A history of nineteenth-century medical science: George Eliot’s *Middlemarch*
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INTRODUCTION

*Middlemarch* is claimed to be George Eliot’s masterpiece. What is more, a fair member of scholars with a special affiliation for Victorian literary classics cherish and praise it as the best work of fiction of the nineteenth century. Even George Eliot herself was aware of her success. In her journal she once wrote: “no former book of mine has been received with more enthusiasm”\(^1\). In the course of the two past centuries, numerous writers and academics have expressed their fascination for this versatile novel. Virginia Woolf, for example, was one of the first established literary figures who expressed her respect for Eliot’s work of fiction claiming that it was “one of the few English novels written for grown-up people”. “Anti-romantic, yet intensely passionate, it is one of the greatest novels of all”, agrees A.S. Byatt \(^2\). Henry James’s\(^3\) opinion was more critically nuanced saying that “*Middlemarch* is at once one of the strongest and one of the weakest of English novels”. Arthur George Sedwick clarifies his stance: “It would be a mere waste of time to go into a minute criticism of *Middlemarch*. The plots are too numerous, the characters too multitudinous, and the whole too complicated […] one is more tempted to admire silently than to criticise at all” (*The Atlantic Monthly*, April 1873). More recently, in January 2009, the *Telegraph* even listed the novel as the number one in the top “100 novels everyone should read”.

These superlatives seem to be based on a number of qualities which I will elucidate by means of a short introduction to the novel. Around 1870 George Eliot started writing a story entitled “Miss Brooke”, and shortly afterwards another story about a young ambitious doctor in a provincial town. Then she realized that both stories lacked strength, and consequently decided to combine the two narratives in one whole, thus the basic plot for the novel *Middlemarch* was born. As the title and its subtitle already suggest, *Middlemarch: A Study of Provincial life* is a story about life in a small provincial town called Middlemarch, in mid-rural England. Being written in the second half of the nineteenth-century, the novel is set in the 1830s and 40s. The plot centres around two main characters, the hero and the heroine, Tertius Lydgate and Dorothea Brooke, and their feelings and ambitions. Apart from them, quite a few other characters are introduced, and all their lives are closely intertwined. In the

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\(^1\) This is a quote from a diary entry on January 1, 1873.

\(^2\) A.S. Byatt (1936) is an English novelist, literary critic and winner of the Booker Prize 1990 for her novel *Possession*.

\(^3\) Henry James (1843-1916) was an American writer whose most famous work is *The Portrait of a Lady* (published in *The Atlantic Monthly* in 1881)
beginning Dorothea Brooke, a young idealistic woman, is the central character. She and her sister Celia are orphans who live with their uncle, Mr Brooke. Dorothea seeks happiness and fulfilment in a life dedicated to the search for higher knowledge and therefore she rejects the overtures of James Chettam, her admirer. In due course the latter will marry Celia, Dorothea’s more sensible and especially more uncomplicated sister who is satisfied with a modest happy marriage instead of a grand enthralling life. Dorothea marries the much older Casaubon “whom she fancies a great thinker” (James). Unfortunately, she was blinded by her ideals and ends up trapped in an unhappy marriage. Contrary to her expectations, her role as a wife does not include any assistance in her husband his intellectual investigations. When Will Ladislaw, Casaubon’s nephew, appears, her more passionate self is reawakened. Casaubon, who is not very fond of this relative, senses the attraction between Will and his wife, and therefore adds a codicil to his will preventing that Dorothea can marry Will after Casaubon’s death. Shortly afterwards, Eliot gets rid of this cold unpleasant character by letting him die. Dorothea meets her fictional double when the male main character is introduced, Tertius Lydgate. He is a young and ambitious doctor who moves to Middlemarch hoping to build up a practice and to spread his medical ideas. He wants to dedicate his life to science, thereby developing new forms of experimentation in the field of medicine. Like the heroine of the novel, Dorothea, this hero ends up unhappily married to Rosamund Vincy, a young woman who does not fully appreciate her husband’s ambitions, both privately and professionally. Rosamund is the mayor’s superficial narcissistic daughter who enjoyed a proper education, though she does not cherish her acquired knowledge as much as Dorothea would do if the latter was given the opportunity to study. When the young and supposedly prosperous Lydgate moves to Middlemarch, Rosamund is tempted by the idea of being married to an ambitious and particularly wealthy doctor. Her shallowness will eventually destroy Lydgate because he sacrifices himself and his practice in order to save a marriage that was doomed to fail. A more detailed analysis of the key character Tertius Lydgate follows below.

This short introduction allows me to explain the lines of reasoning behind the quotes from Woolf, Byatt, James and Sedgwick. Woolf’s praise relies on the fact that Eliot did not shun the element of failure in her novel. Unlike most Victorian stories at the time, that focused on the attainment of ideals, Eliot found inspiration in the personal struggles of everyday life i.e. not necessarily climaxing into the required happy end. Being written for “grown-up people”, Middlemarch dared to be an accurate confrontation with reality. Although the typical Victorian writers engaged in writing stories about the perfect and epic life about
their heroes or heroines, Eliot wrote about people of flesh and blood who had to be satisfied with an average life that also dealt with misery. Byatt celebrates the fact that Eliot allowed her readers to identify and sympathize with all characters through their positive and negative experiences. These emotional encounters enable Eliot to turn the cold and harsh reality into a warm personal story. Apart from its genius, James and Sedgwick acknowledge the downsides of this overwhelmingly detailed novel. Overall, Eliot is credited for being an “acute delineator of character, a subtle humorist, a master of English, a universal observer and a comprehensive student, a profound moralist” (Sedgwick). Scholarly studies often prefer to celebrate the extensively elaborated network of characters which centres around the lives of the families Brooke, Vincy and Garth, doctor Lydgate and other additional characters like the intellectual clergyman Edward Casaubon, his nephew Will Ladislaw, landowner Sir James Chettam, vicar Farebrother, banker Bulstrode, the old landlord Featherstone, and many more. Through this network several conventional themes are explored: politics, religion, gender roles and differences, class, status, idealism, expectations, Victorianism and education. As the subtitle suggested, several themes associated with provincial life are indeed elaborated, with extreme care. Not only the multiplicity of character and theme, but also the novel’s emotional quality, partly due to the slumbering autobiographical undertone, validate its status as a modern masterpiece.

I do agree that *Middlemarch* deserves praise for all the aspects mentioned above. It is true that this nineteenth-century novel is extremely well-designed, versatile and rich in character and theme. Hence the novel provides sufficient material to list it as a book that is still up-to-date. Thus *Middlemarch* can be seen as a quite modern piece of literature, both thematically and stylistically. However, what surprises me, is the fact that *Middlemarch* has hardly ever been praised for its qualities concerning scientific data. In my opinion, one subject is systematically forgotten in the thematic analyses that we are familiar with i.e. medical science. Occasionally there are essays that touch upon the importance of nineteenth-century science in the novel and in the life of its author. For example, in the article ‘Fiction as vivisection’ Richard Menke analyzes the parallels between the scientific act of vivisection and G. H. Lewes’ style of writing, and the way in which he influences George Eliot. Other pieces of writing which mention the subject of science, nearly always display the theme within a coordinating topic such as politics or religion, so the specific scientific value of the novel is blurred instead of fully recognized. It is indeed unusual for literary academics, who are specialized in some area concerned with humanities, to engage in a project that is deeply
involved with the basic principles of exact sciences, and vice versa. Nevertheless, I was
dumbfounded to find that medical students today do not have to take up any compulsory
history lessons about the history of medicine\(^4\). Of course I realize that no doctor will think
about the inventor of vaccinations when he or she is saving the life of a human being - and
self-evidently that is what really matters in the end - , but it is my opinion that a course meant
for the awakening of the historical consciousness of medicine students to impart a vague
sense of the historical relevance of the material they will work with and of the trade in which
they will engage, is an indispensable part of the basic education of a doctor in the process of
formation. Keep in mind, though, that I, as a student of literature at a humanities faculty, am
prone to be prejudicial in that respect. Nonetheless, I sincerely hope that my investigation
will prove its usefulness for future students of literature, history and medical science.

