

Linköping University
Department of Culture and Communication
English

**The Changing Role of Science in *Frankenstein*,
The Strange Case of Dr Jekyll and Mr Hyde,
and *Dracula***

Lisa Jacobsson
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Supervisor: Margaret Omberg

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Introduction

During the 19th Century, science underwent astonishing advancements in a wide range of fields: remarkable progress was seen in electricity, medicine, biology, and social sciences to name only a few. Carol A. Senf points to how the 19th Century “witnessed unprecedented scientific discoveries and technological developments that have helped to determine the shape and nature of our own age” (5). These advancements had not only a profound impact on everyday life, they also fuelled the imagination of artists. Mary Shelley, Robert Louis Stevenson and Bram Stoker are all children of the 19th Century, inspired by its dynamic and thought-provoking qualities. Living and working in an era where, to Christa Knellwolf and Jane Goodall, “the magic and mystique of science was crossing paths” and where “it was impossible to determine which of a range of mind-boggling prospects might become an actuality”, it is not surprising that scientific development was to become a abundant source of inspiration (8). From this source, both hopeful and horrifying questions could be posed, questions concerning the direction of scientific progress. Was it an entirely positive force aiding people in their lives or were there darker elements and unseen dangers?

These questions are at the core of three classic horror stories of the 19th Century: Shelley’s *Frankenstein, or the Modern Prometheus* (1818), Stevenson’s *The Strange Case of Dr Jekyll and Mr Hyde* (1886) and Stoker’s *Dracula* (1897). Spanning the century, they mirror the revolutionary progress of science as they tie in with actual advancements. The works move from the first decades of the century, where electricity and chemistry dominated the progress made, to the end of the century where biology, evolutionary theory and psychology were scientific forerunners. Thus, Anne K. Mellor states that Shelley founded Frankenstein’s venture to form a man “on the most advanced scientific research of the early nineteenth century”, i.e. chemistry and electricity (305). Approaching the end of the century, the scientific focus has shifted somewhat and Julia Reid notes how Stevenson expresses “the atavism unveiled by evolutionist psychiatry, which focused on the survival of primitive elements in human consciousness” (97). Stoker reflects the interest in the human psyche in a new world when, at the end of the century, according to Senf, he “wove together plausible science with both Gothic horror and an interest in the workings of the human heart” (138).

Before presenting my argument, I wish to make a brief introduction to each of the works, in order to demonstrate how their principal themes connect to science and the consequences of scientific development. In *Frankenstein*, Shelley explores the fears created by the seemingly limitless possibilities recently offered to scientists. Since progress was being made in completely

new areas, the consequences of these possibilities were equally unknown. Knellwolf and Goodall point out that scientists “investigating completely new areas of interest had very little sense of where their discoveries would lead them”, which generated fear in the public mind (1).

Furthermore, Shelley introduces with her character Viktor Frankenstein the alarming idea that, for sections of the scientific community, morality and forethought are of little importance.

Bernard E. Rollin claims that “the truth of moral statements is unrelated to the truth of scientific statement” (16). David Punter adds that the major theme in *Frankenstein* “relies upon and even exploits public anxieties about scientific progress and about the direction of this progress if undertaken in the absence of moral guidance” (242).

A similar concern provides the major theme in *The Strange Case of Dr Jekyll and Mr Hyde*. However, the novella also deals with another question brought to light by evolutionary theory: degeneration, the downside of progression. Reid pictures how “unresolved questions plagued evolutionist thought: was the current direction of change progressive, and could it be reversed? (7). The frightening and atavistic Mr Hyde, Dr Jekyll’s inherent lower self, might be seen as evidence of baser elements surviving in modern man. In addition to threatening humanity, degeneration also puts modern society as such at risk. Punter points to how *The Strange Case of Dr Jekyll and Mr Hyde* poses “a question appropriate to an age of imperial decline: how much . . . can one lose – individually, socially, nationally – and still remain a man?” (239-240).

This question is taken to its extreme in *Dracula*, where the preservation of modern man and society also is at stake, now facing a vampire menace. In stark contrast to the two other works, science is here depicted as a provider of shelter against the ancient, non-human threat. To Senf, the novel expresses Stoker’s belief that “science (or more accurately, technology) can help people to solve the problems that he witnessed in his own day” (135). Science thus emerges as a bringer of hope and the righteous battle against Dracula fought by Stoker’s scientists Van Helsing and Dr Seward might be seen as mirroring the development Roy MacLeod traces in the late 19th Century where “science was invested with new values – of instrumentality, commodity, and utility – and its moral value seen as an ‘object lesson’ in citizenship and efficiency” (3).

The aim of this essay is to show the changeable role of science in *Frankenstein*, *The Strange Case of Dr Jekyll and Mr Hyde*, and *Dracula*, how scientific progress can constitute a friend as well as a foe and that the direction is decided by the human factor. The scope of these works will demonstrate how science initially forms a force of evil, creating fears, but later transforms into a force of good, redeeming human and religious values. In *Frankenstein*, the fear of uncontrollable progress is explored whereas the fear of unpredictable degeneration is discussed in *The Strange Case of Dr Jekyll and Mr Hyde*. The idea of progress through science is redeemed in *Dracula*,

through its assistance in the overthrow of evil. The method is an analysis of how and why science is used and the results thereof, scrutinizing the fear of frantic progress and erratic degeneration as well as how these fears are laid to rest by the reinstatement of human and religious values to be found in science. The development of the role of science in the span of the three works, from evil and threatening to good and hopeful, will run through the analysis.

The three works share similarities in their narrative technique, belonging firmly to the Gothic tradition. They are all made up of a multitude of narrators, giving accounts through various means such as letters and diaries. In *Frankenstein*, the structure is akin to a Chinese box and Punter claims that the novel “has a simple plot, which is greatly complicated by sophisticated narrative devices” (122). Even though *The Strange Case of Dr Jekyll and Mr Hyde* might easily be regarded as a rather modern detective story, Reid sees how “its narrative form – an assemblage of collated testimonies – is also shaped by Gothic generic conventions” (94). These conventions are also present in *Dracula* with its collage of letters, diaries and clippings from newspapers. This Gothic structure of narration allows for two things: first, to approach the remarkable truth from different angles through the multitude of narrators, and second, to anchor it in reality by creating a distance to the evidence presented.

The three works share more than similarities in narrative technique; they also possess a comparable literary status. They are all considered classics and are referred to in a wide variety of contexts, sometimes correctly but perhaps for the most part incorrectly, diminishing their richness and complexity. Regarding them as rather transparent horror stories is thus a misconception, even though it should perhaps be pointed out that *Dracula* is generally considered as the least fine literary work, and has never had the same literary status as the others. The massive popular interest bred by these works has obviously left its mark in the academic world where they are the subject of numerous, not to say countless, studies. My contribution is the focus on science and its implications, how science moves from evil to good and the importance of leaving a human mark on the progress of science. The works of some critics already mentioned in this introduction have been particularly valuable to me during the work on the essay: Knellwolf’s research on Frankenstein’s fatal attraction to the new sciences, Reid’s study on Dr Jekyll’s dealings with degeneration and evolution, and Senf’s examination of Van Helsing’s humanistic use of science.

Chapter 1: Scientific Progress and the Fear of Uncontrolled Creativity

This first chapter will focus on rapid scientific progress and how it awakens the fear of uncontrolled creativity; what might happen if the new possibilities science offers are explored without any restraints. Illustrating this fear is Mary Shelley's portrait of Victor Frankenstein in *Frankenstein, or the Modern Prometheus*, a scientist taking full advantage of the potential of science to create life without reflecting over the moral or social consequences. In the first section of the chapter, the protagonist's motives for turning to science are examined, how the motives range from good intentions to purely egotistical reasons and to the quest for glory. The second section will scrutinize Frankenstein's use of science and show how the influence from current scientific activities fuels his ambitions, forming not only a being but also an obsessed, isolated scientist. Lastly, the painful and desolate result of this uncontrolled and unreflective creativity will be discussed.

Viktor Frankenstein's initial motives for taking an interest in science are good. He recognises the possibility that scientific progress might be helpful to humankind and he sees himself possessing "talents that might be useful to my fellow-creatures" (Shelley 214). Furthermore, his will to use science to help people is displayed in his wish to "banish disease from the human frame and render man invulnerable to any but a violent death" (42). Thus, he seemingly sees science as a means to prolong life and relieve pain, and himself as a man both willing and able to realise this vision. His relationship to his family might be seen as manifesting this humanistic side of Frankenstein; the family is portrayed as a closely-knit group who loves and cares for each other.

However, being a part of a loving family does not hinder a rather rapid and negative development of Frankenstein's focus. Despite noble ambitions, it soon becomes clear that Frankenstein's focal point is not to use science to prolong life or relieve pain, but rather to unveil and even dominate nature to serve his own interests. Realising the creative force of nature and aiming at mimicking it, Frankenstein feels a "fervent longing to penetrate the secrets of nature" (41) and he "pursued nature to her hiding-places" in order to fully understand her (55). This longing is entirely different from his initial idea to use science to aid humans. Alan Rauch doubts that Frankenstein ever had honourable intentions and claims that he has no real interest in the welfare of humans, but that "in his enthusiasm to discover the principle of life, Frankenstein is indifferent to the problems that trouble the living". The way Frankenstein eagerly attempts to unravel the mysteries of nature and creation reflects how science suddenly seemed to give scientists the capability of creating life.

