist creates a rational creature but neglects to provide the energy and resources necessary for its education, moral or otherwise. "In a fit of enthusiastic madness I created a rational creature and was bound towards him to assure, as far as was in my power, his happiness and well-being" (Shelley 219). However, unlike the isolated Beast People of Moreau's island, the creature, by virtue of living in Germany amongst human society, finds a way to educate himself by observing the DeLacy family and attempting to live amongst them. As a result, while the creature's attempts to assimilate himself within human society ultimately fail, they still demonstrate the benefits of inhabiting the artificial "garden" of civilization. Despite countless setbacks and misfortunes, Frankenstein's creature does succeed in acquiring the knowledge made available through human civilization, an option not given to the Beast People who rely solely on Moreau.

As Glendenning states:

> Despite Moreau's assurance and self-control, the "green confusion" that reigns on the island ultimately represents, not just Prendick's perplexities, but the contingencies that overwhelm his host as well. Events in which chance colludes with Moreau's fallibility attest to his inability to exercise complete dominance over his experiments […] Like the

> world itself, the island is an imperfect laboratory, unable to contain the chaos inherent in any complex system subject to manifold variables. (589)

Of course, "complete dominance" when dealing with the natural and evolutionary process was impossible from the very beginning, especially when considering the size and scope of Moreau's endeavor. Despite his scientific background and expertise, or his own wishful thinking, the process of natural selection is something that Moreau, as a creature subject to evolution himself, will never have complete control over. Despite his attempts at playing God, Moreau is overlooking his own human and biological origins which prevent him from having absolute power and influence over his fellow organisms with whom he shares an evolutionary ancestry. With such delicate and marginal control over his garden, it is to be expected that things would fall apart, as is the case when he is fatally wounded by one of his own creations. Once nature has taken back control of the island, it does so in such a total and encompassing way that even Prendick finds himself undergoes a sort of degeneration after being forced to live amongst the Beast People. "I too must have undergone strange changes. My clothes hung about me in yellow rags, through whose rents showed the tanned skin. My hair grew long, and became matted together. I am told that even now my eyes have a strange brightness, a swift alertness of movement." (*Moreau* 168) Even after his return to London, he describes himself as having "caught something of the natural wildness of the Beast People" (*Moreau* 172), demonstrating the power of nature's influence, but also that this wildness is a product of nature itself, coming from evolution and its natural process, and therefore out of his control.

Interestingly, this sort of regression from a civilized to a more "natural" state also occurs in Wells's *The Invisible Man*. While believing his newly gained invisibility will grant him power and influence over others, Dr. Griffin finds himself wandering the streets "weary, cold, painful,

inexpressibly wretched" (*Invisible Man* 158). By admitting his "sole object was to get shelter from the snow, to get myself covered and warm; then I might hope to plan" (*Invisible Man* 158), Griffin describes a situation similar to that of an animal fighting against nature for its survival, constrained by basic and primal needs. Griffin's animalistic state resembles Jean-Jacques Rousseau's own conception of a natural man who's "desires never extend beyond his physical wants" (Rousseau 17), suggesting a sort of evolutionary regression. As a result, the isolation he experiences from the rest of society is similar to that experienced by Prendick who is left to fend for himself in the wilderness of Moreau's island, forced to degenerate alongside Moreau's creature to a pre-civilized "natural state." Of course, Griffin's isolation is self-imposed and exposes a fatal flaw in the mad scientist that is reminiscent of Dr. Moreau's. Instead of creating subordinate scientific subjects as Moreau does, Griffin "upgrades" himself through self-experimentation, giving himself the unusual physical trait of invisibility which he believes will grant him an edge over others. "I was invisible, and I was only just beginning to realise the extraordinary advantage my invisibility gave me." (*Invisible Man* 150) In his attempt to gain ultimate control over his fellow man, Griffin is also attempting to control the process of natural selection by self-selecting a trait that he believes will make him more "fit," elevating him above his peers. "You have only to think! And I, a shabby, poverty-struck, hemmed-in demonstrator, teaching fools in a provincial college, might suddenly become – this." (*Invisible Man* 137)

Unfortunately, just like Moreau, Griffin cannot control the process of evolution and is therefore incapable of accurately predicting how this newly acquired trait will serve him once applied in the real world. Like Huxley's death-watch Beetle in the kitchen clock, Griffin is limited in his understanding of the workings of the universe by his own limited experience of time, his own subjective perspective, and by biological and physical restrictions. Griffin's

mistake is a common one, the assumption that the evolutionary concept of the "survival of the fittest" somehow points to natural selection's inherent purpose – to create an objectively stronger, better creature. In truth, while evolutionary traits are passed on for a reason, that reason has little to do with individual human progress, but rather with an organism's ability to adapt to its current context and environment. Most importantly, this process cannot be purposefully controlled by those who are subject to it. Like Edward Prendick or Moreau's creatures, who fall victim to the power of nature once the man-made garden protecting them has crumbled, Griffin also finds himself regressing, or degenerating, to an animalistic state once he has successfully given himself a trait that separates and isolates him from society. Here again, the mad scientist's attempt to control the natural evolutionary process and to impose his will upon nature fails, to the detriment of the scientist.

Interestingly, while Wells's *The Time Machine* is much more overt in its use and application of Huxley's analogy of the garden and features a scientist-protagonist who demonstrates a considerable understanding of the concept, the time traveler's relationship to the evolutionary process remains a problematic one. Immediately after his arrival to the future, the time traveler states:

> We improve our favorite plants and animals – and how few they are – gradually by selective breeding; now a new and better peach, now a seedless grape, now a sweeter and larger flower, now a more convenient breed of cattle. We improve them gradually, because our ideals are vague and tentative, and our knowledge is very limited; because Nature, too, is shy and slow in our clumsy hands. (*Time Machine* 35)

This passage, noticeably reminiscent of Huxley's own depiction of humanity's relationship with natural selection, presents the time traveler as possessing a better grasp of evolutionary theory

and its implications than his Wellsian counterparts. However, due to his problematic subjective view, the traveler still struggles when attempting to apply this evolutionary theory onto the world he encounters. Unlike Moreau and Griffin, the time traveler does not share as a main objective the physical control of nature or his fellow man. Instead, his mistake stems from a hubristic belief that he can so quickly read and understand the future world he is exploring. For example, the time traveler, who has only been living amongst the Eloi for a few days, confidently declares there are no signs of infection or illness in the future. “The ideal of preventive medicine was attained. Diseases had been stamped out. I saw no evidence of any contagious diseases during all my stay.” (*Time Machine* 35-36) The time traveler provides no evidence for this claim and has provided no sign of possessing any kind of expertise on the subject, exposing this as yet another subjective interpretation of what he has personally witnessed.

In fact, the time traveler’s entire narrative consists of him explaining, and almost immediately disproving, the various theories and interpretations he forms based on little more than subjective observation he alone conducts. As he sets on his journey to the future, the time traveler expects to encounter a human race that has progressed and improved over time, “strange developments of humanity” and “wonderful advances upon our rudimentary civilization” (*Time Machine* 21), exposing here again an evolutionarily progressive and anthropocentric point of view. Even when describing man’s interaction with nature through the terms of Huxley’s garden analogy, he ends by stating that “In the end, wisely and carefully we shall readjust the balance of animal and vegetable life to suit our human needs” (35), demonstrating his belief that humans can gain complete control over nature. Upon his arrival, he is surprised to learn this assumption was wrong, but continues to incorrectly interpret the world around him, believing the Eloi inhabit a “communist utopia” (*Time Machine* 32). When the traveler finally admits to his own

uncertainty and ignorance, the scientist-protagonist is once again revealed as akin to Huxley's Death-Watch beetle, incapable of fully understanding and accurately defining his surroundings due to his own subjective and biological limitations. Of course, while the traveler's final theory appears to be his most plausible (*Time Traveler* 57), the reader is given no way of confirming whether he has once again come to an incorrect conclusion. In fact, the traveler's ultimate failure and disappearance following his second voyage to the future unfortunately suggests his theory may have once again been wrong. While the time traveler, unlike Moreau and Griffin, may not be willingly inducing harm, his incorrect subjective interpretations and his problematic application of evolutionary theory do lead to his harming himself and those around him, making him dangerous, nonetheless.

Yet, this attempted appropriation and controlling of the process of natural selection is not the Wellsian scientist-protagonist's only problematic application of Darwin's theory of natural selection. Another is rooted in the belief that the human species is not only superior to other creatures, but also concretely and significantly distinct from them. The "doctrine of unlimited progress," which assumed human evolution inevitably led to the progress of the species, was debunked by Malthus's *Essay on the Principle of Population* (1798). As Williamson and Bear explain, this disillusionment with the anthropocentric belief in purposeful evolutionary progress trickled down, from the works of Darwin and Wallace, to those of T.H. Huxley, to Wells's own bleak depiction of a ruthless natural selection in *The Island of Dr. Moreau* (25). As a student of Huxley and a biologist himself, Wells viewed mankind "not as the completed achievement of creation, but simply as one species evolving in competition with others" (Williamson and Bear 56). From the Beast People who Prendick so easily misperceives as humans, to the Eloi species who "had kept too much of the human form" (*Time Machine* 73), Wells's novels not only negate

this idea of "unlimited progress," but also demonstrate and play with the uncanny proximity between the human and the animal species. This is something Darwin himself argues for in *The Descent of Man*, where he states, "the time will before long come, when it will be thought wonderful that naturalists, who were well acquainted with the comparative structure and development of man, and other mammals, should have believed that each was the work of a separate creation" (796). As participants in the process of natural selection and, like all organisms, descendants of previous life forms, humans have more in common with animals than they often like to admit.