My methodology relies on a number of essential steps. During a close reading of
Eliot’s novel, especially of the chapters and passages where one gets acquainted with
Middlemarch’s new doctor Tertius Lydgate, numerous references to medical science are
revealed. For example, the incorporation of and the allusions to various historical figures -
scientists and doctors - and medical inventions prove that Eliot’s work of fiction is seriously
indebted to factual scientific data. So after a detailed exploration of my primary source, I had
to get engrossed in the basic terminology of medical science in order to fully appre

\(^4\) These findings are based on the curriculum of medical students in Flandres at the universities of Ghent,
Brussels, Leuven and Antwerp.
to get a closer look at the function and profession of doctors in the nineteenth century. Unlike most literary studies I will not narrow my scope, but I will expand my vision towards the overall importance of nineteenth-century medical science in general. The final part will treat some specific theories from nineteenth-century medicine. To avoid that I will forget the literary value of my research, I will link my findings with crucial biographical information about George Eliot.
Medical narratives

In his article ‘The Theatre and the Granary: Observations on Nineteenth-century Medical Narratives’ Rick Rylance devotes some pages to the development to the genre ‘the medical narrative’. The significance for my investigation is that Middlemarch is often called a medical narrative. This denomination is the only regular medical recognition that the novel has gained over the last decades. Despite the fact that the genre conventions of a medical narrative largely rely on stylistic criteria, I sense that, certainly in the specific case of Middlemarch, the use of the term implies that one clearly acknowledges the presence of medicine as a key theme. In addition, the article highlights the scientific climate of the nineteenth century, the period in which Eliot wrote and situated her story. Rylance examines the difference between nineteenth-century and modern medical narratives. As a consequence, he manages to sketch a truthful image of the overall rapidly changing nineteenth-century environment.

In his article Rylance distinguishes two frameworks for nineteenth-century medical stories. The first framework is derived from Michel Foucault’s ‘The Birth of the Clinic’, a work about the evolution of the medical profession and medical institutions. In the book Foucault claims that medicine in the nineteenth century was the “triumph of objectifying realism”. From then onwards, doctors in medical accounts were perceived as “objectified experts” with an “objectifying gaze” who treated their patient, whom they for their part perceived as mere case studies, with only one goal: normalcy. Clinics were portrayed as Victorian institutions of power instead of houses for healing. According to Foucault, a shift in the perception of medical narratives is needed. Such a shift entails a better understanding of the medical language, attitude and treatment. The second framework is inspired by Oliver Sacks, a clinical neurologist who laments the loss of a “tradition of richly human medical tales” in contemporary medical fiction writing (Rylance 2). He favours the emphatic humanistic richness of nineteenth-century medical novelists, such as, I presume, George Eliot. Both resist the depersonalization of the medical experience and both try to “capture the key elements of nineteenth-century medical story-telling”(Rylance 3). However, as Rylance notices too, their models were too narrow-minded. Foucault only stresses power, corruption and nepotism in the field of medicine, while Sacks extols the rosy-coloured side of medical narratives as being compassionate accounts told by patients who want to share their experiences. According to Rylance both theorists are faced with repression: Foucault
represses diversity, he should look further than the power factor, Sacks represses the shadow side of the misshapen (Rylance 4).

Consequently, contemporary medical narratives frequently appear to be mere chronicles, helpful diagnostic instruments for transmitting knowledge which are constructed according to the example of Victorian medical journals5 (Rylance 4). Rhetorically, these journals included plentiful medical data, which Rylance labels as quantified technical data, and sterile clinical language. Both Foucault and Sacks agree that the difference between nineteenth-century and twentieth-century medical narratives is due to a paradigmatic shift in medicine which started around 1800 (Rylance 5). The changing climate affected doctors and their patients since the medical reform involved, among other things, new education and methods. The stylistic conventions of the medical narrative felt these changes too: because of the concern with objectivity and ‘scientification’, medical stories became more impersonal.

Besides the fact that labeling Middlemarch as a medical narrative equals the recognition of the medical-scientific value of the novel, the further elaboration of my thesis will demonstrate the way in which Eliot her writing overlaps with the findings of Foucault, Sacks and Rylance. Based on this triple analysis two things will become clear. First of all, Eliot’s novel meets the stylistic conditions formulated for the early and later type of medical narratives – but I will not enter into a detailed stylistic discussion of the novel. Secondly, living up to the stylistic criteria of both types implies that George Eliot was writing her novel during a climate of scientific change: she wrote a story situated in the 1830s and 40s during the 1870s, in other words, she covered nearly half a century of science when elaborating her plot. Moreover, the shifts in science are personified through the character of Tertius Lydgate, the aspiring medical reformer. Not only did she want to create a truthfully medical but still warm-hearted narrative, she also had to anticipate possible pitfalls caused by anomalies in time i.e. between the time she was writing in and the period she wrote about. Therefore, this dissertation will highlight the medical-scientific background of the shifts that Foucault and Sacks detect in the evolution of the medical narrative.

I already wish to stress the importance of the issues touched upon by Rylance and the two theorists he discusses at this point, though I will provide more details in the course of the

5 The most famous example of a Victorian medical journal is ‘The Lancet’. This journal was founded by Thomas Wakley in 1823. It still exists today.
following pages and when I will evaluate biographical information about George Eliot. However, mentioning the article at the beginning of this dissertation ensures a permanent awareness of the historical background of *Middlemarch*. It will become clear that George Eliot her masterpiece perfectly balances between the old and the new, tradition and invention, in history, in literature and in medical science.
CHAPTER ONE: DOCTORS

1.1 Meet the cast

1.1.1 An encounter with Tertius Lydgate

The next part of my thesis will be dedicated to a better understanding of the medical profession during the nineteenth century. Therefore, one of the central characters of the novel will be my guide to learn the tricks of this trade. When reflecting upon the presence of medical science in *Middlemarch*, I guess that every reader will remind the ubiquitous character of the new doctor, Tertius Lydgate. According to me, a closer look at this fictional person will help to gain insight into the apparent broad subject of my study. This central figure is the starting point from which I will develop my scientific analysis which will move from the specific case of doctor Lydgate to nineteenth-century medical practitioners in general. I would like to get a closer look at what being a nineteenth-century doctor implied. Only afterwards my analysis will able to reveal the overall medical-scientific value of George Eliot’s *Middlemarch*. It will become clear that Eliot provided her readers with numerous clues concerning medicine which will ultimately permit me to reconstruct a valuable history of medical science in the nineteenth-century.

Lydgate is the young ambitious, sometimes too idealistic and sometimes naïve doctor who arrives in Middlemarch hoping to start a successful practice or hospital where he can promote and fulfil his medical convictions and objectives “to contribute towards enlarging the scientific, rational basis for his profession” (M. 147). Some prefer to call him a naïve dreamer because he does not hide his aspirations to lead a life that moves beyond the limitations set by the provincial community. He wanted “to do good small work for Middlemarch, and great work for the world” (M. 147). Unlike the older doctors, he has revolutionary ideas concerning medical reform. George Eliot lets him make his first appearance in Chapter 10, near the end of the first book “Miss Brooke”. Having recently arrived in Middlemarch, he is the new talk of the town. Everybody is curious and willing to get to know him. At first, the citizens of Middlemarch are rather pleased with the new doctor, though their benevolence is primarily based on the rumour that Lydgate has what it takes i.e. he is supposed to be of wealthy descent. Some of the elderly ladies in the village are gossiping when suddenly the topic medicines is brought up. This allows Mrs Cadwallader to start chatting about this new
interesting figure. Overall, he makes a fine first impression: the ladies have heard that he is “wonderfully clever”, “a gentleman” and “one of the Lydges of Northumberland, really well connected” (M., 91). Nonetheless, Mrs Cadwallader immediately compares him to one of the older doctors, the recently deceased Mr Hicks, whom she claims to be “unfailing”. She “never knew him wrong”, “he was coarse and butcher-like” while Lydgate is said to be “a sort of philanthropist” because she doubts Lydgate his optimism for medical reform (M., 91).

Already at the beginning of his plot line, without any further notice of his scientific ambitions, it is clear that his path will not be smooth; his dreams and ideals will meet a lot of resistance in due course. Eliot alerts us “that Lydgate was not altogether a common country doctor” (M. 106). The reader senses that the coexistence of the new and old generation of medical men will be problematic. This is an issue that I will elaborate later on. Mrs Cadwallader, though, gave him the benefit of the doubt when she mistakes his skills as a good listener, valorized as an essential quality for any good doctor to be, for blind agreement.