Clearly aiming at possessing this capability, creating life is a major driving force in Frankenstein. This driving force is further boosted by his envisioning himself as the creator and father of a whole new race of beings. He sees how this “new species would bless me as its creator and source” and how he would rightfully earn “the gratitude of his child” (Shelley 55). Fantasising about being worshipped as the creator by his new species, Frankenstein seems to have lost all his initial good intentions to use science to benefit humankind. David Punter sees Frankenstein’s relation to science and his work at hand as an undertaking “conceived as a purely scientific one; he has no interest in matters social or moral” (122). This lack of interest in the social and moral aspect of his vision displays how Frankenstein aims at using science for science’s sake, rather than to relieve pain or prolong life.

In addition to creating life and becoming the father of a new race, Frankenstein also regards glory as an incitement to master science. He imagines how he will “pioneer a new way, explore unknown powers, and unfold to the world the deepest mysteries of creation” (Shelley 49). Envisioning being an admired scientific explorer makes Frankenstein even more determined to exhaust the possibilities offered by science. The relation between Frankenstein and the young adventurer Walton further reveals the importance of glory as a motivating force. Frankenstein describes Walton’s undertaking as a “glorious expedition . . . because danger and death surrounded it” (217). Walton is a fervent admirer of Frankenstein and shares his desire for glory: “I preferred glory to every enticement that wealth placed in my path” (17). Knellwolf notes that Walton is “fired by a powerful yearning to go further than anyone before him” (55). As will be discussed later in this chapter, the two scientists meet very different ends even though they are equally driven by the hunt for the glory scientific discoveries might offer.

The yearning for glory is also reflected in the way alchemy is pictured as an element providing both inspiration and means to Frankenstein. He turns to old alchemists such as Cornelius Agrippa and Albertus Magnus in the search for grand scientific visions since he concludes that modern science “seemed to limit itself to the annihilation of those visions on which my interest in science was chiefly founded” (Shelley 48). He thus rejects major parts of modern science as lacking the ideas and imagination needed to take advantage of the new possibilities given by scientific progress. Even though Frankenstein elects the knowledge of old alchemists as inspiration for his scientific studies, he still chooses modern science as the means for his project. This might sound surprising, but, as Knellwolf points out, there are similarities between old alchemy and the modern science of Frankenstein’s era, particularly their “unlimited fields of investigation” (65).

Filled with inspiration from the grand visions of the old alchemists, Frankenstein finds the means to create life in new science. Especially electricity and chemistry provide scientific resources to Frankenstein's work in realising his vision. As a young boy, he is introduced to these new fields by a family friend who, after a violent thunderstorm, launches a "theory which he had formed on the subject of electricity and galvanism" (Shelley 43). At university, his scientific interest and knowledge are further developed. Both Goodall and J.A.V. Chapple see revolutionary qualities in these scientific fields. To Goodall, electricity "caught the revolutionary imagination most powerfully" due to "its immediately dramatic manifestations" combined with "its exhilarating potentialities as a life science" (118). Chapple adds that chemistry in the early 19th century started to become considered as "the most exciting and significant science" and how "its implications were thought to be revolutionary" (25).

These revolutionary qualities are probably why Frankenstein is attracted to science and its seemingly limitless possibilities. He is a devoted disciple of science: "natural philosophy is the genius that has regulated my faith" (Shelley 40). Mesmerised by the promise of unveiling the secrets of nature, he turns a blind eye to the less attractive aspects of his use of science. He seems to acknowledge that there are unpleasant components in his work by referring to them as "horrors of secret toil" and his laboratory as a "workshop of filthy creation" (55). However, these components are obviously not repelling enough since Frankenstein finds himself caught up by the progress of his work. He finds that "in a scientific pursuit there is continual food for discovery and wonder" (52). Rollin recognises this feature as rather typical in the world of science, how "reflective forethought, ethical and prudential, is thus both ideologically suppressed and lost in the thrill of the chase" (69).

This thrill quickly transforms Frankenstein's scientific pursuit from an ambitious project to an obsessive striving to complete his creature. The desire to reach completion overshadows everything else and is strong "like a hurricane" (Shelley 55). His obsession leaves him blind to the consequences of possible failure (and possible success as well, as will be discussed in more depth later). He is initially inclined to start out with experimenting on a being of "simpler organisation", but he is too enthusiastic about his progress to question his "ability to give life to an animal as complex and wonderful as man" (54). A slave to the thrill, Frankenstein does not allow himself to pause during the creation of his being. To Rauch, this means that he overlooks major parts of his actual scientific success; "nowhere in the process of creating the monster does he reflect on the potential value of each new scientific innovation that results in the creature." He is simply too enslaved by his obsession to see his work in a wider perspective which could possibly be more beneficial to humankind.

Obsessed as he is by science and his creation, Frankenstein has not only lost focus on his initial motive to use science to aid humankind, he has also lost focus on the humans close to him. During his toil in the laboratory, he isolates himself and turns his back on society as well as his family and friends. He “seemed to have lost all soul or sensation but for this one pursuit” (Shelley 55). With his ambition sternly fixed on this one goal, Frankenstein seems to lose his need for human contact and being part of a whole. According to Punter, Frankenstein “forgets all other ties of human affection, forgets his family, and passes into a state of dreamlike, obsessive absorption in the task on hand” (123). Being stripped of social restraints, he loses perspective on the human aspect of science. This loss is gruesomely displayed when Frankenstein does not use science to aid his family when they are slain one after the other, directly or indirectly, by his creation.

Isolating himself and hiding in the laboratory, Frankenstein’s mental health hastily deteriorates. The deterioration is probably due to the very fact that he is alone and caught in a scientific obsession, but could also be explained by the fact that he is on some level shameful about his secret experiment. Instead of proudly displaying the progress his work undoubtedly undergoes, he isolates himself more and more. Chris Baldick describes the forming of the creature as a “very private enterprise, conducted in the shadow of guilt and concealment, undertaken in narcissistic abstraction from social ties” (51). The isolation and shame Frankenstein experiences during his work and subsequent creation leave him in very poor health; and Frankenstein faces, in his wording, “the commencement of a nervous fever, which confined me for several months” (Shelley 62). Knellwolf notes that “obsession, nightmare, nervous illness and the eruption of the irrational typify essential moments of the novel” (54). Frankenstein’s loss of mental control and erratic behaviour parallels his loss of control over his creativity.

In addition to turning his back on humanity in blind obsession, he also turns his back on nature. Nature is portrayed as a calming element but its soothing qualities do not hinder Frankenstein from aiming at exposing and exploiting nature’s secrets. Despite trespassing over nature’s boundaries by attempting to create life, there are moments when he seeks comfort in nature: “these sublime and magnificent scenes afforded me the greatest consolation that I was capable of receiving” (Shelley 99). However, these moments are decidedly fewer than the ones where Frankenstein positions himself in the place of nature. Dismissing nature by substituting its life-giving capabilities with his own scientific abilities forms a parallel with the change of society due to the Industrial Revolution. Punter states that this change created a “world in which older, ‘natural’ ways of governing the individual life – the seasons, the weather, simple laws of exchange – become increasingly irrelevant” (128). In a society where the laws of nature are rather rapidly

deprived of their importance, the fear produced by the possibility of a human creating life is evidently close at hand.

Running alongside the decreasing importance of the laws of nature is the diminishing influence of God. Both these developments are possible to consider as an end to the Romantic view of Nature as a manifestation of God. By becoming “capable of bestowing animation upon lifeless matter”, Frankenstein not only violates nature by forming his creature, he also violates God (Shelley 53). Frankenstein’s use of science has thus placed him in a position where he might be regarded as playing both the role of Nature and God.

As desirable as this position might have been to Frankenstein, the use of science nevertheless leads to a depressing and frightening result, the creation of a being that might be described as a monster. Filled with visions of creating a new, glorious species, Frankenstein is not prepared for meeting his creation once it is formed. Instead, the sight of this mute, stitched-together, enormous creature is completely opposite to the vision he had. On laying eyes on his creature for the first time, “the beauty of the dream vanished” and he is filled with “breathless horror and disgust” (58). He recognises the irony of having chosen the various body parts for their beauty since “a mummy again endued with animation could not be so hideous as that wretch” (59). To Baldick, the ugliness of the creature is simply to be expected since in Romanticism, the beauty these stitched-together parts can display is directly dependent on “the animating principle which organizes them” and since Frankenstein’s animating principle stems from “tormented isolation and guilty secrecy, the resulting assembly will only animate and body forth that condition and display its moral ugliness” (35). The monstrous creation might thus be seen as a symbol for how Frankenstein is not able to use science for the good of humankind.