Interestingly, while Wells's novels illustrate this close relationship across species, his early scientist-protagonist seems to be oblivious to it. In *The Island of Dr. Moreau*, Moreau is obsessed with his goal of removing the "stubborn beast-flesh" (129) and of "burn[ing] out all the animal" (130). Clearly then, for Moreau, human nature is defined by its lack of animal properties. To create man, one must eliminate the animal in its entirety. And yet, as Bergonzi suggests, "Wells's book shows us a world in which animals can be changed into men at the command of the quasi-divine scientist, and then, after his power has been removed, can be seen to regress to a distorted version of their original shape. There is no essential difference between man and animal" (111). This, in part, explains Moreau's inability to accomplish his goal. The distinction he subjectively perceives between man and animal does not exist, meaning the dichotomies he believes himself to be working with are actually one and the same – both the animals and men inhabiting the island are variations of the same biological ancestor. As Moreau attempts to enforce his perceived distinction between the species, his error only becomes more obvious. As Huntington states, while "the humans on the island hold themselves aloof from the beast men, the distinction they maintain is always in danger of being blurred" (64). Referring to

the Law of the Beast, Huntington explains that while it may create the illusion of distinction between men and beast, the repeated breaking of the enforced laws by the island's human inhabitants – from their consumption of meat to their own violent behavior – only serves to prove their underlying similarities (65).

Moreau's continued belief in this non-existent distinction, despite his continual failure, is ultimately rooted in his need for control over nature and over others. The confusion and blurring of the animal and the human leads to "the collapse of all claim that a biological difference earns a moral position" (Huntington 67). In other words, "it is most easy to justify domination if you can prove separation and inferiority" (Huntington 11). While Moreau is incapable of proving the "separation and inferiority" of the animals he is experimenting on, his continued belief in this distinction also grants him the appearance of control and power over others. Unfortunately, similarly to the illusion of control granted by the man-made garden, this illusion eventually crumbles, resulting in Moreau's downfall.

Alternatively, while *The Invisible Man* has almost no animal presence, the novel still depicts a few instances in which Griffin falls victim to this same assumption of "separation and inferiority." In his only interaction with an animal subject, Griffin first tests his new discovery on a cat he finds wandering near his lodgings. This interaction reveals a dissonance between Griffin's perception of animals and of himself. When he administers his experimental drug to the cat, he notes the animal "miaowled dismally" and was "insensible" (*Invisible Man* 142, 143), but fails to consider what the animal's reaction might mean. Once having administered the drug to himself, however, he admits he "had not expected the suffering" and "understood now how it was the cat had howled until I chloroformed it" (147). It is only once he himself is suffering a "night of racking anguish, sickness and fainting" (147), that he understands and reflects on the

cat's obvious pain. While Griffin clearly understands – based on the fact that he uses the animal as a test subject – that there exists an underlying relationship between cats and humans, he still fails to identify the cat's discomfort and correlate it with his own eventual reaction, failing to predict the painful outcome once he administers the same drug to himself. Griffin's failure to consider the similarities and proximity between himself and the cat make sense when considering Huntington's earlier statement that domination is most easily justified when you can prove separation and inferiority. If Griffin views and treats the cat as an object, if he believes himself to be entirely distinct from and superior to the animal, his domination and abuse of it can be justified. Similarly, however, if Griffin views and treats the cat as other, it is also impossible for him to draw the correct conclusions necessary for his experimentation.

Griffin's problematic othering of the cat also becomes evident when considering Victorian society's relationship to pets and animals. As Brenda Ayres explains, Darwin's work had destabilized the boundaries that had existed between what was considered the "animal" and the "human" (2), resulting in muddled and conflicting relationships with, and perceptions of, other species. This complicated relationship was amplified by the fact that "Londoners of the nineteenth century lived in a veritable animal sensorium" (Mangum 15). While animals were used as laborers, food, and experimental subjects for vivisection, Teresa Mangum emphasizes the nineteenth century's alternatingly increasing affection for its domestic pets, which led to an increase in mourning practices for pets and in pet cemeteries (24). The white cat Griffin experiments on, who is later revealed to be his neighbors own house pet (*Invisible Man* 142), exposes Griffin's unsympathetic and objectifying view through the opposing ways the animal is presented as both a subjective domestic cat and an objective experimental subject. By making the cat invisible and dismissing it into the unknown, Griffin makes it impossible for the landlady to

mourn her pet. Through the animal's becoming invisible to its owner and to the world, Griffin cements its objectification as a scientific tool to be discarded once used, as opposed to a beloved and subjective family member. Additionally, building on Ivan Kreilkamp's argument that Victorian pets and petkeeping represented "the constitution of the home as a sentimentally charged space," proving the home's domesticity (2), through his erasure of the old lady's pet, Griffin dismantles the domesticity of her home. In doing so, he destroys her domestic space, simultaneously exposing his own lack of sympathy and sentimentality.

This mentality of distinctness, superiority, and othering is demonstrated by Griffin throughout the entirety of the novel, dictating all of his social interactions. Griffin continually looks down upon his fellow man: he blames his own father, whom he robbed, for his death, referring to his "foolish sentimentality" (*Invisible Man* 140); he views Mr. Marvel, whom he brings on as a sort of assistant, as "stupid" and a "poor tool" (*Invisible Man* 104); and he labels the townspeople whom he terrorizes as "those fools down there" (*Invisible Man* 87). As these instances make clear, Griffin continually seeks to separate and distance himself from humanity, subjectively elevating himself above others, which allows him to justify his questionable actions and what the narrator describes as his "smiting and overthrowing, for the mere satisfaction of it" (101). Considered in this light, the so-called Reign of Terror Griffin attempts to enforce at the end of the novel parallels Moreau's attempt to control and manipulate the evolutionary ecosystem he creates on his island. Griffin's self-distancing from humanity is only reinforced by Kemp's later statement to the police regarding Griffin. "'The man's become inhuman, I tell you', said Kemp. 'I am as sure he will establish a reign of terror – so soon as he has got over the emotions of this escape – as I am sure I am talking to you. He has cut himself off from his kind. His blood be upon his own head.'" (*Invisible Man* 181) While Moreau uses controlled and

calculated violence in order to dominate and impose his will onto his scientific creations, Griffin uses chaotic and anarchic acts of violence in an attempt to elevate himself above others through physical scientific means and through his own subjective judgements of others. As Kemp notes, this attempt to elevate himself is also an attempt to reject and cut himself off from the human race, as if creating his own "superior" species. In both cases, however, the scientist is attempting to control biological traits and processes he holds no control over, and ultimately fails.

The time traveler, on the other hand, seems more willing to accept his evolutionary relationship to the creatures he encounters. And yet, while he immediately identifies with the Eloi whom he describes as having "kept too much of the human form not to claim my sympathy" (*Time Machine* 73), the time traveler is unable to view the Morlock under the same terms. His partiality for the Eloi leads to his incorrect assumption that the Morlock are a separate and distinct species instead of another descendent. Wells's narrative, however, hints at the blurred distinctions between its species as soon as the Traveler arrives in the future and discovers the marble sphinx (*Time Machine* 23). As Huntington states, the sphinx "represents a literal combination of human and animal: woman and lion. We ask whether Weena is a woman or not, whether a Morlock is beast or not; here in the sphinx we have a creature who is both" (45). As the traveler discovers throughout the narrative, the sphinx comes to represent not only the convoluted relationship between the Eloi and the Morlock, but also his own complex relationship to them as well. While the traveler chooses to identify with the Eloi, his own actions often suggest a closer resemblance to the Morlock, from his cravings for meat, "I'm starving for a bit of meat" (*Time Machine* 15), to his numerous aggressive outbursts and tendencies.[7] While the time traveler is eventually able to come to terms with his evolutionary relationship to both future

[7] See Huntington, p. 50

species, it is his erroneous certainty of his distinct separation from the Morlock that blinds his judgement. Here again, the Wellsian scientist-protagonist is held back by his inability to accept the close evolutionary bonds between himself and other earthly life-forms.

Another key aspect of evolutionary theory that Wells's mad scientists overlook is the distinction between nature and mankind's constructed civilization, or his assumption that much of the progress human beings have experienced as a result of civilization and society is the product of natural selection. This misinterpretation is the exact subject of Huxley's famous lecture *Evolution and Ethics,* in which he denounces the claim that nature possesses or demonstrates any ethical or moral considerations. According to Huxley, the "ethical process is in opposition to the principle of the cosmic process, and tends to the suppression of the qualities best fitted for success in that struggle" (*Evolution and Ethics* 89). In other words, Huxley viewed the process of natural selection and civilization's conception of ethics as two opposite forces constantly struggling for dominance. This "ethical process" exists within human society as a means of creating "conditions more favourable than those of nature," allowing humans to live comfortable lives without the constant struggle for survival other animals are forced to endure (*Evolution and Ethics* 101). In fact, many of the very actions that might increase one's "fitness" in nature – such as acts of violence, theft, or murder – are punished and undesirable within a society. As a result, the human concept of "just deserts" is exposed as a societal construct and not a natural one. As Huxley states, "If there is one thing plainer than another, it is that neither the pleasures nor the pains of life, in the merely animal world, are distributed according to desert; for it is admittedly impossible for the lower orders of sentient beings to deserve either the one or the other" (*Evolution and Ethics* 116). Humans cannot escape this unethical cruelty of the natural

process and are destined to always struggle against it in order to promote the progress of an ethical society where as many as possible can live comfortably.