Mr Lydgate had the medical accomplishment of looking perfectly grave whatever nonsense was talked to him, and his dark eyes gave him impressiveness as a listener. [...] He said ‘I think so’ with an air of so much deference accompanying the insight of agreement, that she formed the most cordial opinion of his talents. (M. 92)

Before the action really starts the reader is also informed about Lydgate’s youth, family and education, three aspects that will determine his medical career. Already as a young boy he decided that he wanted to become a doctor when he grew up. He always preferred reading in a quiet corner of a library to playing games with classmates. Since he had been raised liberally, and he was orphaned shortly after he finished public school, his guardians granted him the freedom to read whatever he liked. So he discovered the volumes of an old Cyclopaedia and bumped into some pages about anatomy and the valves of the heart. Unlike compulsory courses about mathematics and the classics, which he followed out of sheer necessity, these excerpts immediately fascinated him. His intellectual passions were

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6 The term is derived from the word philanthropy, which finds its origin in a work by the ancient Greek playwright Aeschylus. In Prometheus Bound the Titan Prometheus grants two gifts to the humans who upper god Zeus wishes to obliterate. The gifts included fire, a metaphor for knowledge, and hope, symbolizing optimism. Therefore, Prometheus was called as ‘philantropos’, a human-loving character. Lydgate too cherishes wisdom and optimism. Consequently, he is distrusted.

7 See 1.5.
awakened, “the moment of vocation had come” (M. 144). After his “prentice days”, he initiated studies in London, Edinburgh and Paris, which he terminated successfully. At twenty-seven he was ready to start his professional career. Being an orphan and having met his vocation, it was probably not a heartbreaking sacrifice to renounce his wealth and to break with, what was left of, his affluent family.

Mr Brooke is the one who informs his fellow citizens, and the reader too of course, about Lydgate’s medical goals and place in nineteenth-century medicine. He says that “Lydgate has lots of ideas, quite new, about ventilation and diet, that sort of thing” (M., 92). At the same time, Mr Brooke forecasts that the ideas Lydgate tries to put across in Middlemarch will not meet much enthusiasm since “medical knowledge is at low ebb among us” (M., 92). Yet, he hopes that the hospital will benefit from Lydgate’s arrival. More specifically, Lydgate’s goal as a medical practitioner is to “raise the profession” (M., 92). He desires to engage in anatomical and pathological research to reform old medicine, based on the belief that “better methods are to be found” (M. 124). Raising the profession equals “importing the techniques of French clinical medicine and anatomy to rural England in the 1830s” (Menke 15). Mr Bulstrode’s preoccupation with the improvement of hospitals seems to be based on the same concern. However, whereas Bulstrode, the banker of Middlemarch, hopes for simple and straightforward cures against the mortal diseases, Lydgate, even as a voracious idealist, remains more realistic by primarily focusing on the reform of the medical field. After all, it is logical that new cures could not be discovered from scratch without any proper reorganization. In addition, as a reformer he wants to be seen as a clinical anatomist instead of an experimental physiologist. His methodology relies on active observation, which can be perceived as a passive form of experimentation, and classification. Eliot clarifies his passion and determination:

*He for his part had tossed away all cheap inventions where ignorance finds itself able and at ease: he was enamoured by that arduous invention which is the very eye of research, provisionally framing its object and correcting it to more exactness of relation.* (M. 165)

For example, when a patient is ill, he prefers to leave nature to its own devices by letting the disease run itself out. He claims that future patients will benefit from this process because it enables him to recognize the various stages of disease and recovery. His patients are indignant
about his methods because they expect an effective and immediate cure, thus Bulstrode hopes that new science will provide humanity with instant healing. Another example of Lydgate’s methodology can be found in the field of anatomy. To fully understand the functions of the human body, a doctor was supposed to get acquainted with the different parts of it. His work was largely indebted to a revolutionary theory formulated by the eighteenth-century French physiologist François Bichat who discovered that diseases did not necessarily grow rank in one specific organ but in the much smaller tissues which I, as a layman in cellular biology, can describe best as the intermediate level between organs and separate cells. This theory of organic interdependence would enable scientists to link all human conditions (GENS 143). So, Lydgate felt he had to study the human body, dead or alive. Once he asked the permission of the family of Mrs Goby, a woman who had died because of a fatal heart disease, to perform a dissection. The inevitable consequence was that the population of Middlemarch started to believe that the hospital where Lydgate volunteered should be avoided because if you entered there would be a fair chance that you would not leave it alive since it was Lydgate’s intention to let people die to collect corpses to experiment with.

_Mrs Dollop became more and more convinced by her own asseveration, that Doctor Lydgate meant to let people die in the Hospital, if not to poison them, for the sake of cutting them up [...] for it was a known ‘fac’ that he wanted to cut up Mrs Goby._ (M. 442-443)

Consequently, Mrs Dollop even compares him to Burke and Hare, a notorious duo of murderers, who killed human beings and dug up corpses for anatomical research. Not only did his potential patients distrust practices like dissection, the previous generation of doctors too felt threatened by Lydgate his presence in Middlemarch. On the one hand, they questioned Lydgate his new medical methods, but on the other hand they were intimidated by the way in which his desire for innovation persuaded parts of their ‘clientele’. For instance, Dr Sprague and Mr Wrench, who represent the older medical establishment, did not yearn for the undermining of their life-long authority by a much younger romantic dreamer whom they consider to be a so-called wannabe doctor. The rocky road Lydgate had to walk on, because

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8 William Burke and William Hare killed at least fifteen people for so-called anatomical purposes. In fact, they were hitmen who covered their crimes with some ram-shackle scientific justification: they sold corpses to their client Robert Know, a private anatomy tutor from Edinburgh, who had commissioned bodies, since dissection was forbidden.
of the distrust from both his colleagues and his patients, is a metaphor that exemplifies the resistance that new science encountered in the course of the nineteenth century.

As I already indicated the majority of the inhabitants of Middlemarch associated Lydgate’s descent, in combination with his profession as a doctor, with wealth. What they did not know, was the fact that Lydgate had turned his back on his prosperous family when he decided to become a doctor. Instead of climbing up the social ladder, he voluntarily descended. He knew “that he was not rich, but he never had felt poor […] money had never been a motive to him” (M. 179). His passion for the medical profession was so genuine and ardent that it made him forget that he was in fact keen on luxury. As a former member of the upper class, he could not yet fully handle his lower rank. He spent more money than he could afford and instead of making a living he kept on performing voluntary services in the hospital. Even when being consulted or when he visited patients at home, he did not ask any financial compensation. According to him, this was a practice typical of the working class. However, it was a very common practice in Middlemarch. What is more, Lydgate did not spurn to flaunt his knowledge, his “conceit was of the arrogant sort, never simpering, never impertinent, but massive in its claims and benevolently contemptuous” (M. 149-150). Soon he got the reputation of being an arrogant, intellectual snob. Rosamund’s interest in Lydgate was based on his alleged snootiness which granted him a false air of power. Strong-willed and too gritty to climb the social ladder Rosamund was determined to trap Lydgate into marriage.

_In Rosamund’s romance it was not necessary to imagine much about the inward life of the hero, or of his serious business in the world: of course he had a profession and was clever, as well as sufficiently handsome; but the piquant fact about Lydgate was his good birth, which distinguished him from all Middlemarch admirers, and presented marriage as a prospect of rising in rank and getting a little nearer to that celestial condition on earth in which she would have nothing to do with vulgar people, and perhaps at last associate with relatives quite equal to the county people who looked down on the Middlemarchers (M. 166)._

When one takes all these aspects into account, one can see that Lydgate was in fact the victim of his own good intentions. He wanted to help Middlemarch with his medical assistance, he aspired to contribute great scientific discoveries to humanity, he cared for all
his patients and he never meant to speak badly about any Middlemarcher. Yet he was perceived as an intellectual outcast, a snobbish weirdo who interfered in the life of a provincial town. He could not cope with “the hampering threadlike pressure of small social conditions” (M. 180). Eventually, Lydgate will end up alone with his frustration caused by his failures, professionally as a doctor-scientist and privately as a husband. He is rejected and defeated by a society that was not yet ready for his intended reform. In Middlemarch, this ambitious man of the world will only be remembered as an unworldly intruder. The last years of his life contrast sharply with his beginner’s enthusiasm. His strength, the passion for his profession, is at the same time his biggest weakness. Lydgate dies at fifty.