The failed creation is not merely a personal failure to Frankenstein; his egotistical quest also places the public and especially his loved ones in danger. To Rauch, the clash between the creation and the public is rather expected since “in an era when the public presentation of science had much to do with its value and its acceptability, Frankenstein’s secretive approach to knowledge production can be taken as a sure sign that his discovery will be a disaster with respect to public understanding”. This lack of public understanding will bring substantial pain to Frankenstein’s loved ones. Neglected during the creation, they now have to face the aggravated creature seeking revenge and the results are horrific. The string of killings directed at his family makes Frankenstein start to realise his guilt. Having created a being that kills almost everyone he cares for, he shuns the company of other humans; he feels he “had no right to share their intercourse . . . [since he] had unchained an enemy among them” (Shelley 189). Guilt ridden, he even contemplates suicide but exclaims: “I dared not die, and leave my adversary in being” (205).

A bringer of death and misery, the creature itself is also inflicted with great pain by Frankenstein's uncontrolled creation. Despite being a scientific success, he is immediately scorned and abandoned by his creator. Punter notes how Frankenstein unfairly judges the creature and labels him "as a monster, purely on the grounds of his physical appearance" (123). Condemned to be a social outcast, the creation is filled with rage directed at both his creator and humankind at large. He "wished to tear up the trees, spread havoc and destruction" (Shelley 138). Despite developing into a violent and rather hateful being, the creature has not been born evil but as a curious being, in the need of fatherly attention and guidance. Becoming increasingly aware of himself, he starts posing questions: "What did this mean? Who was I? What was I? Whence did I come? What was my destination?" (131). His search to answer these questions is fruitless, since his creator and father turns his back on him, leading him to rightfully accuse his creator: "Accursed creator! Why did you form a monster so hideous that even *you* turned from me in disgust? (133). The confusion and pain the being experiences illustrates to Punter how Frankenstein "defies God by creating life, but it is the monster who bears at least part of the punishment" (121-122).

The creature's pain and lack of company leaves him wanting a partner. He asks of Frankenstein once again to use science and form a companion "of the same species" and with "the same defects" (Shelley 146). Half-threatened, half-moved by his creation, Frankenstein initially agrees to form this mate: "I felt what the duties of a creator towards his creature were, and that I ought to render him happy before I complained of his wickedness" (104). During the work of forming the female, the frenzy of the first, uncontrolled creation is gone and he "should often lose all self-command" during his "unearthly occupation" (157). Not lost in the thrill of the chase, he pictures with alarm how "a race of devils would be propagated upon the earth" (170). He also sees how he would be regarded by his potential victims, how "future ages might curse me as their pest, whose selfishness had not hesitated to buy its own peace at the price, perhaps, of the existence of the whole human race" (171). Allan K. Hunter claims that "on the brink of completing the female version and by extension, the natural cycle, Victor finally recognises the exponential threat mankind would face if this new organism was allowed to reproduce" (142). His refusal to create a mate signifies the beginning of Frankenstein realising that lack of reflective forethought and responsibility is what caused him to attempt to form a being in the first place. This recognition, late as it may come, prevents Frankenstein from repeating his mistake.

The lack of reflective forethought and the disastrous consequences it brings illustrate how science needs some restraints to be good and beneficial to humankind. Initially, Frankenstein is

convinced of the usefulness and importance of his work. He is also certain of success, even though he touches on the idea of failure “and at last my work be imperfect”, he swiftly brushes the hesitation away and envisions how his work “would at least lay the foundations of future success” (Shelley 54). Instead of reflecting whether his work potentially might lead to something good, he is caught in the chase for new and dazzling scientific results. Rollin suggests that “scientists tend to welcome all new technological and scientific discoveries as positive achievements and to shun discussion of the ethical or social issues they occasion” (5). The failed creation and the pain it inflicts demonstrate that scientific progress is not in itself always good, even though Frankenstein and his fellow scientists are inclined to regard all progress as positive. Knellwolf suggests that “the novel draws attention to the fact that a precarious lack of responsible forethought characterises our culture’s valorisation of progress”, a valorisation which is evidently not without problems (62).

Along with reflective forethought, responsibility is also an important factor in exploring the possibilities of science to do good. Isolated in a scientific pursuit of new discoveries, Frankenstein is clearly unable to direct his studies in a responsible direction. To Knellwolf, “since the acquisition of new knowledge can bring about dramatic changes, it is essential that human affections be strengthened as a backdrop to the responsible application of new discoveries” (64). Left to his own devices, it takes one disastrous creation to make him act in a responsible manner concerning the use of science. This is reflected in the way he sacrifices himself and what is left of his family by refusing to create a mate. He sees that the well-being of humankind weighs more heavily than the well-being of his own family and himself: “a thousand times would I have shed my own blood, drop by drop, to have saved their lives; but I could not, my father, indeed I could not sacrifice the whole human race” (Shelley 190). Stressing the importance of personal responsibility in science, Shelley seemingly considers taking responsibility as a scientist to be a decisive factor in using science to do good.

In addition to forethought and responsibility, nurture is another major element in making science good and useful for humankind; and, as with forethought and responsibility, Frankenstein turns out to be a failure when it comes to nurture. As seen earlier in this study, he turns his back on his creature, forcing the creature to fend for itself, “no father had watched my infant days” (124). Frankenstein’s inability to realise that the result of his scientific experiment needed fatherly guidance, leaves his being in a state of misery and murderous rage. Knellwolf claims that “there is no attempt to condemn curiosity as such, but the novel certainly paints a gory portrait of its consequences if it is not embedded in a nurturing context” (58). Punter also sees the importance of a nurturing context, suggesting that the novel is “against the illusion of pure scientific enquiry”

(122-123) and how it “emphasises, in a very modern way, the need for care and responsibility in matters scientific” (125). Had Frankenstein been a better father to his creation, a great deal of pain and the loss of many lives could probably have been avoided.

As discussed earlier, the refusal to create a mate displays some signs that Frankenstein regrets letting his scientific curiosity roam freely without any restraints. It is tempting to regard his finally taking responsibility as a sign that he is a reformed man, realising the full extent of his misuse of science. However, examined more closely, he does not truly regret the forming of his first creature. He considers his experiment to be “a fit of enthusiastic madness” and does not “find it blameable” (Shelley 219). That Frankenstein is not truly reformed is further made visible in his before-mentioned relation to fellow-scientist Walton. Their relationship reveals how Frankenstein cannot wriggle out of the grip science has on him. Frankenstein thus has a mixed message to Walton; on the one hand he encourages him to “seek happiness in tranquillity, and avoid ambition”, but on the other hand he encourages his scientific mission and claims that even if he himself fails, “yet another may succeed” (220). The rejection of science is thus not entire, and according to Goodall, “promethean science dealt only in extremes: it either enabled the triumph of the life force or led to miserable destruction” (130). In the case of Frankenstein, science leads to the destruction of the miserable scientist as well as his creation.

The final arctic scenes function as a backdrop to this destruction, fittingly illustrating the misery facing Frankenstein, his creation and Walton. The difference between the destinies of Frankenstein and Walton is that Walton’s crew forces him to retreat from the Arctic and return to England and his sister. To Baldick, Walton’s decision is “settled for him by the employees whose lives he has risked, and he is saved from his folly by collective strike action” (55). The threatened mutiny ultimately saves Walton’s life, but perhaps kills his ambition at the same time. In contrast, Frankenstein has never had a crew to restrain him and has therefore been free to lose himself in his scientific quest. Chapple sees a stronger connection between science and the tragedy experienced by the three narrators. He notes Shelley as having “unexpectedly made a literary discovery that ran counter to almost all we have so far seen in Romanticism – the power of modern science to create human desolation” (37). Consequently, in the wrong hands and with the wrong intentions, science creates no more than misery and death.

Chapter 2: Science and the Fear of Unpredictable Degeneration

Having witnessed how the uncontrollable exploration of scientific progress leads to the destruction of both Frankenstein and his creation, we will now study the effects of another aspect of this progress. *The Strange Case of Dr Jekyll and Mr Hyde* awakens the question whether the process of scientific progress can be reversed, and bring forth something not only non-progressive, but also degenerative and menacing. Is it possible that progress can awaken something from the past, threatening the present? This second chapter focuses on the fear created by the downside of progress – the fear of unpredictable degeneration. Following the pattern from the previous chapter, the first section of the chapter will analyse Dr Jekyll's motive for using science; the second section will study the use Dr Jekyll makes of science and in the third section, we will take a closer look at the violent and frightening result.

Dr Jekyll's intentions, resembling those of Frankenstein's, can in fact also be seen as initially good; he seemingly aims at making life easier for humankind. Convinced that he and the entire human race suffer from having a split personality with one good and one evil side, he aspires to ease that suffering. Jekyll claims that "man is not truly one, but truly two", and dreams of the day when he will be able to split the physical being to match the split personality (Stevenson 55). He envisions how this process would lift a heavy burden. If the two sides of the mind "could but be housed in separate identities, life would be relieved of all that was unbearable" (56). In the light of this, it can be argued that Dr Jekyll's intentions for using science are initially good. Baldick supports this idea, claiming that Dr Jekyll's experiment is "primarily an ethical one conducted, apparently, for the best of reasons, but it has unacknowledged motives which the tale exposes metaphorically in the shape of Hyde" (145).