As evidenced by his own writing, particularly his essay *Evolution and Ethics*, Wells agreed with Huxley and also argued against the social Darwinists of the period. Wells distinguishes between the "natural man," produced through the process of natural selection, "the culminating ape, and a type of animal more obstinately unchangeable than any other living creature," and the "artificial man" produced through education and acquired traits that emerge in society, "the highly plastic creature of tradition, suggestion, and reasoned thought" (*Human Evolution* 230). According to Wells, then, "Morality" implies keeping the "natural man" in check, while promoting the progress and development of the civilized "artificial man." While Wells was a clear proponent of this understanding of evolution and ethics, his mad scientists are not. In a quote that demonstrates Wells's own disapproval of the actions of his mad scientist, he states "sin is the conflict of the two factors [natural man and artificial man] – as I have tried to convey in my *Island of Dr. Moreau*" (*Human Evolution* 230). While Wells does not further elaborate on this connection to his novel, its truth is quite evident when taking a closer look at Moreau's methodology and his definition of what humanity entails. When describing his experiments to Prendick, Moreau explains his disappointment at not successfully creating a human-creature that is "rational." "And least satisfactory of all is something that I cannot touch, somewhere – I cannot determine where – in the seat of the emotions. Cravings, instincts, desires that harm humanity, a strange hidden reservoir to burst forth suddenly and inundate the whole being of the creature with anger, hate, or fear." (*Moreau* 130) However, these traits, which Moreau views as ultimate proof of his successfully creating a being akin to man, are acquired traits that emerge within society. The absence of anger, hate, or fear in civilized man is not

passed through natural selection and cannot be biologically or surgically "extracted" from a living creature. Moreau's inability to make this distinction prevents him from seeing the impossibility of his endeavor. Additionally, it stops him from achieving it through other means.

Had Moreau attempted to adequately educate the creatures on his island and to re-create a society that encouraged ethical and intellectual development, he might have seen the progress he desperately seeks, just as his predecessor Victor Frankenstein, through sympathetic education and socialization, might have created a less destructive creature. Instead, Moreau creates creature after creature, discarding them as soon as the apparent flaws he subjectively perceives are exposed. The society the creatures do form, hidden in the forest and constantly terrified of retribution from their creator, leaves little opportunity for rational and ethical growth or progress. Once again, when comparing Moreau to Crusoe, a significant contrast emerges. Despite the absence of evolutionary discourse in *Robinson Crusoe,* the novel does have some important overlap with *The Island of Dr. Moreau*, especially in its depiction of an isolated individual attempting to create his own civilization on a deserted island. Unlike Moreau, however, Crusoe opts to teach the subjects he seeks to govern. From his teaching his pet parrot Poll how to speak, to his religious and moral education of his rescued companion Friday, Crusoe's successful shaping of his civilization is done through the "artificial" societal means of education. This might explain why Crusoe emerges "very rich in subjects…like a king… my people were perfectly subjected – I was absolutely lord and lawgiver" (Defoe 207), while Moreau meets his demise at the hands of the very creatures he is attempting to subjugate.

Griffin makes a similar error in assuming that the rules of nature alone will guarantee him success against the ethical, social man. As Williamson and Bear state, "*The Invisible Man* is a parable of man's inner conflict: of animal man against social man. Griffin … is the utter

individualist, the primitive animal" (83). When focusing on the advantage he believes his invisibility will grant him, Griffin overlooks the many elements of human society that counter the gruesome and unethical requirements of nature. While invisibility makes it easier for Griffin to hide from, attack, or even murder others, the "visible" men and women he encounters are granted protection through their cooperation and the legal system their society has put into place. While killing his competition might have gotten him ahead in nature, the many crimes Griffin commits immediately single him out as an outlaw and a danger to society. As a result, the evolutionary advantages related to his invisibility change when applied to a societal context, and Griffin is forced to hide from the police and the amassing mob who cooperatively hunt him down. While there are possibly advantages to be gained from invisibility in a civilized society, Griffin errs in assuming that the advantages are those associated with the violence, aggression, and cruelty of natural selection, instead of the qualities defined by the ethical cooperation of social man. It is significant, then, that Wells represents Griffin as ultimately defeated by an angry mob of civilians, an assemblage of everyday members of society. Wells's novel depicts the collective rejection of an individual who directly defies Huxley's "ethical process," a scientific genius who famously attempts to use the unethical laws of nature to gain advantage over his fellow citizens. Griffin's defeat does not only symbolize the villagers' victory, but also the victory of social man over natural man.

Alternatively, the time traveler from *The Time Machine* does not share the same beliefs regarding the role of natural selection within human society. Whatever misconceptions he might initially hold are quickly relinquished once he is confronted with the future world he discovers. While it may seem tempting to applaud the time traveler on his eventual ability to accept what his fellow scientist-protagonists overlook – the distinction between the natural world and the

artificial, civilized one – this achievement loses some of its luster when we consider the circumstances under which it occurs. By travelling so far into the future, the traveler witnesses the direct result of human evolution and is granted a perfect example of Huxley's metaphor of the garden. As Hughes explains, the time traveler stumbles upon the results of "a world-wide preventive equilibrium devised by the human intellect in a former age," where the "Eloi and Morlocks are entangled in an evolutionary mechanism that, ironically, is the residual force in the garden that man built hoping to stop the evolutionary clock" (59). Building on Hughes argument, this attempt by humanity to curtail the effects of evolution ultimately fails, the time traveler eventually arrives at the conclusion that the Eloi and Morlock emerged as the result of a human society where "the dream of the human intellect" had "committed suicide" (*Time Machine* 90) and where society had given up on trying to counter "change, danger, and trouble" (*Time Machine* 91). As Huxley argued, the fight between nature and social man is never-ending because nature itself is relentless, always trying to regain control, something the time traveler also recognizes. "But that perfect state had lacked one thing even for mechanical perfection – absolute permanency" (*Time Machine* 91).

The time traveler's final interpretation suggests he leaves the future having accepted the relationship between the process of natural selection and the society man creates to counter it. While this seems like a healthy departure from Moreau and Griffin, it must be acknowledged that the traveler, who only means to encounter the future as an observer, is not conducting the same type of experimentation. Unlike Moreau and Griffin whose scientific practice holds a particular goal, the traveler enters the future as a curious observer meaning to report his findings there, something he struggles with throughout the entire novel. Considering the passive role the traveler intends to occupy throughout the narrative, as well as the fact that he is conveniently dropped

into a perfect representation of human evolution and Huxley's garden analogy, his slow arrival at an eventual understanding appears mediocre at best. From constantly interfering with the lives of the subjects he is observing, to repeatedly coming to incorrect conclusions, the traveler very clumsily and tenuously lands on a better understanding of the dynamics of evolution and civilization during his own time period than his fellow Wellsian scientist. While the more positive and ethical aspects of this depiction of the scientist should not be ignored, the traveler's fumbling, subjective confusion should not be presented as an ideal, or even productive, depiction of scientific research and experimentation.

On the surface, *The War of the Worlds* appears, once again, to stand at odds with Wells's other early novels. As mentioned in the previous chapter, its scientists remain anonymous and offer a healthy alternative to the egocentric, problematic Wellsian mad scientist. However, while the novel offers no human depiction of unethical science, the alien invaders provide an unusual stand-in for the mad scientist role. The "efficient, amoral, technological power" (*Discoverer of the Future* 74) of the aliens represent what Sussman describes as "the potential for cruelty in the purely scientific intellect" (179). As the novel explains, as a result of evolving into what has essentially become a brain without a body, these creatures become "a mere selfish intelligence, without any of the emotional substratum of the human being" (*War of the Worlds* 104). While the aliens are initially presented as a species completely distinct from the humans they invade, they can also be seen as the possible future of "superevolved humans" (Fayter 271), representing the impact of this "selfish intelligence" in science, and emphasizing Suvin's statement that the aliens of science fiction are "a mirror to man just as the differing country is a mirror for his world" (117). Similarly, the Martian invaders also represent Jameson's conception of science fiction as a genre used to "defamiliarize and restructure our experience of our own present"

(216). As such, the aliens mirror the three evolutionary misconceptions of the Wellsian mad scientist through the novel's creation of a future lens that allows us to better witness and understand our present relationships to science, scientific experimentation, and evolution.

To start, the aliens' eventual demise underscores the scientist's inability to control the course of evolution and of nature. As Bergonzi states, the Martians, who are incredibly advanced and overwhelmingly powerful "embody the kind of 'superman' ideal that both Moreau and Griffin aspired to" (134). And yet, despite these great advances, the aliens are "irrevocably doomed" (*War of the Worlds* 137) from their very arrival on earth. While the aliens aimed to improve their circumstances and their odds of survival through science and technology, the absence of bacteria on mars results in their having no way of preparing for the attack of our "microscopic allies" (*War of the Worlds* 137). As Fayter explains, "for all their terrifyingly advanced weaponry, the Martians are but, like us, the product of Darwinian selection, vulnerable to lowly bacteria to which they have never been exposed" (271). In effect, this proves that had Moreau and Griffin reached their desired goals, they still would have remained at the mercy of nature and natural selection, just as the incredibly advanced aliens discovered when they perished on earth.