1.1.2 Other medical characters

A history of medical science equals a history of subsequent generations of medical practitioners. It is inevitable that through the life of doctors, theories and methods are introduced as well. The previous subchapter about doctor-reformer Tertius Lydgate confirmed this. Through his eyes the reader of Middlemarch gains insights into the quasi unexplored subject matter of medicine in the nineteenth century. His personality reveals numerous clues concerning the medical profession at the time. Nonetheless, only one fictional character is hardly enough to make some serious statements about nineteenth-century medical science. To safeguard the nineteenth-century reality percentage of Middlemarch George Eliot was clever enough to introduce more than one medically inspired character. Examples are, in order of accumulating prestige, Mr Gambit, Mr Peacock, Mr Wrench and Mr Toller, Mr Hicks, Dr Minchin and Dr Sprague. Dr Sprague, “the senior physician in town” (Middlemarch 16), is the medical authority in the village together with Dr Minchin, another shrewd and reputable medical man. The recently deceased Mr Hicks, a rural practitioner, was also regarded as a well-respected wise man. Mr Wrench, “the medical attendant to the Vincy family”, and Mr Toller are two other “long-established practitioners”. Note that George Eliot indicates the medical hierarchy by means of a different form of address i.e. doctor or mister. Mr Peacock retired and Mr Gambit is described as a second-rate “practitioner a little bit lower in status than Wrench or Toller, and especially esteemed as an “accoucheur”9. As a consequence of the presence of all these “medical men” the reader was enabled to compare several medical

9 An ‘accoucheur’ is a French term which refers to a male doctor who guides a woman through her pregnancy: in other words, ‘accoucheur’ is the French, somewhat outdated, equivalent of a contemporary ‘gynecologist’
stances. Reality was not unequivocal, so neither is life in Middlemarch. Different voices express their opinion, but as I will indicate later all these physicians can be divided into two groups: the old traditional versus the new revolutionary generation of doctors, Lydgate being the only one in the latter group. In addition, this multiplicity of character reminds me of the article by Rick Rylance. Rylance highlighted the difference between early nineteenth-century and modern medical narratives due to the overall changing climate which defines the entire century. Besides social and political reform, science too was developing rapidly back then. The nineteenth century was a time of great change for the medical profession. For example, numerous inventions\textsuperscript{10}, such as the stethoscope and vaccinations, were part of the medical revolution. Through the fictional personalities of all these different doctors, all representing slightly dissimilar opinions, the reader involuntarilly gets acquainted with nineteenth-century medical-scientific changes, which entail the underlying patterns of the stylistic differences between nineteenth-century and modern medical narratives. After an extended introduction to the character Tertius Lydgate, the new doctor in Middlemarch, I would like to expand my view by analyzing several aspects of being and becoming a doctor in the nineteenth century. Only by gathering essential basic information through the figure of the doctor, a deeper understanding of the purely scientific aspect of my subject medical science will be possible. In chapter two I will provide sufficient evidence that George Eliot provides her reader with endless clues concerning nineteenth-century medical science which will eventually help to reconstruct a history of medical science in the nineteenth century. This accumulation of information will provide the best results for my investigation in order to make the undiscovered subject matter of medical science in \textit{Middlemarch} comprehensible. So now I would like to uncover details about the medical profession hidden throughout the novel by means of relevant fragments, passages and quotes from the novel.

\textsuperscript{10} More details about such inventions can be found in chapter two, part 2.4.
1.2 The doctor

The nineteenth-century physician was often regarded and idealized as a wise, grave man who was a friend, even to the poor. He was a man “to whom his patients would be duly deferential” (*The Cambridge Illustrated History of Medicine* 11, 121). Familiarity and trust were the basic services doctors were supposed to offer their patients. Scientific knowledge and treatment were less important. Hence, the general practitioner emerged as a family friend instead of a medical practitioner. Also Mrs Vincy regarded Mr Peacock “equally as a friend” (M. 260). Around 1800 doctors often provided their services exclusively for the more affluent and richer families although they were not necessarily wealthy themselves. The lines of reasoning behind this misconception are exemplified through Rosamund’s allure to Lydgate: she thought him to be extremely prosperous.

Yet this result, which she took to be a mutual impression, called falling in love, was just what Rosamund contemplated beforehand. Ever since that new arrival in Middlemarch she had woven a little future [...] And here was Mr Lydgate suddenly corresponding to her ideal, being altogether foreign to Middlemarch, carrying a certain air of distinction congruous with good family, and possessing connections which offered vistas of that middle-class heaven, rank: a man of talent, also, whom it would be especially delightful to enslave: in fact, a man who had touched her nature quite newly, and brought a vivid interest into her life which was better than any fancied ‘might-be’ such as she was in the habit of opposing to the actual. (M. 117-118)

According to Rosamund, this bright stranger ought to be prosperous. She is deluded by the mistaken belief that exoticism, knowledge and power go hand in hand. As their mutual story line develops, Rosamund realizes that the perfect little future that she had woven on beforehand is shattered because Lydgate is coping with financial issues. However, early nineteenth-century practitioners, thus belonging to the older generation of medical men, mostly had prosperous origins since they could easily pay for medical education. Lydgate, poor and bankrupt near the end of his plot line, is said to be connected to the “Lydgate of

\[11\] From now on, when quoting from *The Cambridge Illustrated History of Medicine*, I will use the acronym *THICOM*.  

18
Northumberland, really well connected” (M. 91). Indeed, Lydgate used to be keen on wealth and extravagance. As a consequence of his inherited richness, he could invest his money in the best medical education at the time and in the founding of a new hospital: Lydgate the idealist wanted to help humanity instead of wasting his money on superfluous luxury. At a given moment Mr Toller is right in arguing that Lydgate “has been living at a great rate for a young beginner”, at the same time supposing that “his relations in North back him up” (M. 468). The main difference between Lydgate and his older colleagues is that the former is truly passionate about the medical trade whereas the latter just seem to have made a logical choice based on their descent by choosing for the medical profession. One will understand that all medical practitioners had to fulfil the same role, regardless of factors like descent or personal motivation. All physicians ought to become trustworthy family friends who possessed abundant intellect in order to cure. As the novel progresses, one will see that Lydgate gains the trust of the sick Middlemarchers, since they feel that he is as wise and reliable as the more traditional doctors. Humanitarian charisma and effective cures are decisive factors in one’s choice of a family doctor. The exact methodologies and the institutions where they acquired their medical skills imply less from a patient’s point of view. Nonetheless, medical training is an essential part in one’s formation as a doctor. Therefore, I would like to investigate this aspect in the following subchapter.
1.3 Job description and requirements: a link with education

As the century progressed, medical science changed, thus affecting the role of the family doctor as well. The primary function of medical practitioners in the early nineteenth century and before was to provide primary care. In *The Cambridge Illustrated History of Medicine* Edward Shorter designates primary care back then as “the confused efforts of doctors and patients to come to grips with the ever-changing realities of medicine imposed on them by science” instead of brisk medical action. As a family friend they tended to overlook the significance of medical guidance. When someone was ill, the doctor offered reassurance, trust and comfort. He did not necessarily provide an effective cure, but when someone was sick, he was a temporary supportive family member. Even afterwards, he remained on good terms with his ex-patients. As the century continued, medicine evolved and so did the role of the doctor. Again I refer to the article by Rylance. He stresses that education, methods and attitudes changed seriously at the beginning of the nineteenth century: all these factors affected the medical profession enormously. Here I will take a closer look at the nineteenth-century doctor’s education, but more details about specific methodologies will follow in chapter two.

Not all medical practitioners enjoyed an equally valuable medical training, because the quality supposedly depended on the academic institution. In other words, one’s financial status played a major role in determining the most suitable place for medical training. Naturally, aspiring doctors from the lower classes instantaneously had to cast aside their academic and professional ambitions out of sheer necessity: they usually had to perform manual labour in order to sustain the family. On page 145 George Eliot writes that Lydgate “carried to his studies in London, Edinburgh and Paris”. Obviously, Eliot’s choice for these three universities was no coincidence. London, Edinburgh and Paris were believed to provide the best medical education at the time.