These hidden motives are unveiled when Dr Jekyll's basic idea is examined more closely. Inherent in the idea of separating the good and bad elements of a person is the fact that an evil creature must come into being alongside the good one. Jekyll sees how this separation would benefit both beings, thus making in reality no moral distinction between the two: "the unjust might go his way, delivered from the aspirations and remorse of his more upright twin; and the just could walk steadfastly and securely on his upward path" (Stevenson 56). This lack of distinction between the two beings he wishes to create lays bare the difference between Dr Jekyll's motives and Frankenstein's: Frankenstein, however misdirected, aims at freeing mankind from pain and suffering, whilst Dr Jekyll targets at separating good and evil and thus relieving them of each other's restraints. Baldick sees how the two scientists both "begin with good intentions, but their projects are internally contradictory: Frankenstein tries to become the

benefactor of his race by turning his back on it, while Jekyll and wishes to rid himself of shameful secrecy by secret means” (145). Dr Jekyll’s motive is thus thinly veiled by good intentions, but behind the veil lurks another, more egotistical motive.

If Jekyll were to succeed in realising his idea, he would then be able to allow himself to indulge his lower self whilst keeping up appearances as the respectable, Victorian gentleman Dr Jekyll. As Hyde, he could gain access to pleasures otherwise denied him, he could “thus plod in the public eye with a load of genial respectability, and in a moment, like a schoolboy, strip off these lendings and spring headlong into the sea of liberty” (Stevenson 60). Kathleen L. Spencer points out that “the pressures on middle-class Victorians to conform were intense (and too well known to need documentation)” (207). The pressure of following strict social conventions, and not being able to give in to his instincts, torments Jekyll and becomes a breeding ground for his split personality.

Dr Jekyll’s goal of creating an “un-split” person, more at ease with himself, can be seen as an attempt to take another step in the evolution of humankind. Jekyll’s idea of separation might be said to reflect the thoughts awakened by the development within evolutionary biology; theories pointing towards a continuous development of species could also indicate the possibility of evolving out of this split personality. Reid states that Jekyll “depicts the human brain as complex and disunified, consisting of different layers of mental organization, developed sequentially over the long evolutionary past” (95). Not satisfied with the complexity of the human psyche, Jekyll aims at purifying each part of the psyche’s spectre. According to Reid, he “rebels against this mixed heritage” (95).

The use of science in the form of evolutionary theories is thus portrayed as Dr Jekyll’s best chance to reach his aim: the mental and physical separation of his good and evil side. His scientific studies are depicted as leading “wholly towards the mystic and the transcendental”, and have, in Jekyll’s words, the potential of casting “a strong light on this consciousness of the perennial war among my members” (Stevenson 55). Jekyll’s studies differ from the studies conducted by Frankenstein, by focussing on biology instead of electricity and chemistry. They are seemingly specifically targeted on the new idea of evolution. To Jekyll’s delight, they pay off: “a side light began to shine upon the subject from the laboratory table” (56). He realises that he might be able to detach the body from the mind; he becomes conscious of “the trembling immateriality, the mist-like transience, of this seemingly so solid body in which we walk attired” (56). In this manner, his studies question and challenge the accepted notion of human physiology and take him one step closer to achieving his goal.

Even though Jekyll's studies are successful, the direction of them is appalling to his fellow scientist, Dr Lanyon, despite the fact that he is unaware of Jekyll's ultimate goal. Unlike Walton, Dr Jekyll's foil is not inspired or dazzled by Dr Jekyll. Instead, he is portrayed as a moderate and traditional scientist, working in "Cavendish Square, that citadel of medicine", where he practices medicine in a down-to-earth fashion (12). It is implied that the two doctors used to be closer, conducting work and studies in roughly the same territories. But to Dr Lanyon, the work of Dr Jekyll is "unscientific balderdash" and he blames him for being "too fanciful" and having gone "wrong, wrong in mind" (12). The conflict between the two doctors can be seen as bringing to life some of the doubts raised by the public concerning the medical profession in the Victorian era. Having been admired and respected, doctors were now looked upon with some suspicion. To MacLeod, Stevenson "dramatized the fantastic prospect of a materialistic and murderous alter-ego lurking behind every respectable medic" (5).

Respected or not, Dr Jekyll profoundly desires to separate his good and evil self and thereby end the tiresome struggle he believes is destroying him. He is convinced that he is not alone in this struggle, and he swears to "the thorough and primitive duality of man" (Stevenson 56). This claim supports the idea that Jekyll sees the separated selves as the evolved human being. Cyndy Hendershot states that "while Jekyll accepts Darwinian principles, he ultimately rejects their implications, seeking to rid man of his animal past through scientific means" (106). However, as Dr Jekyll does not explicitly prefer his good side to his evil one – he states that out of "the two natures that contended in the field of my consciousness. . . I was radically both" – the focus is perhaps not on getting rid of his animal past, but setting it free (Stevenson 56).

Regardless of whether the intention is to reject it or set it free, the animal past is indeed the focal point of Dr Jekyll's studies. In his struggle of separation, some of the most interesting mechanisms of evolutionary biology are laid bare, brought to light by the works of evolutionists Jean-Baptiste Lamarck and Charles Darwin. The difference between Lamarck and Darwin is essential, since their takes on evolution are opposed: Lamarck claims that adaptation is the main force, whereas Darwin stresses coincidence. Reid explains that Lamarck's theory had "a notably progressive momentum" contrasting Darwin's theory which "was subject to multiple, conflicting interpretations: progress and direction existed alongside unpredictability and extinction" (7). Lamarck is of the opinion that evolution is carried out when beings adapt to the circumstances under which they live and develop new skills and characters. Darwin, on the other hand, sees evolution as a process filled with random development which might signify adaptation but not necessarily so. Darwin's idea that evolution can randomly signify both progress and degeneration should perhaps warn Dr Jekyll that his idea of bringing humankind forward might just as easily

lead to putting it back. It thus seems as if Jekyll is a disciple of Lamarck rather than of Darwin, hoping that his scientific studies will make humankind adapt and thereby end the internal struggle.

Thus, leaning towards what seems to be a Lamarckian idea, Jekyll proceeds with his studies to separate his inner selves. Choosing the progressive take on evolution, Jekyll evidently ignores the risk of degeneration, the unpredictable development advocated by Darwin. The idea of degeneration echoed in several branches of contemporary science and Reid points to how Stevenson shone the light on “the conflicting claims of inheritance, environment, and volition [which] formed the principal fault line of *fîn-de-siècle* degenerationist discourse” (64). If Jekyll were a disciple of Darwin, he would most likely be aware of the risk that earlier forms of humanity might stay hidden in the new, evolved form, possibly to reappear at some point. However, being a Lamarckian disciple, Jekyll seems to be convinced that these earlier forms simply will become extinct. If the outcome of the experiment were to follow Lamarck’s progressive take on evolution, Jekyll would be free of his culturally induced suffering.

The risks connected with Jekyll’s experiment are also highlighted by the theories of evolutionary psychologist James Sully (1842-1923). He suggests that Jekyll’s experiment is risky since it aims at transforming the human mind, the weakest part of humans “since it has been recently acquired” (Hendershot 106). Following this theory, Jekyll’s experiment on the delicate human mind might equally likely bring forth a degenerate being as an adapted, evolved form. Trying to transform and adapt the human mind therefore creates two possible threats to mankind: the threat of being surpassed by a superior being and the menace of becoming a degenerate species. Hendershot expands on Sully’s theory, pointing to two alternatives: “that the human species may be supplanted by a more evolved race as well as that the human may devolve to an earlier form” (106).

Evidently ignoring the risk inherent in both alternatives, Jekyll continues with his experiment and manages to successfully separate his physical body from his split mind; he creates a “second form and countenance” (Stevenson 57). Unfortunately, he soon realises that the result is a degenerate form rather than a progressive form, and utters that it is “the expression, and bore the stamp, of lower elements in my soul” (57). Punter notes how Jekyll’s transformation “is the reversion of the species, the ever-present threat that, if evolution is a ladder, it may be possible to start moving *down* it” (244). Jekyll’s desire to speed up the pace of evolution backlashes and results in a degenerate being instead of an evolved human.

The degenerate being, Mr Hyde, differs from Dr Jekyll in several aspects. Hyde is described as being “smaller, slighter and younger than Henry Jekyll” which Jekyll believes is due to the fact that his evil side is “much less exercised and much less exhausted” through his constraints on

himself (Stevenson 58). Having striven to keep up appearances, he has formed the ground for a small, yet evil and vital being. Hyde's appearance expresses with clarity how he is a more primitive being than his creator. Whilst Dr Jekyll's hand is "professional in shape and size: it was large, firm, white and comely", Hyde's hand is "lean, corded, knuckly, of a dusky pallor and thickly shaded with a smart growth of hair" (61). The stark contrast between the hands mirrors Hyde's primitiveness in comparison to Dr Jekyll.

The primitive elements of Hyde's physical being are also replicated in his mind. He is often compared to an animal; he cries "like a rat" (41) and jumps "like a monkey" (42). Reid points out that "Stevenson's tale represents the atavism unveiled by evolutionist psychiatry, which focused on the survival of primitive elements in human consciousness" (97). Obviously these elements have indeed survived in Hyde, resulting in a situation where Jekyll has, in a rather terrifying way, moved down the evolutionary ladder instead of the opposite. In a perhaps less dramatic take on the surviving primitive elements, it is possible to see Hyde as a savage rather than an animal. Hyde is depicted as having "snarled aloud into a savage laugh" (Stevenson 15), which makes Punter claim that "it is strongly suggested that Hyde's behaviour is an urban version of 'going native'" (241).