This evolutionary weakness in the alien species also mirrors the second misconception of the Wellsian scientist, which is his belief in the absolute distinction of humans from, or his attempt to fully separate himself from, other animal species. And yet, as Williamson and Bear suggest, the alien invaders in Wells's novel not only represent a threat against humanity, but they also hint at a "final" or potentially future stage of human evolution (61). Described as being "descended from beings not unlike ourselves, by gradual development of brain and hands" (*War of the Worlds* 104), the aliens are also a product of natural selection, possessing the evolutionary

traits that fit their respective native environment. This suggests the existence of an evolutionary similarity between the aliens and the human race, however small it may be. This is reinforced by Darwin's own argument that:

> Man is liable to receive from the lower animals, and to communicate to them, certain diseases, as hydrophobia, variola, the glanders, etc,; and this fact proves the close similarity of their tissues and blood, both in minute structure and composition, far more plainly than does their comparison under the best microscope, or by the aid of the best chemical analysis. (784)

The aliens' vulnerability to germs passed on by the human race suggests some kind of evolutionary and biological connection between the two very different species. Regardless of how small this similarity may be, if an alien species from another planet can possess this kind of biological relationship with the human species, it seems illogical to assume that humans would somehow be completely and distinctly different or superior to the living creatures that inhabit their own planet. This potential biological connection to the human species also hints at the possibility that these cruel and overly rational Martians may represent the evolutionary future of mankind, illustrating the risks in following in their footsteps.

Finally, the ruthless and calculated behavior and actions of the alien invaders demonstrate what Huntington terms "the ethical horror of natural evolutionary behavior," forcing us to "reconsider the relations that can exist across species lines" (63). While providing an important reversal of perspectives between the gaze of the coloniser and that of the colonised (Rieder 7), the Martians, who show no sympathy or consideration for the human race, are also a perfect representation of a society that chooses to live by the cruel rules of nature to survive instead of

creating an ethical civilization.[8] Through the horrific consequences of such "natural destructiveness," Huxley's call for an ethical, socialized man is proven to be a much more desirable alternative.

Whether attempting to create animal-human hybrids, visiting future earthly species, experimenting with human invisibility, or even invading an unfamiliar planet, Wells's early scientific romances illustrate the crucial importance of understanding the theory of natural selection when conducting scientific experimentation. Often fueled by the scientist's subjective conviction in his own superiority or that of his species, the various errors in understanding and interpretation of his scientist-protagonists unfailingly stand in the way of successful and productive scientific experimentation and discovery. As seen through the various errors and defeats of the mad scientist, these delusions of grandeur regarding their own influence over nature and their standing amongst species and organisms, as well as their misunderstanding of the importance of ethical civilization and cooperation, hinders their progress in a way that, after having considered the evolutionary conversation of the period, seems needless and avoidable. In the case of Moreau, his misunderstanding and misapplication of Darwin's theory of natural selection reveals his endeavors to be illogical and unattainable. For Griffin, while he manages to attain the result he seeks, his problematic relationship to his fellow creatures blinds him from the potential real-life benefits of such an amazing discovery. Even the time traveler, whose motives and intentions are much more social and constructive, is shown to be held back and restricted by his problematic understanding of evolution and man's relationship to it. Finally, by demonstrating that these natural and evolutionary laws and consequences also apply to the

[8] "It is this intelligent denial of civilization that constitutes the real problem of the Martians […] a pure natural destructiveness without an ethical dimension" (Huntington 81)

superior and much more technologically advanced Martian invaders from *The War of the Worlds,* Wells demonstrates that the failure of the mad scientist is not caused by a lack of strength, power, or evolutionary standing, but rather from a delusional misinterpretation of the role and function of evolution itself. This results in the Wellsian scientist-protagonist's belief that the natural and evolutionary processes can be controlled, manipulated, and dominated. Through his depiction of the mad scientist and his problematic relationship to the works of Darwin, Huxley, and the concept of natural selection, Wells demonstrates the dangers of scientific practice characterized by an anthropocentric and subjective understanding of human evolution that ignores man's own ecological constitution and his biological relationship to nature, his fellow man, and his fellow organisms.

Chapter 3:

"A Sense of Dethronement": The Mad Scientist, Victorian Society, and the Experimental Subject in H.G. Wells

While the Victorian scientific community often viewed itself as being aligned with "moral excellence," literature such as H.G. Wells's scientific romances created a space within which this alignment could be questioned and reconsidered (DeWitt 2), whether that be through the exploration of the figure of the scientist, through the exploration of the scientific community as a whole, or through the exploration of the general public's relationship to either. While Wells's depictions of unethical, dangerous scientist-protagonists illustrates the perils associated with this type of mad science, they also suggest a questioning of the basic ideals which created and shaped the scientific community and nineteenth-century scientific discourse itself. Through his nuanced and ambiguous portrayal of unethical nineteenth-century scientists, an exclusionary and status-obsessed scientific community, and a late-Victorian public enthusiastically suspicious of science, Wells's early scientific romances illustrate that the threat of "mad" and unethical science comes as the result of a society unable to engage in productive scientific discourse. While Wells never vindicates the figure of the mad scientist, this character reveals that the ethical burden should also be placed on the social conditions and cultural anxieties that support and foster this eccentric figure's emergence within society. In doing so, Wells's novels challenge nineteenth-century definitions of science and scientific community, while simultaneously encouraging readers to reimagine governing scientific methodologies and philosophies as more inclusive, unbiased, and socially accountable.

Wells's *The Island of Dr. Moreau* – through its depiction of the stigma and controversy surrounding the experimental practice of vivisection – provides an interesting exploration of the

scientist's relationship to these various participants of nineteenth-century scientific discourse. Vivisection, defined in the Oxford English Dictionary as "the action of cutting or dissecting some part of a living organism," or more specifically, "the action or practice of performing dissection, or other painful experiment, upon living animals as a method of physiological or pathological study" ("Vivisection") was an established scientific practice across Europe by the nineteenth century. However, debate around the issue gained momentum in England in 1875 following an investigation by an appointed Royal Commission questioning the ethics of animal experimentation (DeWitt 129). The resulting passage of The Cruelty to Animals Act required that all scientists obtain special licenses and certificates to conduct experiments on animals. The bill, viewed as too lenient by anti-vivisectionist and too restrictive by the scientific community, resulted in increased animosity between advocates from both sides (130). The central claim of anti-vivisectionists was that this type of animal experimentation "degraded" the moral character of the scientific practitioner, endangering the morals of the scientific community and British society more broadly (DeWitt 127).

Interestingly, as Rob Boddice explains, the "dominant note of concern was not for the plight of animals, or for the morality of mad scientists, but for the character of the nation. England, so the argument went, was under threat from the importation of Continental, specifically German, scientific methods that paid little or no regard to suffering" (54). This suspicion towards German science and its methods is reflected in nineteenth-century literary depictions of mad scientists trained in Germany – from Mary Shelley's Victor Frankenstein whose formative education and training occurs at the University of Ingolstadt, to Richard Marsh's mad scientist Cyril Wentworth who is trained under the renowned chemist Professor Ehrenberg at Heidelberg University in *A Spoiler of Men* (1905). The most prominent voice

against vivisection, social activist and writer Frances Power Cobbe, argued against what she described as the scientist's cruelty and "indifference to suffering," particularly physiologists who "understand the matter to a nicety, and have the most perfect acquaintance with every pain which they cause" (Cobbe 7). Cobbe's prolific pamphlets and publications opposed the period's usual rationalization that justified the pain and suffering caused by vivisection as the necessary societal cost for scientific advancement and the betterment of the human condition. Cobbe, by contrast, questioned how those believing in Darwinian evolution could simultaneously perform such torturous acts on creatures viewed as sharing human biological ancestry. In an 1884 pamphlet entitled *The Moral Aspects of Vivisection*, Cobbe states:

> Truly this mournful spectacle of the perpetuation of cruelty by those who best understand what is cruel, and of the contemptuous disregard of the claims of the brutes by those who have taught us that the brutes are only undeveloped men, is one to fill us with sorrowful forebodings for that future of our race which, from other quarters, seems to promise so fairly. (9)

Alternatively, while a large portion of the British public joined Cobbe in criticizing what they viewed as cruel and horrific scientific experiments, scientists and physiologists responded with criticism of their own. They pointed to the various other ways animals were made to suffer in human society – from hunting and farming, to butchery for meat and violent deaths at the hands of nature itself – in order to challenge anti-vivisectionists for the narrow focus of their lamenting (Otis 33). According to the Victorian scientific community, "real compassion meant looking beyond animal suffering, overcoming one's emotions through force of reason"; those opposing attempts to advance human knowledge were figured as "ignorant and hostile to science" (34). Using rhetoric rooted in the period's emerging concept of scientific objectivity,

Victorian men of science represented sympathetic reactions as requiring "measured judgement" (Boddice 138). As Boddice explains, the "instinctive or habitual sympathies of others had to be critiqued as false, egocentric, and ultimately of limited or no benefit to society" (138). These scientists instead focused on the importance of desired outcomes, the elimination of pain and suffering, and the greater good.

Calling attention to their own specialized training and knowledge, and viewing themselves as the most qualified to evaluate experimental practices, early physiologists and scientists practicing vivisection argued that protesters, who were primarily women typically associated with the private sphere, lacked the qualifications to engage in the public debates of science (Otis 128). As Anne DeWitt explains, while debate surrounding the practice of vivisection intensified from the 1870s to the turn of the century, the arguments themselves remained "remarkably consistent" (130), in part because both sides were using entirely different and irreconcilable rhetoric (Willis 223). By the time Wells began his writing career, British readers were familiar with popular debates surrounding vivisection and the figure of the scientist. Moreover, numerous novels had already been published depicting the figure of the scientist as "morally stunted, emotionally cold, and a dangerous virtuoso of cruel arts" (Boddice 58). A notable example is Wilkie Collins's *Heart and Science* (1883), which famously draws on Victorian fears of human experimentation and takes a strong stance against the practice of vivisection. Alternatively, as a trained member of the scientific community who did not fully oppose the practice of vivisection, but who nonetheless also lived as an author and teacher in the heart of London during the peak of the controversy, Wells provides a much more nuanced literary exploration of the issue and its ethical contours.