First of all, England was one of the first countries where medicine dropped the yoke of theory by aiming at the mastery of concrete medical action. Especially in London, medical training advanced with great strides. This is to be related to the fact that London was the capital of the British Empire around 1800. By mentioning London, Eliot presumably referred to King’s College London School of Medicine and Dentistry, more specifically to Guy’s
Hospital\textsuperscript{12}, where medical science was taught. The two other medical faculties might have played a role in Lydgate’s training too since the young doctor was able to turn his hand to anything related to medical science. In St Thomas’ Hospital medical men focused on surgery. In King’s Hospital, the operating rooms were frequented by students of medicine because there they could witness with their own eyes how the human body worked, how it functioned and how it was to be treated. Those rooms were the centres for the diffusion of medical knowledge. Moreover, this can explain Lydgate his interest in dissection.

Secondly, Edinburgh became the nineteenth-century medical authority. Since its foundation in 1726, the University of Edinburgh Medical School is regarded as one of the best medical schools worldwide\textsuperscript{13}. Its creation resulted from the proposal by Alexander Munro in 1725, in which Munro pleaded for the founding of a Hospital for the Sick Poor. Additionally, Scotland’s oldest voluntary hospital is established in Edinburgh i.e. the Royal Infirmary of Edinburgh which was institutionalized in 1729. If one presumes that Lydgate really existed and that he studied medicine in Edinburgh, one will see that Eliot’s attempt to sketch a truthful image of a nineteenth-century physician succeeded. In addition, not only did Lydgate study Medical School at Scotland’s most renowned nineteenth-century University, the presence of a flourishing voluntary hospital in Edinburgh probably inspired Lydgate’s future career since he volunteers at and invests in the new Middlemarch hospital. His desire to found a hospital is an apparent initial goal of his intended reform.

\begin{quote}
A fine fever hospital in addition to the old infirmary might be the nucleus of a medical school here, when once we get our medical reforms; and what would do more for medical education than the spread of such schools over the country. (M. 124)
\end{quote}

If Lydgate studied in Edinburgh, it is likely that his reform plans were inspired by the university he attended.

\textsuperscript{12} King’s College London School of Medicine and Dentistry was the most renowned English medical school in the nineteenth century. It currently consists of three departments: St Thomas’, Guy’s and King’s Hospital. Especially Guy’s Hospital, founded in 1721 by Guy Thomas, focused on the study of medical science.

\textsuperscript{13} A 2010 survey from The Guardian listed The University of Edinburgh as the third best university for studying medicine.
Finally, the other medical teaching enclave, to which George Eliot alludes, is to be found in the capital of France, Paris. Eager to expand his aptitude, Lydgate also studied in Paris. In the post-revolutionary climate of the French Revolution in 1789, changes in science and education were to be expected. The ideology behind the French Revolution was in fact the same mainspring for educational reform in France. From the nineteenth century onwards medicine desired to become true science. Consequently, “diagnosis formed its pith and marrow” (THICOM 174): investigation depended on careful observation and objective interpretation which piloted medical science towards better results. Two key figures within French medicine and medical science worldwide are René Laennec and Francois Bichat. Both radically changed the medical field: Laennec is the inventor of the stethoscope and Bichat discovered the importance of tissues. What is more, both men studied in Paris and influenced the Parisian medical scene. The Parisian School was the first to extol the value of diagnostic accuracy since Hippocrates. This Greek doctor was the first physician ever who believed that diseases had natural instead of supernatural origins. His diagnosis were always preceded by a meticulous investigation of the body. Since students of medicine in Paris revalued his practices, they were often referred to as being sensualistic: guided by their senses - ear, eye, smell, taste or touch- they could detect and identify a disease. The motto of the sensualistic school was said to be “peu lire, beaucoup voir, beaucoup faire”.

It caught my attention that the post-revolutionary climate in France, and the subsequent changes within medical science, are mirrored in the problematic infatuation of Lydgate with the merciless actress Laure who murdered her husband in cold blood on stage during a play. This personal tragedy seems to exemplify his belief in fundamental medical reform. Lydgate’s obsession with Laure changed his perception of and attitude towards women forever. At the same time, this unhappy romance stimulated his fervour for the medical trade.

Three days afterwards Lydgate was at his galvanism again in his Paris chambers, believing that illusions were at an end for him. He was saved from hardening effects by the abundant kindness of his heart and his belief that human life might be made better. But he had more reason than ever for trusting his judgement, now that it was so experienced; and henceforth he would take a

14 For a deeper analysis of the importance of these two figures within nineteenth-century medical science I refer to chapter two about medical science.
As a consequence of the change in his ideas about women, his ideas about medicine changed as well. In that respect, Lydgate’s time in Paris symbolized a twofold radical reform both on a personal level, privately and professionally, and on a larger scientific level. Privately, his modified perception of women causes the problematic understanding with his wife. Professionally, his infatuation with Laure stimulated his passion for the medical profession. On a scientific level, Lydgate tries to implement actual reforms. These consequences are the direct result of Lydgate’s stay in Paris. Approximately twenty years after the invention of the stethoscope American students of medicine found their way to Paris to complete their academic career since René Laennec, the inventor of the stethoscope\textsuperscript{15}, studied there too. They sensed that this revolutionary metropolis was the place to be to study. Note that George Eliot perfectly manages to capture the essence of medical training with respect to content in Edinburgh and Paris in only one phrase, though the comment especially focuses on the voice of one of the elder physicians who disliked the presence of the young Lydgate in Middlemarch.

\begin{quote}
Lydgate is a man who had not been to either of the English universities and enjoyed the absence of anatomical and bedside study there, but came with a libellous pretension to experience in Edinburgh and Paris where observation might be abundant indeed, but hardly sound. (M. 182)
\end{quote}

Despite the sharp undertone, which represents an opponent of Lydgate, Eliot demonstrates that observation through the senses became an essential part of diagnosing.

It is obvious that situating Lydgate’s medical-scientific academic career in London, Edinburgh and Paris was not a sheer lucky guess by George Eliot: in fact, opting for these three renowned institutions was a conscious decision that enhanced Lydgate’s credibility as a medical practitioner. First of all, because of the fact that this fictional character studied at existing universities, the boundaries between fact and fiction, between reality and narration are blurred. Moreover, Lydgate’s educational background refuted the false impression that he

\textsuperscript{15} The stethoscope was invented in 1816 by René Laennec. It was a revolutionary diagnostic invention which determined the future of medical science. More information can be found in the second chapter.
was just an arrogant idealist. His ideas about medical reform were indeed based on previous years of devoted study at well-known medical institutions. This causes a curious twofold effect. On the one hand, the reader immediately thinks highly of this new young doctor. Even if one does not immediately catch the value and prestige of education at these institutions, the place names themselves imply some intellectual weight. On the other hand, the older generation of physicians in Middlemarch disapprove of the fact that Lydgate preferred studying abroad to attending English universities like Oxford and Cambridge. Apart from a general distrust in him, Lydgate his academic choices are the cause of gossip and reproaches. Moreover, his attitude as a prestigious braggart seriously damages his reputation. Yet, George Eliot immediately counters the older physicians’ disapproval by adding an ironic reference to the inadequacy of an Oxbridge medical training. In comparison, the Scottish universities were much more professional in the teaching of medicine.

*Also, the high standard held up to the public mind by the College of Physicians which gave its peculiar sanction to the expensive and highly-rarified medical instruction obtained by graduates of Oxford and Cambridge, did not hinder quackery from having an excellent time of it; for since professional practice chiefly consisted in giving a great many of drugs, the public inferred that it might be better off with more drugs still, if they could only be got cheaply, and hence swallowed large cubic measures of physic prescribed by unscrupulous ignorance which had taken no degrees. (M. 146)*

This ironic twist indicates a sincere defence of Lydgate by Eliot herself: she expresses genuine belief, trust in and sympathy for this character.

However, Lydgate did not plan on staying in one of the cities where he attended university: he wanted to share his knowledge, he wanted other people to benefit from his studies. He always planned on going to a provincial town, completely unaware that that choice would imply his downfall.

*He went to study in Paris with the determination that when he came home again he would settle in some provincial town as a general practitioner, and resist the irrational severance between medical and surgical knowledge in the interest of his own scientific pursuits, as well as of the general advance: he*
would keep away from the range of London intrigues, jealousies and social truckling, and win celebrity, however slowly, by the independent value of his work. (M. 145)

The quote also displays Lydgate’s naïve enthusiastic idealism. According to Lydgate, being a general practitioner is the best occupation ever.