Savage or animal, Hyde's primitive elements turn out to be a veritable threat to both his creator and the public in general. The most apparent type of threat Hyde poses is the physical, immediate threat. The killing of Sir Danvers Carew, an MP and representative of a modern, democratic society, in "ape-like fury" mirrors how little regard Hyde has for human life as well as civilised society (Stevenson 22). Hyde's violent nature makes him infamous: "tales came out of the man's cruelty, at once so callous and violent, of his vile life, of his strange associates, of the hatred that seemed to have surrounded his character" (31). The brute that is Mr Hyde spreads fear and threatens the lives of the public, i.e. members of civilised society. To Reid, Stevenson "contested the relentlessly progressivist accent of evolutionary anthropology" (110). Displaying the bestiality of this new breed is one of the ways in which Stevenson questions the Lamarckian idea of permanent progress in evolution. By awakening the fear of humankind succumbing to a less developed form, Stevenson seems to portray himself as a Darwinian.

Hyde's bestiality spreads deep fear amongst the people he encounters. Dr Jekyll's friend Enfield, who catches Hyde after he tramples down a girl in the street, relates how Hyde "gave me one look, so ugly that it brought out the sweat on me like running" (Stevenson 7) and Dr Lanyon recounts how Hyde's touch gives "a certain icy pang along my blood" (52). In addition to the rather understandable fear he spreads, Hyde also gives rise to hate. The surgeon attending to the girl turns "sick and white with desire to kill him" (8) even though he is depicted as being "about

as emotional as a bagpipe” (7). These rather violent reactions to Hyde also suggest that the horror Hyde awakens has a more profound cause than simply his evil deeds.

Even though almost every character responds with disgust and fear to Hyde there is simultaneously an element of uncertainty as to why they react as strongly as they do. When Enfield tries to explain Hyde’s appearance to Jekyll’s friend and lawyer Utterson, it is not without difficulty; he states that Hyde “must be deformed somewhere; he gives a strong feeling of deformity” but at the same time he “couldn’t specify the point” (10). Utterson has a similar reaction, he sees Hyde as “pale and dwarfish, he gave an impression of deformity without any nameable malformation” and even “troglodytic” (16). It is possible to see these strong reactions as mirroring the fear of one’s own inner brute – the fear that degeneration can possibly strike oneself. Reid claims that “as the focus on Hyde’s antagonists indicates, it is preoccupied by the contagious nature of his atavism rather than by Hyde himself” (102).

Evidently, Hyde has an unsettling and disturbing effect on the Victorian gentlemen in the novella. Living in a society which demands its citizens to conform to rather strict rules, these gentlemen would necessarily feel obliged to repress their lower or wilder sides. When confronted with a truly wild and low form of life as Hyde, their belief in their culture has to be reinforced. To Reid, “their atavistic responses therefore spring not from heredity but from cultural beliefs – about the importance of denying savagery” (102). Dr Lanyon, the gentleman who perhaps denies savagery the strongest, thus suffers a devastating reaction to Hyde. Initially suspecting that Jekyll might be blackmailed, Dr Jekyll’s strange behaviour makes Lanyon doubt his former colleague’s sanity and he fears that Jekyll is suffering from a brain disorder. His suspicions are strengthened when he is asked to fetch a drawer in Jekyll’s laboratory and receive a guest, presenting himself as Dr Jekyll. Convinced that Jekyll is insane and that he “was dealing with a case of cerebral disease”, Lanyon awaits the guest with a loaded gun (Stevenson 51). When Jekyll reveals his transformation abilities to Lanyon, the doctor’s life “is shaken to its roots” (54). Appalled and terrified by the result of Jekyll’s studies, Lanyon’s health deteriorates rapidly: “the rosy man had grown pale; his flesh had fallen away; he was visibly balder and older” (32). Unable to handle the atavistic transformation, Lanyon dies. Hendershot argues that Lanyon passes away because “Hyde’s transformation back into Jekyll shatters Lanyon’s faith in oppositions, which can contain Hyde’s meaning” (109).

Despite causing the death of Dr Lanyon, Hyde might be said to pose an even greater threat to his creator. The pressure of sharing his existence with this primitive, violent and hunted being lies heavily on Dr Jekyll. Much like Frankenstein, he is tormented by what seems to be a nervous breakdown, he utters how he is “a creature eaten up and emptied by fever, languidly weak in both

in both in mind [sic], and solely occupied by one thought: the horror of my other self' (Stevenson 68). Much as Frankenstein isolated himself in shame during his scientific work, Dr Jekyll keeps his scientific advancements away from the public. Baldick sees a parallel between the two scientists, noting that they work in "a noticeably male world of isolation and guilty privacy, thus highlighting and condensing the theme of irresponsible secrecy which runs through the nineteenth-century tradition of Romantic transgression" (144). Both scientists feel the need to isolate themselves with their creations: Frankenstein is alone whilst forming his being from various body parts, and Dr Jekyll seems to choose hermit-hood to avoid being caught as Mr Hyde.

The fear of getting apprehended and executed is just one aspect of Dr Jekyll's deep fear of Mr Hyde. The other, and even more terrifying aspect, is that Jekyll faces the risk of actually becoming Mr Hyde, the primitive part of himself he consciously separated and set free. Fearing this development, he utters: "I was slowly losing hold of my original and better self, and becoming slowly incorporated with my second and worse" (Stevenson 62). The fear is intensified when Jekyll starts to transform into Hyde even without the drug, making Jekyll realise that the balance has indeed been shaken and that Hyde's side seems to be growing stronger. He is horrified at the thought that the balance "might be permanently overthrown, the power of voluntary change be forfeited" (62). That Hyde might corrupt Jekyll's free will shows how Hyde is truly a threat from within and might also be seen as supporting Sully's claim that the mind is the weakest part of the human. Reid notes that "as Hyde gradually gains predominance, Jekyll fears an atrophy of the will, which alone can control the lower instincts" (97).

In spite of a deep fear of losing his free will and becoming his more primitive self, Jekyll's feelings towards his creation are rather ambiguous. On the one hand, he acknowledges that Mr Hyde is evil by referring to him as a "child of Hell [that] had nothing human; nothing lived in him but fear and hatred" (Stevenson 67). On the other hand, even though Dr Jekyll realises that Mr Hyde is evil and looks evil, when he sees him in the mirror he "was conscious of no repugnance, rather of a leap of welcome" (58). This welcoming emotion clearly reflects how Dr Jekyll aims at indulging in his lower side without having to feel remorse. Having transformed into Hyde, Jekyll feels "younger, lighter, happier in body" and this sensation is combined with "an unknown but not an innocent freedom of the soul" (57). Punter sees a parallel between Frankenstein and Dr Jekyll; how "the monster is the creature, the embodiment of Frankenstein's desire, just as Hyde is the desire-creature of Doctor Jekyll" (126).

Another parallel between the two scientists is that they both pity their creations and recognise how they have caused them pain. Frankenstein agrees to form a mate for his creation to save him

from his depressing loneliness. Even though Dr Jekyll is terrified at the idea of becoming Hyde, he still feels for him and recognises that his “love of life is wonderful” and knowing how Hyde fears being killed, he finds it in his heart “to pity him” (Stevenson 69). The scientists thus both fear and care for their creations.

Jekyll’s ambiguous feelings towards Hyde are also reflected in the way Jekyll’s feelings of remorse are depicted. Jekyll claims to be both “the chief of sinners” as well as “the chief of sufferers” (33). Nevertheless, he seems reluctant to fully take responsibility for creating this violent being. Even though he is “at times aghast before the acts of Edward Hyde”, he is at the same time convinced that “it was Hyde, after all, and Hyde alone, that was guilty” (60). This unwillingness to recognise his own guilt in Hyde’s actions resembles the way Frankenstein denies being responsible for the actions of his creature. It also displays how Dr Jekyll both indulges in being Mr Hyde as well as distancing himself from him.

If Dr Jekyll’s feelings towards Mr Hyde can be described as ambiguous, Hyde’s sentiments towards Jekyll are of a cooler kind. Their relationship is therefore rather unequal: “Jekyll had more than a father’s interest; Hyde had more than a son’s indifference” (63). Nevertheless, Jekyll and Hyde do have one thing in common: the dread of getting caught and executed. This fear forces Hyde to repeatedly transform back into Jekyll, to “commit temporary suicide, and return to his subordinate station of a part instead of a person” (69). Despite loathing not being able to gain control, Hyde realises that the only way to stay alive is to return to the form of Jekyll. Even though Hyde’s actions are what put them both in danger, Hyde is the one who actually gets them out of danger. When Jekyll transforms into Hyde in broad daylight, he panics but as Hyde he is more alert and resourceful: “where Jekyll perhaps might have succumbed, Hyde rose to the importance of the moment” (66). Thus, the primitive form saves the civilised man. To Hendershot, this supports the idea of the “physical agility and quickness in thought of undomesticated man” (106).