As suggested by Willis, Wells's *The Island of Dr. Moreau* initially depicts Moreau's experimentation through the lens of the anti-vivisectionist (219). Through the limited perspective of Prendick, the reader is only allowed troubling glimpses into Moreau's experimentation by way of the puma's cries of pain, "such an exquisite expression of suffering … It was as if all the pain in the world has found a voice" (*Moreau* 97), and through Prendick's graphic encounter with the vivisected puma, "bound painfully upon a framework, scarred, red, and bandaged" (107). Prendick's initial reaction to Moreau's experimentation, his assumption that Moreau must be experimenting on human beings, and his fear of being next on Moreau's cutting board, furthers this connection to anti-vivisection rhetoric in its assumption that practitioners of vivisection might eventually move up to human experimental subjects, a fear that became prominently featured in the period's literature.[9]

However, Moreau's experimentation is depicted as problematic because of the way he uses vivisection, and not solely for his use of it. As demonstrated in the previous chapters, Moreau's obsessive need for control, his selfish secrecy, and his problematic subjectivity suggest he has no wish to share his results with the scientific community, an important element of any scientific experimentation. Like Griffin and the time traveler, he selfishly holds on to his knowledge preventing any kind of accountability from others or the possibility of replication. Moreau's motivation, as explored in the previous chapters, is rooted in self-interest, having little to do with the greater good, the betterment of the human condition, or any of the moral justifications voiced by the scientific community when defending the practice of vivisection. While vivisection did require that sympathetic pain in the laboratory be "shut off, deferred in the name of sympathy for humanity," as Boddice states, "this was not at the expense of sympathy for

[9] See Vint, p. 92

pain in general or in the abstract" (Boddice 61). As with scientific objectivity more generally, the emotional and sympathetic distance the scientific community advocated for when performing vivisection was meant to serve as a tool or methodology to improve scientific practice and accuracy, not a universal set of values or ideology to live by. As a result, Moreau seems to mirror the exact fears of the anti-vivisection argument, depicting a self-interested, unsympathetic, amoral scientist performing cruel, torturous experiments free from societal restraints. In effect, this depiction would have been a troubling one for both sides of the debate since professional scientists would have read Moreau's perversion of their professional and ethical experimental standards as horrific, unscientific, and as playing directly into anti-vivisection rhetoric.

To make matters worse, the outcome of Moreau's experiment brings into question the very value and purpose of vivisection as a practice. As Williamson and Bear explain, "Moreau forces a sort of progress upon his island, but the changes he engineers are undesired, pointless, and temporary" (79). The question of whether the practice of vivisection resulted in actual significant and beneficial advances was frequently raised by anti-vivisectors like Frances Power Cobbe, and is raised by Prendick himself when he tells Moreau that the "only thing that could excuse vivisection to me would be some application" (*Moreau* 126). Without any kind of beneficial outcome or application to Moreau's experimentation, *The Island of Dr. Moreau* can easily be read as a condemnation of the practice of vivisection.

And yet, Wells's novel offers a much more complex depiction of the scientific vivisector. According to Anne Stiles, "despite his shocking emotional detachment, Moreau never becomes a one-dimensional caricature, unlike the evil geniuses of some lesser Victorian fiction" (140). The depiction of Moreau within the novel takes a turn when Prendick is reminded of his previous encounter with the name "Moreau" on an anti-vivisection pamphlet a decade earlier. Through his

recounting of how the physiologist was "howled out of the country" (*Moreau* 94), the reader is granted a more sympathetic view of the scientist-protagonist. Described by Prendick as a "prominent and masterful physiologist," (93) he is said to have been "known to be doing valuable work" when "suddenly his career was closed" due to "sensational exposures" in a "gruesome pamphlet" (94). Prendick's description of the "accident (if it was an accident)" (94) that led to Moreau's exile, while not entirely absolving him of guilt, does suggest the reader should sympathize, to a certain extent, with the vivisector. Prendick's own belief that "the tepid support of his fellow-investigators and his desertion by the great body of scientific workers was a shameful thing" (94) furthers this point.

This sympathetic glimpse into Moreau's past suggests that his exile may have occurred due to the scientific community's inability to protect or defend the scientist against public outrage, ultimately leading to their discarding him as a liability. Moreau's practice of vivisection would not have been unique or unusual during the nineteenth century and, until his experiments were exposed to the public, the scientific community voiced no issue with his work. As Willis suggests, "Moreau's expulsion from London comes not as a direct consequence of his scientific method or even of his moral indifference but from his delivery of ammunition to the enemy" (214). Admittedly, this very "delivery of ammunition" on Moreau's part comes as the result of a secrecy and resistance to the public that promotes and allows for this type of "sensational exposure" in journalism. By depicting what Otis terms "the ravages of science unchecked," while also caricaturing "obsessed anti-vivisectionists" (47), *The Island of Dr. Moreau* refuses to lay the entirety of the blame on one side. Instead, by offering this multifaceted depiction of the vivisection debate, Wells offers an ambivalent portrayal of the vivisector that holds both sides of the debate accountable. Through his depiction of the mad scientist, Wells asks the reader to

reconsider the role of the scientist, the scientific community, and of society at large within scientific discourse and experimentation.

Consequently, *The Island of Dr. Moreau* criticizes a scientific community that "refuses to bend either to genuine public concerns or those of its own members who fail to conform" (Willis 229). Describing the Victorian debate surrounding vivisection and Moreau's own history as "carnivalesque," Willis explains both Moreau and this debate come to represent:

> an uproarious, public denouncement of an elite community that appears to transgress and alter the relationships between science and society but that actually does no more than release the tensions between the privileged and the dispossessed while maintaining the structures of power already in place. For Wells, this is unacceptable. The cultures of science and society must enter a truly dialogic relationship where the voices of culture – be they scientific, public, or fictional – can interrogate and define one another openly and equally. The freedom to pursue science is borne out of the freedom of others to interrogate it. In arguing this case, Wells performs that interrogative role. (234)

Through its use of an ambivalent narrator who shows the ability to sympathise with opposing sides – from the vivisector, to the horrified public, to the animals on the island – the novel provides a nuanced portrayal of the vivisection debate which refuses to attribute blame to, or entirely condemn, one side in particular. Wells's novel sheds light on the inherent flaws of the debate as a whole, the inability of either side to engage in a productive dialogue. While Moreau's experimentation – described as "wantonly cruel" (*Moreau* 94) – is certainly troubling, his exile from both the scientific community and British society exposes the struggles faced by individual scientists forced to deal with a rigid scientific community and a suspicious and critical public. Moreau's continued hopes of eventually bringing his successful work "back to England"

(*Moreau* 129) to disprove his critics, as well as his inability to let go of the community that rejected and abandoned him, alternatively hints at the toxicity and danger that comes from the scientific community's obsession with status and social standing.

This portrayal of the individual scientist-protagonist struggling against the scientific community and the public at large also plays an important part in Wells's *The Invisible Man*. When Griffin asks Kemp for his help in enacting his "Reign of Terror," the fellow scientist advises him not to be a "lone wolf," to publish his scientific research and "take the world – take the nation at least – into your confidence" (*Invisible Man* 177). On its own, the advice seems sound, especially when contrasted with the outrageous plan Griffin has proposed. However, a closer look at Kemp's role as a scientist sheds new light on the interaction. The narrator discloses that while Kemp is considered a scientist by the scientific community, he does not "live by practice" (*Invisible Man* 127). As stated in the first chapter of this thesis, Kemp hopes to obtain the title of F.R.S (Fellow of the Royal Society) but has no interest in concrete scientific experimentation, exposing his own selfish motivations rooted in a wish to improve his social status.

As Leon Stover suggests, this small detail regarding Kemp hints at the "greedy competition for public honors" present within the Victorian scientific community, which Griffin himself alludes to when describing the "knavish system of the scientific world" (*Invisible Man* 137). Interestingly, Griffin is not the only Wellsian mad scientist who seeks the title of F.R.S. Also motivated by, and preoccupied with, praise and social standing, the bumbling Professor Cavor from Wells's later novel *The First Men in the Moon* (1901) also hopes to obtain the distinction of an F.R.S. for his scientific discovery of Cavorite. In both cases, the scientist's preoccupation with this award reveals the egotistical, selfish motivation of these researchers. The

novelty of professional science resulted in a relatively small number of scientists and a scientific community that A.J. Meadows describes as having been "tightly knit," at times becoming a "fully fledge 'old boys' network" dictated by scientific competition and hierarchy (75). While Griffin's self-exile is clearly his own doing, the circumstances that led to this decision – the belief his professor, who he describes as "a scientific bounder, a journalist by instinct, a thief of ideas" (*Invisible Man* 136), was attempting to steal his work – demonstrates the toxic nature of an exclusive and inaccessible scientific community defined by the constant struggle to improve status and standing. As DeWitt explains, Wells had publicly voiced criticism of the figure of the "professional scientist," a "narrow professional concerned with the institutions of science – universities, scientific societies – rather than with knowledge and its wider implications" (169).