 [...] the medical profession as it might be was the finest in the world: presenting the most perfect interchange between science and art: offering the most direct alliance between intellectual conquest and social good. Lydgate’s nature demanded this combination: he was an emotional creature, with a flesh-and-blood sense of fellowship which withstood all the abstractions of special study. (M. 146)

This perfect balance between the scientific and the social attest to Lydgate’s authentic ardour for the trade, implying that he was not just an arrogant know-it-all, but that he genuinely cared for his patients. The ideal area to find that balance is a small provincial town instead of a big city.
1.4 Doctor-patient relationships

As I already indicated at the beginning of this chapter nineteenth-century doctors were wise, grave men who were a friend of the family, even to the poor. However, during that century medical science underwent some radical changes. As a consequence, the relationship between doctors and their patients also evolved. Edward Shorter is aware of this effect of medical reform: “The fact that the nature of the relationship between doctor and patient was transformed relied on the physicians’ new medical-scientific attainments which influenced the nature of primary care” (TCIHOM 128). Below I will address two aspects of the doctor-patient relationship in the nineteenth century. First of all, the patient’s expectations will be discussed, afterwards, I will throw a light on the act of diagnosing.

Firstly, patients had certain expectations about their medical adviser. For example, doctors had to be trustworthy and compassionate. In addition, patients expected to be taken seriously. In the early nineteenth century, patients were satisfied with a superficial bodily examination which consisted of taking one’s pulse and looking at the tongue. However, as the century continued, the changes in medical science affected the form of the medical consultation; it became more clinical and impersonal.16 Patients felt like a number and as a consequence they started to claim their rights. That is to say, as the social status of doctors was rising, because of their increasingly scientific superiority, patients felt that the distance between them and their medical counsellor enlarged too. Rationality proved its efficiency in the purely academic field, but it impersonalized the relationship between doctor and patient. Around the 1880s patients were fed up with the increasing arrogance of doctors towards their clients. In the second half of the nineteenth century a sense of “therapeutic nihilism”17 dominated (TCIHOM 141). Physicians were convinced that they could do little to cure disease despite their intensive medical training. What is more, even during their education students were alerted to the general belief that expectations concerning active involvement in curing patients and reforming the trade were in vain. The primary goal of medicine seemed to be the accumulation of scientific data, like for example recording and composing collections of case

16 This reminds us of the stylistic changes in medical narratives, as Rick Rylance has pointed out by the means of the findings of Foucault and Sacks. Both theorists lamented the increased depersonalization of the genre.
17 The term was coined by Joseph Dietl in the 1840s. Therapeutic nihilism was also preoccupied with scepticism towards the possibilities of drug treatment. The topic of drug treatment throughout the nineteenth century will be elaborated in 2.3.
studies, instead of healing. This clinical reductionism impeded more personal holistic\textsuperscript{18} treatments. Consequently, patients again began longing for support, warmth, comprehension, guidance and respect during an illness. Consequently, the patient-as-a-person movement was founded.

\[
\text{[...]} \text{the patient-as-a-person movement was born: patients refused to be seen as a medical experiment any longer, the only they claimed to be in desperate need of was a friendly smile from their doctor. (TCIHOM 140-144)}
\]

From the mid-nineteenth century medicine was finally preoccupied with treating sick people instead of only treating diseases. It is true that a doctor’s apparent personal involvement was almost as effective as an actual cure. A listening ear and a shoulder to cry on proved to be indispensable social skills which had an unmistakable therapeutic effect. In the novel George Eliot writes that Lydgate “cared not only for ‘cases’, but for John and Elizabeth” (M. 145). This implies that he, despite his search for scientific progress by means of experiments, cared for the person behind the patient. Thus, he met the expectations of the average nineteenth-century patient.

In \textit{The Cambridge Illustrated History of Medicine} Edward Shorter devotes some pages of his essay\textsuperscript{19} to the relationship between doctors and their patients. In addition to some findings about the patient-as-a-person movement, he also stressed the fact that “nineteenth century doctors were accustomed to compete against one another for the custom of the patients, for they practiced medicine to make a profit”. In other words, a wide array of patients equalled a fruitful market place to gain money. Therefore, “to attract patients, they often felt obliged to offer whatever it was the patient wanted”. Steered by that yearn for wealth, physicians were not exactly reluctant to please their patients. A happy customer would definitely come back and spread the word to more potential future clients. This can explain the initial success of the patient-as-a-person movement. The willingness to acknowledge the needs of patients could have been primarily preoccupied with the desire for popularity and financial success. Only afterwards did this involvement become an essential part of primary health care and medical consultations. George Bernard Shaw (1856-1950), the Irish

\begin{footnotesize}
\begin{enumerate}
\item In general, holism expresses the idea that a whole is more than the sum of its independent parts. This will be touched upon in the next chapter about medical science.
\item From ‘What the traditional patient wanted’, pp 118-120.
\end{enumerate}
\end{footnotesize}
playwright, literary critic and an activist for amongst others health care, once said that “the
desire to placate patients ideas of what constitutes good medicine is one of the basic motors of
change in primary care”.

Note that Lydgate’s genuine compassion towards his patients might mean two things. On the one hand, as an idealist medical reformer he might have been ahead of his time, thus fulfilling the latent undefined needs of his patients. Remember that Middlemarch is situated in the 1830s while the story was written during the 1860s and 1870s, the period in which the patient-as-a-person movement was founded. As a consequence, in the eyes of the older generation of practitioners, Lydgate presumptuously dealt with problems that were not yet formulated, with the involuntary effect that the senior practitioners were put in a bad light. In that respect, the older physicians estimated him to be an irritating know-it-all. On the other hand, George Eliot, whilst writing Middlemarch, probably was influenced by the topicality of the patient-as-a-person movement in her immediate surroundings. Consequently, Lydgate’s involvement, when compared to that of his older colleagues, might be an anachronism. Yet, maybe Eliot deliberately attributed Lydgate with such revolutionary qualities. At the same time she could have been expressing a personal passion. The reasons why that might have been the case will be elaborated in the biographical component of this thesis which will treat two crucial aspects about George Eliot and her life i.e. her education and her marriage.

Secondly, the relationship between doctors and patients is determined by the act of diagnosing. Besides demonstrating apparent personal involvement “it was the task of the medical practitioner to link the patient’s subjective description of pains with the doctor his own scientific knowledge” in order to provide the patient with an accurate diagnosis and cure (TCIHOM 129). Medical practitioners were, and still are, confronted with the problematic chasm between the patient’s vulgar language and the doctor’s medical-scientific verbal communication. In other words, there is a yawning gap between practice and theory. Through the limited description of pains by a patient, medical practitioners had to scan their encyclopedic knowledge, eliminate irrelevant disorders and select all possible diseases. To correctly round off the consultation he had to determine which disease was growing rampant inside. Therefore, the physician had to perform a physical examination. From the nineteenth century onwards such an examination included three steps: looking, touching and pressing. When compared to the traditional consultation, which included taking one’s pulse and looking at the tongue, this threefold innovation affected the doctor-patient relationship as well. On the
one hand patients felt neglected because of the increasingly impersonal understanding with their doctor, but on the other hand medical consultations gradually became more intimate. Thus the physical bond was tightened. In the beginning of the century diagnostic methods were often old tried and tested ones. However, the mere act of taking one’s pulse was often enough to soothe a patient. Only decades later did an extensive physical examination qualify as a serious consultation. In these circumstances the patient-as-a-person movement was born.

It is clear that the perfect implementation of the medical trade entails balance: balance between the scientific and the social, and balance between the physical and the psychological well-being. Only a combination will lead to the desired result i.e. cure through primary health care.
1.5 Old versus new

As the plot line of Tertius Lydgate in Middlemarch evolves, the tensions between him and the older generation of medical practitioners, like Dr Sprague and Dr Minchin, to name a couple, grow. Their initial hesitating attitude towards him finally results in true aversion. They disapprove of his methodology, distrust his ideas about reform and consider him to be a charlatan.

_The medical aversion to Lydgate was hardly disguised now. Neither Dr Sprague nor Dr Minchin said that he disliked Lydgate’s knowledge, or his disposition to improve treatment: what they disliked was his arrogance, which nobody felt to be altogether deniable. They implied that he was insolent, pretentious, and given to that reckless innovation for the sake of noise and show which was the essence of the charlatan._(M. 454).