The ever-lasting struggle between Jekyll and Hyde goes to show how Jekyll has failed in reaching his goal: the end to his destructive internal war. Having opted for the total separation of his two selves, Dr Jekyll finds himself still a divided person. The depressing result is “two characters as well as two appearances, one was wholly evil, and the other was still the old Henry Jekyll, that incongruous compound” (Stevenson 59). Even though he succeeds in separating himself and creates an entirely evil being, the other half is still not an entirely good one. His better half is still a person with better and worse sides. Punter points to the fact that the two sides are not each others opposites, rather how Hyde is within Jekyll, “the fact that he is smaller than the doctor, a ‘dwarf’, demonstrates that he is only a part whereas Jekyll is a complex whole” (242).

Since Dr Jekyll is unsuccessful in creating two opposite beings, one entirely evil and the other entirely good, the result might be described as devastating. In addition to being forced to live under continuous pressure from his internal war, he also has to worry about the evil deeds of his lower self. In the light of this, the separation and creation of Hyde does not signify progress or an evolved man, but rather degeneration and a return to a more primitive being. To Baldick, both Frankenstein's and Jekyll's creations "mock them by appearing in the shape of the conditions in which they were brought forth, rather than the ends for which they were conceived" (145). Being created for mainly egotistical reasons, the creations do not constitute a glorious new race or the new, evolved man. Instead, they bring fear and suffering, threaten their creators' very existence and finally bring about their deaths. When Jekyll realises that the balance between him and Hyde has been permanently overthrown, and that his violent, degenerative side is on the verge of taking control, he ends both his own life and Hyde's.

Chapter 3: Science and the Reinstatement of Human and Religious Values

Portrayed so far as a bringer of death, desolation and misery, science will play a noticeably different role in this last chapter of the essay. In *Dracula*, science is instead an important tool for the forces of good in the battle to protect humanity from the forces of evil. Having been used for oblique and egotistical purposes in *Frankenstein* and *The Strange Case of Dr Jekyll and Mr Hyde*, science in *Dracula* plays the part of a predominately positive force, used with the best intentions and no longer exploited without reflective forethought. Nevertheless, the limitations of what science is capable of are also put to the test – can science answer all our questions? In step with the previous chapters, this chapter will correspondingly study why, how, and with what result Dr Seward and Van Helsing employ science in the fight against evil.

In contrast to Frankenstein and Dr Jekyll, who mainly turn to science to serve themselves, the motivating force for Seward and Van Helsing is chiefly altruistic. Their aim is not to create a new being but instead to protect both friends and strangers from the threat posed by an alien evil force. They look upon the fight against evil as a vocation and vow to “find out the author of all this our sorrow and to stamp him out” (Stoker 217). Portrayed as hard-working, responsible and religious people “pledged to set the world free”, Dr Seward and Van Helsing thus differ greatly from Frankenstein and Dr Jekyll. The latter scientists are best described as transgressors, eager to challenge and overturn the established view on life, death and humanity (321).

However, the characteristics of a transgressor are found in the enemy Seward and Van Helsing vow to resist. Revealing himself as Count Dracula, their enemy is not only frighteningly powerful, he is also a transgressor capable of killing as well as reviving. The vampire count thereby challenges the very idea of life and death. Opposing him are the two scientists armed with what might be described as traditional Victorian values. Punter notes several contrasting traits between the scientists’ Crew of Light and the vampire, for instance how “Dracula stands for lineage, the principal group of characters for family; Dracula for the wildness of night, they for the security of day” (259).

The battle to preserve and protect the boundaries between life and death is also a struggle to shield humanity from Dracula’s influence. In addition to being as menacing as Frankenstein’s creation and Mr Hyde, the Count’s state is infectious. Hence, his victims risk being transformed into vampires and becoming “foul things of the night like him - without heart or conscience, preying on the bodies and the souls of those we love best” (Stoker 237). The two scientists recognise that facing up to Dracula means facing the threat of losing their humanity and becoming soul-less vampires. To Senf, the description of the children of the night mirrors

influence from evolutionary biology: “Stoker presents Dracula and his fellow vampires as members of another species, one that is physically more evolved but also one that is morally trapped at an earlier stage” (130).

Frighteningly, the threat goes beyond transforming into a seemingly devolved species. Dracula’s ability to blend into a new environment threatens not only individuals but also the society in which they live; civilisation as such is thus at stake. The manner in which he successfully adapts to British society displays what a cunning enemy Dracula is. His coming to the new country is carefully planned; in Van Helsing’s broken English, the vampire “study new tongues . . . the politic, the law, the finance, the science, the habit of a new land and a new people who have come to be since he was” (Stoker 321). The desire to defend Britain from Dracula can be paralleled with how late-Victorians felt a passionate need to safeguard British traditions from foreign influence. Spencer sees how the “identity for the ordinary middle-class Briton now hung delicately on two slender threads at the extreme margins of scale, the intimate and the national” (204). The manner in which Seward and Van Helsing “go out as the old knights of the Cross” can consequently be seen as protecting individuals as well as their civilisation from a strange and alien danger (Stoker 320).

Turning to science to protect Britain and its inhabitants from Dracula might be seen as a logical step for a medically trained late-Victorian gentleman such as Dr Seward. The massive scientific advancements during the 19th Century created a profound belief in the potential of science to illuminate any mystery. Senf argues that British confidence, initially founded on the power of the Empire, was further boosted by the progress of science: “the typical nineteenth-century Englishman often came to believe that there was no problem that science could not solve” (6). Struggling to cure his patients, “to bring them back to happiness and to those that love them”, psychologist Seward is a disciple to science and selects it therefore as his weapon to fight the menacing evil (Stoker 114).

Dr Seward’s master and colleague, Dutch professor Van Helsing, offers a rather different view on how to fight evil. Even though he is a devoted scientist, he is also an advocate of faith, sacrifice and hope. Punter characterises him as “a superman, and therefore combines in himself a number of contradictory qualities, but the emphasis in his character is on order, neatness, reserve” (259). Possibly suspecting from the start what evil influence is to be confronted, Van Helsing states that his and the Crew of Light’s mission must with necessity be performed with an open mind and in secret. He realises that doubt and reluctance will in fact protect Dracula. Scepticism will be “at once his sheath and his armour, and his weapons to destroy us, his enemies” (Stoker 321).

Seward and Van Helsing become rapidly aware of the potentially catastrophic consequences of this omni-threatening evil and decide to stop it. Even though the two scientists' approach to battling Dracula differs somewhat, they have a characteristic in common that both Frankenstein and Dr Jekyll lack, namely reflective forethought. Their forethought in hindering Dracula might be seen as paralleling Frankenstein's refusal to form a mate for his creation. However, whilst Frankenstein arrives at the conclusion not to form another being after experiencing the devastating results of his first creation, Dr Seward and Van Helsing realise this without making a disastrous mistake. According to Rollin, most scientists have a tendency "to be cavalier about the dangers emerging from science and technology . . . or to ignore them" (71). Van Helsing and Seward's cautiousness thus separates them from the transgressors who are driven by glory and the excitement of new discoveries.

Combating a potent or possibly even omnipotent enemy, the scientists are forced to use all the weapons available to neutralise him. Van Helsing describes Dracula in life as a "soldier, statesman, and alchemist – which latter was the highest development of the science-knowledge of his time" (Stoker 302). In addition, Dracula is depicted as being "cunning more than mortal, for his cunning be the growth of ages" (237). The scientists' turning to their own field of expertise signifies utilizing new and modern weapons against an old and powerful enemy.

One of these modern weapons is medicine. As well as being a medically trained professional, specializing in the field of psychology, Dr Seward is an accomplished and multi-talented man, described by one of his patients as a "humanitarian and medico-jurist as well as scientist" (244). He is seemingly so devoted to his vocation that he in fact shares his house with it; the asylum is housed in an added part to his estate. On account of this devotion, it seems only natural that he would seek the answer within medicine as to why Dracula's first victim on British soil, Lucy, has turned ill. Upon examining her, he suspects that a psychological disease, "something mental" has caused her sudden illness (111). Understandably, Seward is not capable of guessing the real cause of her medical state. His only clue is a small wound on her neck and he touches on the idea that it "might be the means of that manifest loss of blood" but rejects it rather rapidly, since "such a thing could not be" (123). However, even if he does not consider a vampire bite, he does test Lucy's blood in the hope of finding the cause of her disease.

Despite Seward's efforts to cure her, he finds himself forced to witness how she gets worse and worse. Watching Lucy deteriorate is not only painful, it is also a display of how fruitless his manner of using science is. Seward slowly realises that despite his scientific skills, he is clueless as to the origin of Lucy's dreadful condition; he exclaims "I do not know what to think, and I have no data on which to found a conjecture" (191). Blind to the possibility of a supernatural enemy,

he shows how his use of science represents a short-term view where all the aspects of the case are not explored. Senf is not surprised at Seward's inability to identify the threat: since he is "the most scientific and rational of all the characters, it takes him the longest to accept the presence of what is Gothic and mysterious" (21).