From Moreau's exile resulting from the scientific community's fear of public opinion; to Griffin's suspicion and disillusionment with the scientific community; to every human character's only being named and recognized by their professional titles in *The Time Machine*, Wells's early fiction recurrently depicts the scientific community as exclusionary, competitive, and obsessed with social status. This theme also plays a prominent part in Wells's short story "The Moth" (1895), in which a scientist's sanity deteriorates after the death of his professional rival. Being a "man of dull presence," Professor Pawkins is unable to garner the support of his colleagues who prefer Professor Hapley's "skillful rhetoric" ("The Moth" 23). When the two scientists' "long struggle, vicious from the beginning and growing at last to pitiless antagonism" culminates in a sharp decline in Pawkins' health and his eventual death, Hapley finds himself unable to continue his scientific research (24). Consumed by a "desire for glory" and a "concomitant rivalry, extended to the point of obsession, between colleagues" (*Discoverer of the Future* 200), the story exposes Hapley's use of science as a means of climbing the social ladder

and tearing down his opponent. When the scientific community turns against him as a result of his opponent's death, Hapley, who has lost his social stature and is unable to let go of his obsession with Pawkins, slowly looses his mind.

While lacking either the more extraordinary or gothic elements of his early novels, "The Moth" offers yet another clear critique of a scientific community whose main focus is social stature and toxic competition. As A.J. Meadows explains, despite its impressive professionalization, ground-breaking discoveries, and adoption of ideologies such as scientific objectivity, "the scientific community still had its issues … Not everything was sweetness and light in the new societies" (80). Upon his return to England, Charles Darwin himself declared he was "out of patience with the zoologists" due to their "mean, quarrelsome spirit," before choosing to avoid the scientific social circles in general (Meadows 80). Wells clearly touches on this frustration towards the harmful traits present within the scientific community in his early scientific romances, complicating his depiction of the mad scientist. While the decisions and actions of the Wellsian mad scientist remain problematic, and while these scientists should still be held accountable for their decisions, actions, and beliefs, Wells refuses to depict the scientific community as the opposite and idealized corrective force to their mad science. The scientific community is not a solution to characters such as Moreau, Griffin, and the time traveler, but rather an inherent and causal factor leading to their creation.

Additionally, Wells's novels go against anti-science readings or conclusions through their criticism of a British public that also rejects and isolates the scientist. Moreau's exile from the scientific community is caused by a righteous anger that originates from a general public suspicious of scientific practice. When the time traveler is rejected by his social circle in *The Time Machine*, it is notable that both professional scientists and non-scientific workers are

represented. Besides this simultaneous rejection from both the scientific community and the general public, the most obvious example of this phenomenon occurs in *The Invisible Man*, in which Griffin, a "scape goat figure hunted out of society" (Bergonzi 120), is chased down the streets, brutally beaten, and ultimately murdered by an angry mob. As Haynes states, while the narrative itself is centered around Griffin's ruthless and cruel quest for power, wealth, and influence, "the most vivid picture of cruelty in the novel is the final description of the townsfolk, honest average citizens, who have come to hate what they fear until they are capable of unsuspected brutality" (*Discoverer of the Future* 236). The potential for this kind of cruelty is hinted at earlier in the novel when Griffin states his landlady and her sons were "all a little disappointed at finding no 'horrors'" in his room (*Invisible Man* 150), suggesting an enthusiasm and eagerness that goes beyond moral and ethical concerns. In the end, the townspeople who have feared Griffin and labelled him a monster prove themselves just as capable of monstrous and destructive behaviour when they form an "exceptionally savage" mob and collectively murder Griffin (*Invisible Man* 199). The crowd's very own "tumultuous vociferation" (198) and "savage kicking" (199) puts into question their qualification as judges of morality or ethics.

Of course, the mad scientist of Wells's early scientific romances still emerges, ultimately, as a dangerous and problematic figure. While Wells's nuanced portrayal of the scientific community and nineteenth-century scientific discourse demonstrates how and why such a figure could emerge, the mad scientist's own actions, views, and beliefs are still presented as reprehensible and irresponsible. Through the creation of narratives that leave the reader uncertain as to where, or with whom, our sympathy should lie, these novels force readers to consider each character critically and sympathetically, objectively and subjectively, and as both abuser and victim. This is made evident through some of the Wellsian mad scientists' use of self-

experimentation, which ultimately points to the character's problematic and dangerous relationship to power. When Griffin's old classmate and fellow scientist, Kemp, tells a police officer about his encounter with the invisible mad scientist, he declares he has "listened to such a story this morning of brutal self-seeking!" (*Invisible Man* 179) While this statement applies specifically to Kemp's interaction with Griffin, it also reflects the reader's own experience with Wells's novel. In fact, Kemp's statement can be applied to all of Wells's early scientific romances, each depicting in their own way narratives of brutal self-seeking. From Moreau's obsessive need to prove the validity of his subjective, problematic theories to reclaim his former glory within the scientific community; to Griffin's selfish and destructive use of an arguably incredibly important and significant scientific discovery; to the time traveler's irresponsible voyage and "glorified joy-riding"[10]; Wells's early scientist-protagonist is characterized by self-interest and selfish motivation. The Wellsian mad scientist, in Kemp's own apt description of Griffin, can be described as "pure selfishness," as thinking "of nothing but his own advantage, his own safety" and, in some instances, as "inhuman" (179). Whether these characteristics manifest themselves through problematic subjectivity, or through a flawed anthropocentric understanding of nature and evolution, the common, underlying features are selfishness, isolation, and an inflated sense of self-importance.

One way the Wellsian mad scientist's self-interested nature manifests itself is through the use of self-experimentation, a method used by the scientist-protagonist in both *The Invisible Man* and *The Time Machine*. As depicted through Dr. Jekyll's earlier adoption of this experimental

[10] "In fact, [the time traveler] seems to use his invention for nothing more than glorified joy-riding. Yet neither does he regard science as a means of pursuing truth for its own sake, nor as a way of benefiting the human community at large. His attitude to research is purely personal, and like Nebogipfel, his main concern is to escape from the immediate confines of his temporal situation." (Bergonzi 167)

approach in Robert Louis Stevenson's *The Strange Case of Dr. Jekyll and Mr. Hyde* (1886), the literary mad scientist's use of self-experimentation is not unique to Wells. In fact, self-experimentation often occurred within the non-fictional scientific community. From the Nobel Prize-winning self-experimentation of Dr. Karl Landsteiner who made possible the practice of blood transfusions in the late nineteenth century (Altman 34), to influential German scientist Max von Pettenkofer's self-experimentation with the cholera bacterium in 1892 (23), numerous Victorian scientists were willing participants in what Lawrence K. Altman terms the "nineteenth-century tradition of self-experimentation" (26).

The distinction, however, between historical accounts of real-life self-experimentation and Victorian literary depictions of the mad scientist's self-experimentation is made evident through a statement made by Dr. Pettenkofer regarding his scientific methods:

> Even if I had deceived myself and the experiment endangered my life, I would have looked Death quietly in the eye for mine would have been no foolish or cowardly suicide; I would have died in the service of science like a soldier on the field of honor. Health and life are, as I have so often said, very great earthly goods but not the highest for man. Man, if he will rise above the animals, must sacrifice both life and health for the higher ideals. (Altman 25)

Clearly, Pettenkofer's experiment, which consisted of his ingesting the cholera bacterium, offered him no immediate or personal benefit, aiming instead to contribute towards the greater good. Additionally, his findings and methods were openly shared with the scientific community, allowing future scientists to replicate his experiment, and eventually resulting in one of his students, Eli Metchnikoff, winning a Nobel Prize for his studies in immunology (Altman 26). This type of self-experimentation, while dangerous and unappetizing, was presented as selfless

and altruistic – a self-sacrifice motivated by a desire to minimize the suffering of others. Alternatively, Griffin's self-experimentation is motivated by his unwillingness to share his scientific discoveries, and his shameless desire for glory and personal gain. Keeping all his notes hidden away in notebooks coded by cypher, the scientist tells "no living soul" of his discoveries, hoping to "flash my work upon the world with crushing effect" (*Invisible Man* 13). While Griffin shares his hopes of becoming "famous at a blow" (137), he voices no interest in minimizing the suffering of others, repeatedly harming those who cross his path. He seeks invisibility for his own selfish, anti-social needs and utilizes self-experimentation as a way of hoarding knowledge to acquire power through the secrecy it provides.

While the time traveler, another self-experimenter, may appear less nefarious and anti-social than Griffin, his motivations also stem from a selfish desire to withhold information from others. When first introduced, the time traveler is in the midst of a conversation with acquaintances, disclosing his intention to travel in time through the use of a novel invention. While on the surface, this may seem like an attempt to share his discoveries and research with his community, a closer look at the information the traveler does share suggests otherwise. When describing the Fourth Dimension Theory that led to his scientific achievement, and when declaring his intention to experiment on himself with this machine, the traveler provides little concrete or useful information for his listeners. Sharing with the scientific community, and the world at large, allows for scientists to be held accountable and allows fellow scientists the opportunity to replicate experiments to promote scientific advancement. The consequences of scientific secrecy and isolation are clearly depicted in Wells's *The First Men in the Moon* when Professor Cavor's interrupted and unsuccessful attempts to communicate his findings result in his literal isolation from humanity and eventual demise. Seeing as no other scientist has the

means to replicate his creation of Cavorite – the substance that allowed him to travel to the moon – no one can rescue him from his precarious situation as a prisoner of the moon's overly-rational inhabitants. Ironically, Cavor, who has until now chosen to remain secretive and distanced from the scientific community, is destined to be "evermore into the Unknown – into the dark, into that silence that has no end" (*First Men* 176). This depiction of secrecy and isolation as a fatal flaw of the mad scientist is not unique to Wells, however, also playing a prominent role in the downfall of Shelley's original mad scientist, Victor Frankenstein.