Since the citizens of Middlemarch welcomed Lydgate, the older generation could not attack him overtly without damaging their own reputation. The old men of medicine had to turn to hidden accusations to discredit Lydgate, despite his profound knowledge and passion for the trade. Unfortunately, his astonishing expertise got used against him. Everybody knew that Lydgate loved to flaunt his knowledge: after a while doctors like Dr Sprague reproached him with being too self-occupied and arrogant. In general, I think that those medical men felt threatened: they might have been afraid to lose patients or their omniscient medical-scientific superiority. As a reaction they boycott his presence, practice and the hospital by spreading false rumours. One of the first rumours includes this made-up arrogance. When that gossip was well-spread, accusations got worse. People were made to believe that it was unsafe to be hospitalized in the clinic where Lydgate volunteered since he supposedly impeded healing in order to let his patients die: because he needed corpses to experiment with, he looked for adequate material among his patients. Again everybody knew that Lydgate indeed favoured an experimental methodology. The traditional practitioners prove to be rather cunning when deceiving the bulk of the Middlemarchers, who lack any medical know-how. They use and abuse facts: sensational gossip distorts the truth to persuade Middlemarch of Lydgate’s malicious intentions.
This rivalry relies on mutual misunderstanding because there are major differences between the old traditional and new revolutionary generation of medical practitioners. Traditional physicians offered their patients trust and security. In general, before 1800 a doctor’s main medical acts consisted of taking one’s pulse and analyzing symptoms of fever, because fever was already identified as the response of a body’s defence mechanism against invading bacteria or viruses. During a traditional consultation fever acted as a sickness or health indicator. If somebody felt hot, respired more rapidly than usual and when the pulse quickened too that person was sick. Shorter defines traditional medicine as a pre-scientific phase of medical practice. It refers to the period before doctors became men of science and before patients started to respect science and its practitioners (120-126). Besides the fact that the primary function of a general practitioner was to offer trust and compassion as a family friend, the older generation tended to celebrate their social status themselves. The difference between them and the next generation is that the latter was attributed a higher social rank by the public since the overall attitude of patients towards their doctor altered. During the nineteenth century physicians started thinking differently about their status. Whereas the older doctors’ concern with patients was frequently based on personal benefit, the younger ones genuinely cared. In Middlemarch the young Dr Lydgate is the pre-eminent example of the modern doctor who strives for medical reform through innovations in methods and attitudes. His personality is the result of years of change throughout the nineteenth century. In that respect, one must again remember the fact that there is a huge lapse of the time between the moment of action and the moment of writing i.e. respectively in the 1830s and 1860s. However, a key moment is to be situated in the early nineteenth-century i.e. in 1815 when the Medical Reform Act was passed²⁰ (TCIHOM 126-132). Through this act a Court of Examiners started to conduct examinations in order to grant licenses to those who successfully passed their exams to become a medical practitioner in England. As a result, surgeon-apothecaries were finally recognized as general practitioners. In other words, the perception of physicians changed radically. The link between the doctor figure and science became widely recognized, and thus enhanced the public’s awe for him. In addition, in the course of the century the need for a single practitioner, also called a family doctor, who could fulfil “all of the medical and surgical needs” was rising among the middle class families (Shorter 127). As a result of the Medical Reform Act in 1858, the General Medical Council

²⁰ In chapter two it will be clarified that medical reform in the nineteenth century relied on crucial medical evolutions which initiated during previous centuries. See 2.1.
was set up, refining the criteria for granting medical licenses. The goal of these acts was to prevent medical quackery.

Scientific change completely transformed medical practice. An eighteenth-century doctor was primarily pre-occupied with the recording of specific cases without any further notice. Quantity dominated over quality. Besides the general concern with fever diagnosis relied almost entirely on a physical examination that merely consisted of looking at the tongue. Because of the permanent lack of know-how, the average consultation concluded with the prescription of laxatives. Cures were generally concerned with the riddance of poisonous body fluids, because scientists were not yet acquainted with the vital importance and the functions of organs and tissue. In contrast, the new generation of doctors, who examined their patients scientifically, would design a systematic history of the present illness and perform a physical examination by pounding, listening and poking. Whereas the older generation had an “instinct for prognosis, the new doctors highly estimated the value of new treatments as a result of rational reasoning. Afterwards he considered all the possible diseases, of which he was well-aware because of the medical-educational reform, the patient might have on the basis of the signs and symptoms hitherto gathered. This is called the ‘differential diagnosis’, but I will provide more details in the chapter about medical science. Both the clinical investigation as well as the differential diagnosis were quite new, but this will be elaborated in the following chapter.

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21 In comparison with Europe medical reform in America lagged behind. This is partly due to the better educational possibilities for European students of medicine. Therefore, the following excerpt written by Young Arthur Hertzler in the 1890s can perfectly illustrate the physical examination of the 1830s in England. Here he describes a house call in Kansas: “The usual procedure for a doctor when he reached the patient’s house was to greet the grandmother and aunts effusively and pat all the kids on the head before approaching the bedside. He greeted the patient with a grave look and a pleasant joke. He felt the pulse and inspected the tongue, and asked where it hurt. This done, he was ready to deliver an opinion and prescribe his pet remedy”.

22 See 2.1 for more details about François Bichat and the importance of tissue.
CHAPTER TWO: MEDICAL SCIENCE

2.1 Introduction

Michel Foucault perceived the nineteenth century as the “triumph of objectifying realism” (Rylance 2). According to him, doctors were certified experts who investigated patients, whom they regarded as mere case studies, with an objectifying gaze in order to attain one goal: normality. Nineteenth-century medicine “formed its concepts and prescribed its interventions in relation to a standard of functioning, and organic structure, and psychological knowledge” (Foucault 109). It is true that the nineteenth century was an era of increased rationalism. This was supposedly a direct consequence of the previous age of Enlightenment. The importance of these findings is that this wide-spread rationality also proved to be proficient in the purely scientific field of medicine.

In the history of medical science there is consensus about one thing: around 1800 the traditional medical paradigm started to shift (Rylance 5). When remembering the Industrial Revolution at the time, one has to acknowledge that from the nineteenth century onwards factories, machines and an endless list of inventions emerged. Consequently, all aspects of life changed radically. Medicine too favoured reform by means of scientific objectivity. In general, nineteenth-century medical science depends on restored orderliness, refreshed administration and efficient data-gathering. Systematic recording of cases assisted in refining statistics, methodologies and treatments. As I already highlighted in the previous chapter, this ‘scientification’ of medicine gave birth to a new professionalism. Doctors were conscious of their social role and status and new medical protocols required a distinct renewed discourse: doctors used a “relatively self-enclosed dialect” (Hunter 8). Medical training and education changed and the medical profession was institutionalized: in the nineteenth century numerous hospitals and clinics were founded.

In this chapter I would like to get a closer look at nineteenth-century medical science by means of hidden clues throughout the novel. In Middlemarch the reader gets overwhelmed by dozens of names, methods and instruments. Sometimes George Eliot provides the reader with extra information, sometimes she merely mentions something. It is my intention to

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23 From Kathryn Montgomery Hunter’s Doctor’s Stories: the narrative structure of medical knowledge.
examine these apparent superficial hints and to reconstruct them into a coherent history of medical science. It will become clear that Eliot did not incorporate these clues at random. She consciously contemplated the integration of scientific data. As a consequence, *Middlemarch* proves to be a richly detailed account of nineteenth-century medical science. This chapter will consist of the following steps. After this introduction, I will reconstruct a history of nineteenth-century medical science by means of the names of various big medical men that appear throughout the novel. Afterwards I will dedicate some pages to nineteenth-century infectious diseases and their treatment by means of some case studies. To conclude, some final remarks concerning inventions and debate will be formulated.
2.2 A history of medical science through the eyes of the greatest medical men

2.2.1 Before 1800

According to Sherman B. Nuland the history of medicine corresponds with an extended biography of its most prominent participants i.e. doctors, scientists, activists and reformers (Doctors: The Biography of Medicine 13-19). Through their eyes one easily gets acquainted with essential concepts and theories. Recklessly unfolding Middlemarch its scientific secrets would be a sign of eager enthusiasm, but given the fact that even a voracious reader has to acknowledge that this masterpiece is quite a knuckle, it is wise to start with a historical overview based on some major medical men. Since medical theories and innovations usually rely on the discoveries made by the previous generations of scientists, it is crucial to sketch the major headlines within the recent past of nineteenth-century medical science in order to guarantee the best possible understanding of the concepts that will be clarified.