Seward's rationality and scientific enterprise mimics in part the overly ambitious spirit of Frankenstein and Dr Jekyll; mirroring his predecessors, he also exhibits tendencies to exploit science without forethought. During the treatment of one of his patients, obsessed with devouring life and now demanding a cat to feed on, he contemplates giving him the animal to come closer to uncovering the reason behind this obsession. Tempted, he asks himself why he should not "advance science in its most difficult and vital aspect – the knowledge of the brain" (Stoker 71). Nevertheless, he resists temptation, thus drawing a line between himself and the two other scientists.

However, it is not scientific hubris that puts the greatest strain on Seward's mental health. To be able to fight Dracula he has to acknowledge the alien nature of his enemy which means that he is obliged to revalue the very core of his scientific, British identity. The process of revaluation and slowly accepting the unknown leads him to question his sanity and he speculates: "if my long habit of life amongst the insane is beginning to tell upon my own brain" (135). Troy Boone claims that Seward's failure "to understand Dracula in supernatural terms actually empowers the vampire" which allows the Count to menace what is British with "radical transformation, with the subversion of its most powerful ideals". The doctor's blind faith in rational science thus creates a vulnerable society, unprepared to face an alien threat.

Seward's Dutch master Van Helsing, however, seems more prepared to face this alien threat in the form of a vampire. He is also a trained doctor, prominent in his field, depicted as "an individual [who] has revolutionized therapeutics by his discovery of the continuous evolution of brain-matter" (Stoker 244). Initially, he aids Seward in the attempts to cure Lucy by utilizing medical knowledge, when, due to her massive blood loss, the two doctors administer several blood transfusions. Van Helsing detects the strange fact that even though Lucy has lost blood she is not anaemic. Somewhat perplexed, he still concludes that "yet there is cause; there is always cause for everything" (114). Unlike Seward, Van Helsing is not perturbed when confronted with Lucy's mysterious disease. Instead, when the blood transfusions and the medical treatment prove ineffective, he directs his efforts to help Lucy in a new direction. Arranging garlic flowers around Lucy's neck and telling her and Seward that "this is medicinal, but you do not know how" illustrates how Van Helsing's approach is more all-encompassing than Seward's, who is blinkered by his focus on pure medicine (130). Aware that modern medicine is insufficient in the battle

against Dracula, he also seeks answers in the non-scientific realm. To Boone, Van Helsing “proposes, in effect, a science that validates reason but does not deprivilege the supernatural”.

Van Helsing’s recourse to applied science and the supernatural signifies the introduction of other elements such as folklore and superstition in the fight against the Count. This combination acknowledges past beliefs and signals his long-term view of scientific use. Van Helsing exclaims that “to superstition must we trust at the first; it was man’s faith in the early, and it have its root in faith still” (Stoker 328). According to Senf, he “is perfectly willing to blend folklore with medicine so long as the procedure works” (30). In addition, Van Helsing points to how constant scientific development creates ever-shifting boundaries between science and non-science: “there are things done to-day in electrical science which would have been deemed unholy by the very men who discovered electricity” (191). In a manner unconcerned with old, new, scientific or non-scientific, Van Helsing utilises the entire spectre of his knowledge.

Van Helsing’s manner of exploring his knowledge displays how he has reached the insight that science is not the answer to every question. He seeks to convince Dr Seward of the limits a scientific approach holds: “Ah, it is the fault of our science that it wants to explain all; and if it explain not, then it says there is nothing to explain” (191). He argues in favour of the importance of keeping an open mind, not least when it comes to fighting Dracula. Van Helsing epitomises his view when he urges Seward to have faith and believe even when it seems impossible. Rosemary Jann claims that “Van Helsing argues that it is really scientists who lack an open mind, since they believe that what they can see and prove constitutes the whole of reality” (275).

In fact, keeping an open mind is a nearly overwhelming challenge to the Victorian scientist Seward. Van Helsing sympathises with Seward’s struggle and explains that in his own effort to keep an open mind, he has come to realise that “it is not the ordinary things of life that could close it, but the strange things, the extraordinary things, the things that make one doubt if they be mad or sane” (Stoker 186). And it is precisely the alien, supernatural nature of the enemy that is so burdensome for Seward to acknowledge. Boone sees how he, and the other members of the Crew of Light as well, are forced to “accept beliefs inimical to their self-conception as nineteenth-century Englishmen”.

Nevertheless, when Dr Seward eventually acknowledges the Count’s strange nature, the two scientists are able to make good use of some of the new sciences to fight him. Their utilization of criminal anthropology diminishes Dracula’s influence since it suggests that even though he is a powerful enemy, he is predictable and can therefore be beaten. Van Helsing seemingly regards the vampire as a common criminal, “this criminal of ours is pre-destinate [sic] to crime also; he too have child-brain” (Stoker 341). Jann claims that Van Helsing “reduces the protean Dracula to

an example of the rigidly deterministic Lombrosoan [Italian criminologist, 1835-1909] model that equates crime with insanity” (283). In addition, Spencer explains that criminal anthropology claimed “through elaborate measurements and charts of facial angles that habitual criminals were throwbacks to primitive ancestors, with more of the ape than the human about them” (204). This characterization of criminals echoes the appearance of Mr Hyde, who is also depicted as small, hairy and savage. When Van Helsing describes the vampire like a madman or even an animal, Dracula’s power is effectively weakened.

The diminishing of his powers through the theory of criminal anthropology also makes the Count more vulnerable to other branches of modern science. Even though medicine fails to save Lucy, other branches linked to psychology turn out to be of great assistance in battling Dracula. Mina, the female member of the Crew of Light, insists that Van Helsing hypnotize her during the night in order for her to exploit the connection she shares with Dracula after their exchange of blood. Making the most of their blood bond, she trails his escape through Europe. Mina’s hypnosis can be seen as mirroring the great public interest in paranormal activities and pseudo-science in the mid-19th Century. By exploring the near-psychology realm of mind-reading and hypnosis, the Crew of Light comes closer to capturing Dracula.

Trailing Dracula is further facilitated by the use of information technology, a scientific branch undergoing rapid development. Several of the characters own phonographs on which they record spoken, modern-time diaries. Mina, the secretary of the Crew of Light, transcribes these spoken diaries and collects them together with clippings from newspapers and letters. Her gathering and compiling of information about Dracula and his whereabouts is done with keen use of her typewriter and the decision to make several copies turns out to be crucial since Dracula attempts to set the evidence on fire. The employment of information technology might be said to be the field where the Victorians, Mina and Dr Seward in particular, are able to make good use of what modernity has to offer.

The Crew of Light’s capability to unite their set of skills into a potent whole is a crucial part of the successful result of their fight against Dracula. Not only do they combine science with folklore and superstition, they also combine their individual strengths to make an even stronger group. Van Helsing exclaims, “we have on our side power of combination – a power denied to the vampire kind; we have resources of science; we are free to act and think” (Stoker 238). Jann seems to agree and recognises how their “ability to record, order, share, and reason from their observations becomes at least as vital a weapon against Dracula as their willingness to believe in his supernatural reality” (280). Working together, they manage to bring about a controlled destruction of their enemy. The outcome of this chapter thus differs immensely from the result

in the two previous chapters. Here, a group lead by two scientists reaches a satisfying result whereas in the previous chapters an obsessed scientist succumbs in isolation.

The successful destruction of their enemy is a result of team work, but also of their readiness to work hard and make sacrifices. Even though Seward and his fellow Victorians struggle to accept that their enemy is a vampire, they still rally around Van Helsing and his plan to destroy Dracula. The vampire hunters are willing to unselfishly sacrifice themselves “for the good of mankind, and for the honour and glory of God” (Stoker 321). Jann remarks how “motivated by a sense of duty and strengthened by their ability to cooperate with one another, they enlist their intelligence in the service of a higher good” (276). The scientists and their team are also willing to keep their noses to the grindstone to protect people from Dracula. Punter recognises how “Van Helsing and his associates defeat him [Dracula] in the appropriate fashion, through hard work and diligent application, the weapons of a class which derives its existence from labour” (260).

In addition to sacrifice and hard work, the analysis has shown how other human and religious values that seemed forgotten in *Frankenstein* and *The Strange Case of Dr Jekyll and Mr Hyde* are reinstated. In contrast to a blind, selfishly motivated scientific pursuit which ignores or even rebels against nature and religion, the work of Seward and Van Helsing establishes the importance of faith, loyalty and family. To fight and conquer a non-human enemy, faith in the mission and each other is crucial. According to Jann, the key is belief since it is “the basis not just of faith but is, in Van Helsing’s mind, the foundation of all knowledge” (275). The manner in which religious attributes such as wafers and crucifixes are used to overthrow Dracula also revives some of the power of religious faith. Boone claims that the description of a Victorian scientist employing religious attributes demonstrates how “the occult does not oppose reason and progress here, reason and progress absorb the occult”. The importance of family and loyalty is displayed when one of the crew members, the American Quincy Morris, is killed in the destruction of Dracula. His unselfish sacrifice is commemorated after the birth of Mina and Jonathan’s baby, who is named Quincy. The boy heals the pain of loss and the Crew of Light evolves even more into a family since the boy’s “bundle of names links all our little band of men together” (Stoker 378).