While the information provided by the time traveler sparks curiosity in his guests, it is not enough to allow for accountability or replication, as made evident when the medical man asks if he is "perfectly serious? Or is this a trick – like that ghost you showed us last Christmas?" (*Time Machine* 11) Despite the time traveler admitting that the machine has taken two years to construct, the men have no prior knowledge of its existence. When, "puzzled but incredulous" (10), they follow the time traveler into his laboratory, they are given no specifics about the machine or the mechanisms that operate it and are only allowed to observe it. Picking up a loose part off the ground, the narrator is forced to guess what the component is made of, "Quartz it seemed to be" (11). Evidently, the information the time traveler is sharing is not meant to allow for replication of his self-experiment or feedback from fellow scientists. Instead, the time traveler has invited these guests for his own amusement and hopes to obtain their praise. As he shares his narrative to his audience, "his eyes shone and twinkled, and his usually pale face was flushed and animated" (1). After a demonstration using a smaller model of his time machine that leaves the psychologist in a "stupor," the time traveler "laughs cheerfully," enjoying the effect he is having on his baffled guests (9). While, unlike Griffin, the time traveler does not withhold information in an attempt to hoard knowledge and acquire power over others, he does withhold

information as a means of elevating the suspense and mystique of his unusual "performance." As a result, when his guests return a week later, they remain skeptical, with no means of knowing what they should expect or believe.

When used appropriately, self-experimentation can of course be beneficial, allowing scientists to circumvent the need to recruit experimental subjects and protect subjects from the potential harm of scientific experimentation. However, self-experimentation loses its scientific value if its motivations and methodologies are themselves problematic. By virtue of being rooted in self-centered motivations and achieved through isolation and secrecy, Griffin and the time traveler's use of self-experimentation exposes itself as problematically subjective and unscientific according to nineteenth-century ideals of scientific objectivity. While preventing harm to potential experimental subjects by only experimenting on themselves, both scientists also prevent the scientific community, and the world at large, from benefiting or gaining anything from their achievements. When both men ultimately meet their demise, they both selfishly bring their research and achievements with them, leaving nothing behind to benefit humanity.

However, the selfish and self-seeking nature of the mad scientist's experimentation is a common thread throughout Wells's novels, regardless of whether self-experimentation is used. While this characteristic plays an important part in the character's ultimate failure, it also has a significant impact on experimental subjects and society as a whole since the mad scientist is fueled by his selfish hunger for power.[11] Whether it be power over mankind gained through invisibility, power over the malleability of the animal and human form, extra-terrestrial power

[11] Bergonzi also identifies power as the Wellsian mad scientist's main motivator, arguing that "Nebogipfel, Moreau and Griffin are all variants of a single type, the scientist-as-alchemist, who is not disinterestedly concerned with knowledge for its own sake, but pursues it as a means of obtaining power." (Bergonzi 114)

over the human race, or simply the power to impress and influence fellow members of one's social circle and scientific community, the power the scientist-protagonist seeks is power over others. In effect, the scientist-protagonist's pursuits situate his relationship to his experimental subjects and to his fellow man as being rooted in the need to dominate and control others. This relationship, as explored in the previous chapter, emerges from the scientist's objectifying the experimental subject as "other" and as "object," a practice deeply rooted in Baconian understandings of science and objectivity, as revealed by the feminist science of Evelyn Fox Keller and Donna Haraway.

When Lorraine Daston and Peter Galison state that objectivity "has not always defined science. Nor is objectivity the same as truth or certainty, and it is younger than both" (17), they are pointing to the abstract and artificially constructed nature of this nineteenth-century concept. As a historically located scientific technique or ideology created by human society, objectivity has the ability to evolve and adapt to the needs and beliefs of the scientific community. While the Baconian ideal of objectivity, which "identified the aims of science as the control and domestication of nature" (Keller 33) and promoted the "popular mythology that casts objectivity, reason, and mind as male, and subjectivity, feeling, and nature as female" (Keller 7), was the one initially embraced by the scientific community, alternative forms of objectivity also exist, as scholars like Keller, Haraway, and Bruno Latour point out. These alternative forms of scientific objectivity suggest the potential for increased inclusivity within the scientific community, more productive discourse between its various players, and a more active role for the experimental subject, scientific objects, and non-human entities, all things Wells's early scientific romances seem to be advocating for.

As Evelyn Fox Keller argues, past and present understandings of science often neglect to take into consideration the fact that science and scientific knowledge have been produced by individual, subjective human beings who often belong to the same subset of civilization, that of white, middle-class men (7). In truth, valuable contributions to scientific discourse can, and should, come as the result of varying interpretations and perspectives. In response, Keller argues for a "dynamic objectivity" which still aims to gain accurate and truthful knowledge of the world, but "remains cognizant of, indeed relies on, our connectivity with that world" (117). Donna Haraway, alternatively, posits a feminist objectivity she refers to as "situated knowledges," which argues for a similar consideration of voices and perspectives traditionally "othered" or deemed subjective (188). Acknowledging the impossibility of entirely unmediated sight, either through human eyes or technical machinery, Haraway argues for the rejection of the ideal of passive vision, embracing instead "elaborate specificity and difference and the loving care people might take to learn not to see faithfully from another's point of view, even when the other is our own machine" (190). Knowledge that cannot be situated and embodied, she argues, exposes itself as "unlocatable" and "irresponsible" since it cannot be held accountable (191). "I am arguing for the view from a body, always a complex, contradictory, structuring, and structured body, versus the view from above, from nowhere, from simplicity. Only the god trick is forbidden." (195) The god trick, in this case, refers to Baconian science. Bruno Latour similarly argues for the construction of a new "collective," which would replace the Baconian scientific community. This reimagined community would emerge from "a multiplicity of interests and a plurality of beliefs," avoiding the typical dichotomizing of public and private, objective and subjective (93), and creating more inclusive and representative forms of scientific practice and community.

Recognizing the inherent and unavoidable subjectivity within scientific observation and experimentation that is so often rejected or ignored, Keller, Haraway, and Latour all offer examples of science that is less restrictive and exclusive. Through these, science not only has the opportunity of becoming more accessible, "but far more importantly, our very conception of 'objective' could be freed from inappropriate constraints. As we begin to understand the ways in which science itself has been influenced by its unconscious mythology, we can begin to perceive the possibilities for a science not bound by such mythology" (Keller 93). While Wells's early scientific romances are clearly critical of the problematic subjectivity and lack of objectivity of the mad scientist, their criticism of an isolating and restrictive scientific community that creates these problematic mad scientists conveys the need for a more inclusive and socially accountable scientific community.[12] In effect, this call by Wells for a more inclusive and socially accountable form of science promotes a more sympathetic approach to scientific experimentation, something made possible through Keller and Haraway's feminist objectivity. While Moreau, Griffin, and the time traveler's lack of scientific objectivity is concerning, this problematic subjectivity is rooted in their lack of sympathy and their selfishness, the very characteristics that make them so horrifying. A scientific community that prioritizes a more sympathetic form of scientific objectivity and experimentation, through its rejection of common misconceptions surrounding objectivity and emotional detachment, would arguably shape, create, and attract scientists who act in a more sympathetic manner.

[12] Vint identifies this connection between the works of Wells and later works on feminist science, arguing that Wells "anticipates the critique of objectivity offered by feminist critics of science like Haraway and Sandra Harding, who point out that such a construction of objectivity is connected to a series of intellectual moves that separate man from body and nature and posit the scientist as the neutral, unmarked, and unconnected observer a distorted and limited perspective" (89).

Additionally, as Keller, Haraway, and Latour argue, traditional scientific ideals have a problematic relationship with the experimental subject. As Keller explains, Baconian scientific ideals present scientific experimentation as a means of gaining control and power over nature, a tool for domination, which "takes its most extreme and crystalline form in the sadistic personality" (103), something clearly demonstrated through characters like Moreau and Griffin. Haraway furthers this point, arguing that historically, "White Capitalist Patriarchy" has turned everything "into a resource for appropriation" so that "an object of knowledge is finally itself only matter for the seminal power, the act, of the knower … Nature is only the raw material of culture, preserved, enslaved, exalted, or otherwise made flexible for disposal by culture in the logic of capitalist colonialism" (197-98). By objectifying the observed subject into something that can be owned and appropriated, the scientific observer silences the experimental subject, preventing it from having a voice in the scientific discourse. Through her theory of situated knowledges, Haraway suggests the "object of knowledge" be considered as an "actor and agent," participating in the process of scientific discovery and experimentation, which will allow for a more accurate and complete understanding of nature (198). Alternatively, Latour suggests we replace our "science of objects" and our "politics of subjects" with "a political ecology of collectives consisting of humans and nonhumans" (61), echoing the call for an understanding and a practice of science that is more inclusive and considerate of people, but in this case, also of the object and non-human.

These themes appear prominently in Wells's depiction of a deadly alien invasion in his novel *The War of the Worlds*, where he continues his criticism of various societal groups' interactions and relationship to science and the scientific community, but this time from a new and unfamiliar lens. Wells's Martians, described by the narrator as "intelligent mechanisms" and

as comparable to "human machines" (*War of the Worlds* 43), represent a scientific community that has completely distanced itself from ethical considerations and from sympathy for the experimental subject. While the Martians are not "evil," they are presented as an "efficient, amoral, technological power" (*Discoverer of the Future* 73-74), depicting Darwinian nature with "the additional horror of the denied potential for an ethical dimension" which humanity has created for itself (Huntington 80), as according to Huxley's conception of civilization and the garden. A similar depiction occurs in *The First Men in the Moon* where the moon-dwelling Selenites – who ignore the massacre of their people caused by Bedford and torture their youth to shape them according to their societal needs – are shown to "carry their social specialisation to ridiculous and sometimes terrifying extremes" (Stiles 149). Consequently, Wells's aliens emerge as criticism of the figure of the mad scientist – such as Griffin, Moreau, and the time traveler – who, through isolation and the rejection of the scientific community, abandons ethical considerations.