The reinstatement of human and religious values is also mirrored in the crew’s pity for the vampires they are forced to kill in order to protect humanity. Recognising that the killings are the only alternative to save mankind, the team is not blind to the fact that the vampires were once humans. Mina is convinced that “that poor soul who has wrought all this misery is the saddest case of all” (308). The gruesome task of killing the vampires is less burdensome when they witness how the three vampirellas find solace as they are put to rest: “the repose in the first face,

and the gladness that stole over it just ere the final dissolution came, as realization that the soul had been won” (371). This sympathy and mercy for the enemy parallels the pity both Frankenstein and Dr Jekyll feel for their creations.

Nevertheless, the pity they feel manifests itself in various ways and with contrasting results. The pity of Frankenstein and Dr Jekyll allows their creations to roam free and put the public in harm’s way. Conversely, Seward and Van Helsing’s pity protects the public instead of exposing them to a mortal threat. Even though the final chase and killing is in part motivated by Mina’s condition, it is chiefly enacted to save humanity. By destroying Dracula neither Mina nor anyone else is forced to face being transformed into a vampire and running the risk of becoming his “bountiful wine-press for a while” and later his “companion” and “helper” (288). The death of the vampire ensures the safety and preservation of both individuals and the society in which they exist.

In a somewhat contradictory manner, the Victorians and Victorian society portrayed in *Dracula* are thus saved by scientists but not by science. In fact, had pure science come to their rescue, they would surely have succumbed to the vampire. Instead, their rescue rests on Van Helsing’s ability and willingness to explore the entire scope of his knowledge and combine new science with old superstition and folklore. As Senf puts it, the Dutchman “maintains a foot in both camps” (23). The different scientific disciplines, synthesized with loyal, trusting teamwork form a force able to neutralise the vampire threat. Jann also comments on how synthesis is the key to conquer Dracula: “Stoker’s narrative proclaims the power of belief, faith, and imagination, but the plot makes these dependent on logic, deduction, and proof for their ultimate success” (273). The power of this combination emphasises how science needs another element to be truly good and beneficial.

Conclusion

This essay has examined the role of science in the three classic horror stories *Frankenstein, or the Modern Prometheus*, *The Strange Case of Dr Jekyll and Mr Hyde*, and *Dracula*. The argument stated that the role of science in these works is changeable and constitutes both a friend and an enemy, depending on the protagonists' motives. Viktor Frankenstein and Dr Jekyll explore science selfishly and without forethought, creating fear of uncontrollable speculation as well as unpredictable degeneration. However, the good aspects of science are later redeemed when Van Helsing and Dr Seward add human and religious values. In order to show the argument to be true, the motives for turning to science, the use of science and the results have been scrutinized.

In the three chapters, the protagonists' relation to and exploration of science have been examined. Viktor Frankenstein's scientific obsession results in an isolated, mad scientist and a tormented creature, hungry for revenge. The violent and hateful Mr Hyde, a symbol of primitive backlash, is the outcome of Dr Jekyll's scientific venture. Conversely, Van Helsing's and Dr Seward's humanistic use of scientific progress creates shelter and hope. The distinguishing element in these outcomes is morality, carrying with it reflective forethought and compassion. Clearly lacking in the minds of Frankenstein and Dr Jekyll, it is ever-present in Van Helsing and Dr Seward's use of science. Being used with the best intentions and not for selfish ends, science is thus infused with solid, moral values. Morality is thus a key factor when it comes to the result of the use of science.

Imbuing the use of science with morality or not has a great impact on several areas, ranging from the initial intentions to the end result. Analysing the driving force for turning to science, there are rather distinct similarities between Frankenstein's and Dr Jekyll's, contrasting the motivating force of Van Helsing and Dr Seward. Even though it is possible to trace beneficial intentions in Frankenstein's motivation, i.e. his wish to save humankind from harm, they are quickly overtaken by his desire to find glory in scientific exploration. Dr Jekyll's good intentions are even vaguer: the quest to save humankind from the sufferings of a split personality is a thin veil aimed at disguising his desire to indulge in his lower side and allow it to roam freely. However, after examining Van Helsing's and Dr Seward's motives, it is evident that their driving force is a non-selfish one: to save friends and strangers from an unknown evil.

The analysis has shown that an immoral approach to science has a devastating impact on the people close to the protagonists, their friends and family. Frankenstein's selfish exploration afflicts his family in a horrific manner when most of his loved ones are killed, directly or indirectly, by his creation. Likewise, Mr Hyde's violent and frightening nature has a fatal impact

on the circle around Dr Jekyll, keeping his friends and staff in fear and causing the death of his former colleague and friend. In contrast, the vampire fighters of the Crew of Light with Van Helsing as their leader are brought closer together by their moral use of science in the battle against an omni-threatening enemy. Hence, science in *Dracula* does not destroy a circle of friends, but lays the foundations of a family.

In addition to affecting friends and family, the consequences of the protagonists' use of science run wider and deeper as, paradoxically, they both disregard and defend the role of nature, religion and society. Whilst Frankenstein might be seen as positioning himself as both God and Nature when he forms his creature, Dr Jekyll might be seen as ignoring God and contesting Nature when he uses science to speed up the workings of evolution. Their creations spread fear as they go on their killing sprees, posing a threat not only to the close circle of their creators but also to innocent bystanders. Mr Hyde's atavistic being is also a menace to the core of Victorian society. His savage and animal-like behaviour is living proof of the survival of primitive elements in man and undermines the seemingly impregnable Victorian foundation of faith in progress and religion. However, these core values are reinstated when the Crew of Light defends Victorian society from a foreign enemy with the aid of a science based on a respect for family and religion. Thus, integrating science with the social foundation ensures its beneficial direction.

Whether the scientists attach morality to their scientific work or not, has perhaps the direst consequences in the relationship between the creators and their creations, at least in *Frankenstein* and *The Strange Case of Dr Jekyll and Mr Hyde*. Viktor Frankenstein forms his creature while pursuing a scientific obsession and is therefore both unable and unwilling to reflect morally on the possible consequences of his work. He is instead blinded by the potential glory of becoming father to a new race. However, this pursuit does not offer any glory to the scientist, but isolation, madness and death. Guilt-ridden, Frankenstein does display seeds of morality and reflective forethought when he refuses to form a mate for his creature, even though his newly-found sympathy for his plight tempts him to consider another creation. Unfortunately, it is too late to amend the result of his first creation and the end result is fatal for both father and son.

Much like Frankenstein, Dr Jekyll does not reflect upon the possible consequences of creating a new being in order to selfishly indulge in his lower nature. Succeeding in separating his two halves through drinking a potion, the scientist is forced to face how the frightening Mr Hyde starts to emerge even without the potion. This realisation drives the scientist to isolation and madness; he is haunted by the risk of being completely overtaken by his lower self and captured as a murderer. His creation is consequently a grave threat to Dr Jekyll, but even so he still arrives at feeling sympathy for his creation and admiring his vitality. This sympathy is perhaps the only

sign of scientific morality displayed by Dr Jekyll. Painfully aware of losing all control over his violent, primitive half, Dr Jekyll sees no other solution than seeking death by his own hand.

In *Dracula*, science is used in the service of Van Helsing and Dr Seward, scientists seeking to destroy a menacing enemy rather than creating a new being. Hence, the destructive relationship seen in the other two works is not present in *Dracula*. Utilising science with unselfish motives, whilst being a part of a crew committed to each other and their end, separates them from Frankenstein and Dr Jekyll. With a clear view of the desired consequences, i.e. the destruction of the vampire, they combine science with knowledge from other sources such as religion and superstition. This combination of powers is a crucial factor in conquering the enemy, proving how science cannot be an isolated agent to be truly beneficial. The crew's faith in their mission and each other also enables them to keep their sanity when faced with the supernatural and alien nature of their enemy. Unlike the other scientists, they are therefore not stricken with madness. Even though the mission is to destroy Dracula, the crew also empathises with the vampire.

This essay has demonstrated how the lack of scientific morality in *Frankenstein* breeds fear of uncontrolled progress, hence portraying science as an evil force and a bringer of misery and destruction. Repeating its dark connotation in *The Strange Case of Dr Jekyll and Mr Hyde*, science is once again a bringer of danger and death, as it creates deep fear of surviving primitive elements in modern man. Even though Frankenstein's and Dr Jekyll's scientific explorations bring different fears to light, the result is equally destructive and devastating. In *Dracula*, the opposite result is attained when science is combined with superstition and folklore as well as human and religious values. The scientific effort in *Dracula* is triumphant since it is fused with high morality, good intentions and a respect for various types of knowledge. The result is saved lives, a society safe from harm and an enemy compassionately laid to rest.

The scope of these three works illustrates how scientific advancements must have human values as a backdrop if they are to genuinely signify progress. Shelley's cautionary tale warns us against the dangers inherent in exploring science with thoroughly selfish and short-sighted intentions. Correspondingly, Stevenson portrays the dangers of excessive aspiration and the notion that development automatically means progress. Stoker, on the other hand, directs our attention to the considerable potential benefits of science if guided properly. These hopes and fears are no strange concepts to our day as we are still torn between the promises and threats created by scientific progress. When Frankenstein's and Dr Jekyll's blind attraction to the limitless possibilities offered by science seems to be shared by some scientists of our time, it is perhaps more critical now than ever before that these possibilities are harnessed by human values to constitute a hope and not a threat.

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