The Wellsian mad scientist's attempts to gain power over the experimental subject or society at large is also mirrored in the Martians who clearly invade earth with the intent of dominating it and its inhabitants. This dynamic once again points to an important role reversal between the people of Britain and the Martian invaders from coloniser to colonised, as established by John Rieder (10). Darko Suvin echoes this reading of the novel, stating that the "Wellsian inversion exploits the uneasy conscience of an imperial civilization that did not wipe out only the bison and the dodo" (233). While Rieder and Suvin point to this role reversal in terms of its colonial implications, the reversal also applies to the roles of the scientist and the experimental subject, as suggested various times by the narrator in the novel. From his statement that "we men, the creatures who inhabit this earth, must be to them at least as alien and lowly as

are the monkeys and lemurs to us" (*War of the Worlds* 7), to the description of the Martians observing the earth as comparable to how "man with a microscope might scrutinize the transient creatures that swarm and multiply in a drop of water" (6), human beings are continuously positioned as being the weaker, subordinate, and dominated experimental subjects of the scientific alien invaders. While the ending of the novel suggests a reversal back to earthly norms, with Martian remains now prominently displayed and studied at the Natural History Museum and the reinstatement of the human scientist as the observer and experimenter of the "other," the narrator's remark that the Martian invasion "has robbed us of that serene confidence in the future" (145) sheds light on the precarious nature of this dynamic.

While this role reversal within the novel allows for the criticism of a scientific community and a form of scientific practice that rejects moral and ethical considerations, prioritizing instead mechanical technology and efficiency, it also forces us to reconsider the relationship between the experimenter and the experimental subject. Comparing himself to a rabbit and feeling "an emotion beyond the common range of men, yet one that the poor brutes we dominate know only too well … a sense of dethronement, a persuasion that I was no longer a master, but an animal among the animals, under the Martian heel" (*War of the Worlds* 118), the narrator describes his experienced reality from the perspective of the animal subject so typically used in scientific experimentation. In case the similarities between the Martian's treatment of humans and the human treatment of experimental subjects were not obvious enough, the narrator urges the reader not to judge the Martians "too harshly" since we "must remember what ruthless and utter destruction our own species has wrought, not only upon animals … but upon its inferior races … Are we such apostles of mercy as to complain if the Martians warred the same spirit?" (7) By asking this question, the narrator creates a direct connection between humanity and the

Martians, illustrating the horrific potential outcome of following in their footsteps. From the unfortunate stray cat turned invisible by Griffin, to Moreau's frightened and discarded Beast Folk, to the unsuspecting Eloi and Morlock interrupted by a nosy researcher from the past, Wells's early scientific romances all present the experimental subject as a doomed and hapless lot, objectified, easily discarded, and overlooked by the scientific experimenter. *The War of the Worlds* is clear in its demand that the reader identify with the experimental subject so often othered by the scientist and the scientific community and consider its voice and perspective within the conversation, a request reminiscent of Latour's suggestion that we seat the "object" and the "non-human" as citizens of the "collective."

Interestingly, this role reversal between the scientist and the experimental subject is not unique to *The War of the Worlds*. While Prendick eventually learns the truth, his initial belief that Moreau's experimental subjects are human, as well as the continuous blurring of distinctions between human and animal boundaries occurring within the novel, demand that the reader view the experimental subject as potentially human, and as a result, identify with them. Additionally, as a result of making the Beast People in the image of human beings, Moreau also grants them the ability to talk, literally giving his experimental subjects a voice. While Moreau isolates and distances himself in his enclosure, refusing to listen to his experimental subjects, Prendick and the reader are forced to hear them speak and, in doing so, are forced to reconsider their own understanding of "humanity." This questioning of the very definition of the "human" is a common theme in Wells's novels and in science fiction more generally. Griffin's gradual transformation into a "mad, inhuman" figure (*Invisible Man* 179), *The Time Machine'*s unsettling depictions of humanity's evolutionary future, and the powerful role reversals depicted in *The War of the Worlds* all force readers to reconsider the boundaries and limitations of humanity's

socially constructed definitions, especially those that rely on anthropocentric beliefs. Identifying the connection between Haraway's criticism of Baconian science and Moreau's experimentation, Vint states that the figure of Dr. Moreau "points to enduring problems in how science has been conceived through the separation of man from nature" (102). Moreau is a clear depiction of a scientist who has fallen for the "god trick" and believes he must subdue and dominate the animal subject he views and labels as categorically other. Alternatively, as Vint points out, through the empathy he shows for the Puma woman, Prendick emerges as a character that illustrates the "feminist embrace of the other, and the recognition that speciesism has much in common with sexism, racism, and similar structures of discrimination" (94).

Consequently, the Wellsian mad scientist emerges as a figure that critiques not only the forms of scientific experimentation and the problematic ethics adopted by the mad scientist, but also the relationship between the scientist and the scientific community, the scientist and the public, and the scientist and the experimental subject. By exploring the various perspectives and voices participating in late-Victorian scientific discourse, Wells's scientific romances do not so much denounce a specialized group or individual, but rather diagnose the problematic and exclusionary nature of scientific discourse itself. Describing his novels as "appeals for human sympathy quite as much as any 'sympathetic' novel" (*Preface* 13), Wells's narratives demand that we re-examine established definitions of science and scientific community. Through mad scientists such as Moreau, Griffin, the time traveler, and technologically advanced aliens, Wells illustrates the dangers of scientific practice rooted in self-serving aims, obsession with power, and ambitions of domination. Simultaneously, his mad scientists' interactions with the scientific community and the broader public also expose the dangerous consequences of an exclusive, status obsessed, and overly competitive model of scientific community. These same interactions

also illustrate the pitfalls of a British society that may be overly enthusiastic in its chastising of science and the scientist. Taken together, Wells's wide-ranging depictions and explorations of the mad scientist advocate for new forms of scientific community, methods of scientific practice, and standards of scientific discourse that are more ethically considerate, sympathetic, and inclusive.

Conclusion

While contemporary critics often read the unethical and cruel scientific approaches of mad scientist figures as deriving in part from their unfeeling and dehumanizing objectivity, Wells's depictions of mad scientists reveal that, in fact, "mad," unethical science stems from problematic, selfishly subjective scientific practices. As Daston and Galison demonstrate, the nineteenth-century scientific community intended objectivity to serve as a tool or methodology for scientific practice. Viewed in this way, objective science did not require a complete lack of emotion or sympathy in the experimenter. In reality, the brutal, unfeeling, and selfish actions of Wells's scientist protagonist point to minacious subjective behaviour deriving from Baconian standards that privilege white, European, educated men. Similarly, scientific objectivity was rooted in the concept of scientific community, effective communication, and professional transparency, all qualities the Wellsian mad scientist notably lacks. Taken together, the exiled Dr. Moreau's isolated, ego-driven, and biased animal experimentation; Griffin's violent methodologies and anti-social self-experimentation; and the time traveler's reckless "joy-ride" into the future and subsequent biased observation, constitute a mad science prominently displaying self-destructive forms of subjectivity and ending only in death and experimental catastrophe. By contrast, Wells depicts the scientific community in *The War of the Worlds* as an anonymous, collective, and communal entity accurately depicting the aspirations of a truly objective nineteenth-century science.

The dangerous subjectivity of the Wellsian mad scientist catalyses another of the character's fatal flaw – his erroneous interpretation and application of evolutionary theory. From an obsessive need to dominate and control others and their environment, as exemplified by Moreau's failed attempt to play god and re-create the evolutionary process on his island, to a

misunderstanding of humanity's relationship and connection to other fellow species, as exemplified by the time traveler's continued incorrect hypotheses about the environment and future races he encounters, the Wellsian mad scientist demonstrates a problematic misunderstanding and misapplication of Darwin's theory of natural selection. The Wellsian scientist-protagonist is blinded by a subjective, anthropocentric worldview that only perceives and understands fellow organisms as "other," working with a delusional misinterpretation of the role and function of evolution and nature itself.

These fatal flaws of the mad scientist, which stem from self-interested subjectivity and a desire for superiority over perceived "others," lead to fraught relationships with experimental subjects, the scientific community, and the general public. From questionable forms of vivisection and self-experimentation, to unsympathetic and cruel treatment of animal subjects, to an anti-social refusal to share scientific findings and discoveries, Wells continually depicts the mad scientist's interactions with fellow humans and non-humans as counterproductive, antagonistic, and harmful, even deadly. Wells's narratives, however – while patently refusing to vindicate the unethical actions of the mad scientist – also demand that readers hold accountable the unequal social conditions and contexts that produce such scientists, acknowledging that mad, unethical science is not created in a vacuum. Exposing the flaws of the status obsessed, exclusionary scientific community and the enthusiastically vindictive and overly suspicious Victorian public, Wells's novels demonstrate how unsound scientific practices and mad scientists alike derive from a cultural lack of constructive scientific discourse.

As a result, Wells's depictions of mad scientists advocate for a scientific community defined by more inclusive, sympathetic, and transparent scientific methodologies and practices. Wells calls for more constructive dialogue within the world of science – for a better

understanding of, and relationship with, fellow creatures and experimental subjects. His farseeing works thus anticipate the later scientific criticism of Haraway, Keller, Latour, and others who theorize alternative forms of scientific objectivity, community, and practice. In a present-day moment in which science is still often viewed through the objective, masculine, and impersonal Baconian lens, returning to Wells's reflections on unethical science helps us to better understand our own idea of scientific community – both how it came to be, and how it can be improved.

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