The history of nineteenth-century medical science can be traced back to the previous centuries. In short, sixteenth-century science was primarily preoccupied with fathoming the anatomical structure of the human body. The seventeenth century was a burgeoning age during which William Harvey discovered the blood circulation. A century later scientists’ focus of attention evolved: they preferred to investigate how a disease affected the intern composition of the infected body. For the first time in the history of medicine, the symptoms of disease were evaluated. The detection of indicators of medical distortions relied on a primitive bodily examination i.e. detecting fever, taking one’s pulse and looking at the tongue. Since such a superficial examination did not qualify as being accurate enough, patients often died. Therefore, anatomy, more precisely the dissection of corpses, blossomed. As a consequence, the origins of medical disorders could be traced back to the organs. To understand why these eighteenth-century novelties stimulated nineteenth-century medical science, one should be familiarized with Galen and Vesalius, two historical figures that also appear in Middlemarch and certify a better understanding of Lydgate’s methodologies.

24 I will refer to the book Doctors: The Biography of Medicine by means of the acronym DTBOM.
Until the eighteenth century medical science was dominated by a philosophy of determinism. This scientific movement its unofficial founder was Galen of Pergamon (second century A.D.), a Greek-Roman doctor who believed in the power of omniscient supernatural creators i.e. the gods. They had the power to distribute sickness and health amongst people: these two sanitary conditions served either as a punishment or reward for a person’s sinful or fruitful life respectively. In short, the human body, mind and soul were believed to serve a higher cause. For more than 1500 years this dogmatic style of thinking controlled medicine. Yet, at the same time, Galen is the founder of what is called the ‘experimental method’, the methodology that reformer-doctor Lydgate²⁵ basically defends too. Galen was one of the first scientists ever who highly esteemed direct observation and experimentation with, for example, plants. Nevertheless, his accurate perception was blurred by philosophical and theological haziness, which eventually resulted in ephemeral speculation. In that respect, Galen himself obstructed his own genius i.e. his revolutionary experimental methodology. Nuland significantly refers to Galen’s ambiguous thinking as “the paradox of Pergamon” (DTBOM 13). Nonetheless, as the initiator of the experimental era, Galen should be recognized and remembered for his brilliant observation skills. Galen was the first scientist who linked the concepts of anatomy and disease: to understand the cause of disease a firm scientific background was required, one had to be capable of discerning the different body parts. Only afterwards, one could successfully locate the origin of medical disorders. This is exactly what the character Lydgate entails. Nuland notices that the majority of medical evolutions at the time were based on an increased understanding of the functions of the human body (DTBOM 55). On the whole, Galen is seriously indebted to the work of Hippocrates (460-370 B.C.), the so-called “Father of Medicine” who supported a holistic theory of humorism i.e. health depended on the delicate balance between four types of body fluids. Hippocrates rejected supernatural causes of disease and cared for his patients, whom he provided with diagnosis and treatment. Despite the fact that Galen was extremely susceptible to superstition, he benefitted from Hippocrates’ work within the field of experimentation.²⁶ Unlike Hippocrates, Galen dedicated his life to dissecting and glorifying the perfect design of the human body that the gods created.

²⁵ Lydgate also favours the expectant method.
²⁶ The major link between these two ancient physicians is the theory of humorism (humores). According to Hippocrates health supposedly depended on the delicate balance between four types of body fluids: blood, phlegm, yellow bile and black bile. When that balance was disrupted, a person got sick. Galen ‘refined’ Hippocrates' theory by adding an ephemeral dimension: he linked the four types of fluids with the four elements of nature i.e. earth, fire, water and wind.
This tendency of so-called Galenism, which combines both elements from experiment and philosophy, persisted until the Renaissance, the time of Vesalius. Andreas Vesalius (1514-1564) is a sixteenth-century physician with a special interest in anatomy who wrote *De humani corporis fabrica* (1543), a famous scientific work. He owes his fame to his careful examination of the organs and structure of the human body. What is more, during his education he felt that for centuries nobody ever bothered to actually put Galen’s findings to the test. Vesalius was the first who tended to correct the common mistakes made by Galen. For example, Galen believed that multiple blood types ran through one person’s veins to serve either the more or either the less important organs. On the contrary, Vesalius claimed that every human being had only one blood type. Eventually, Harvey sealed this twist by providing a decisive answer: he discovered the blood circulation inside the human body and spread his findings all over Europe until they got widely accepted by the medical world. To test theories, Vesalius dug up corpses from *La Cimitière des Innocents* in Paris, the city where he once studied as a pupil of Jacques Dubois who introduced him to the work of Galen. Through studying the bones of corpses, he gained more surgical and anatomical insights than fellow students and scientists who blindly read and memorized the classical texts by Galen. Vesalius discovered deficiencies and rectified them. Numerous inaccuracies were a consequence of the fact that Galen based his findings on experiments with animals—he dissected apes–instead of humans, because dissection of human corpses was prohibited by law. It is comprehensible that one could not simply ignore a legislative power, but Vesalius was righteously annoyed by the fact that Galen simply invented elements to sustain his assumptions about veins and arteries. So when Vesalius’ tests proved the contrary, controversy was incited. It is logical that the medical world initially resisted Vesalius’ shocking statements. Radical change after 1500 years was, not surprisingly, quite disturbing. Only two centuries later physicians were finally ready to accept and acknowledge his findings.

In *Middlemarch* Tertius Lydgate seems to be the literary equivalent of Vesalius. Lydgate actively strives for innovations within medicine, he supports the experimental and the expectant method and he is misunderstood by the immediate previous and successive

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27 Andreas Vesalius is sometimes called the founder of modern human anatomy.
28 Jacques Dubois, also known as Jacobus Sylvius, was a sixteenth-century French anatomist who was a great admirer of Galen’s work.
generations. In Chapter 45 he has a conversation with his wife Rosamund. He is completely unsettled by a melancholic reflection about one of his personal heroes within the field of anatomy, Vesalius. Lydgate overtly sympathizes with this sixteenth-century genius, whom the reader gets to know through the eyes of the fictional character. Both had similar goals: they wanted to prove previous generations wrong. Both men are also rejected by a society that seriously distrusts their revolutionary ambitions: nobody is supposed to question (medical) authority. Despite these similarities, Lydgate feels terrible because he, unlike Vesalius, has not yet achieved something grand at this point in his life. The right intentions are present, he is willing to face the mass to serve a greater medical cause, yet he still misses a concrete record of achievements. At the same time, Lydgate realizes that the road to reform is not smooth. Special achievements require special actions. It is no surprise that he admires Vesalius’ secret nightly behavior. Lydgate believes that surreptitiousness is needed, and can be justified easily, if one wants to revolt.

_I am thinking of a great fellow, who was about as old as I am about three hundred years ago, and had already begun a new era in anatomy [...] his name was Vesalius. And the only way he could get to know anatomy as he did, was by going to snatch bodies at night, from graveyards and places of execution._ (M. 334)

Even though Rosamund reacts fairly shocked because of the gruesomeness of this practice, she wants to temper Lydgate’s revolutionary spirit by alerting him to the fact that he already has enough opponents. In fact, she does not care about medical reform, she only worries about her reputation, especially because her husband aspires a life as a kamikaze for the sake of medical science. Again Lydgate feels strengthened in his beliefs, because Vesalius too was spit out by the medical establishment of his time. What is more, Vesalius was right in the end: self-evidently Lydgate too deems himself to be correct concerning his reform ideas.

_No wonder the medical fogies in Middlemarch are jealous, when some of the greatest doctors living were fierce upon Vesalius because they had believed in Galen, and he showed that Galen was wrong. They called him a liar and a poisonous monster. But the facts of the human frame were on his side, so he got the better of them_ (M. 458)
However, in this fragment, Lydgate can be compared to Galen as well. This Greek scientist was a medical authority for centuries, though he appeared to have been slightly overestimated when it was divulged that he only experimented with animals. For years, Lydgate too exclusively experimented with animals, mostly because of legal restraints. During his studies in Paris he is said to be absorbed by “some galvanic experiments” 29 (M. 112). During this brief moment of melancholy in chapter 45, Lydgate is completely deprived from self-confidence. Though he retriggers his moral quite fast, the attentive reader might have noticed the link between Lydgate and Galen: Lydgate admires Vesalius, because he is the one who unmasked Galen, but Lydgate denies ‘the Galen’ inside himself. Lydgate is not willing to recognize his own flaws, so he is doomed to fail his reform mission. His overconfidence in the advantages of medical reform blind him for possible problems. However, Lydgate’s ‘mistakes’ are not to be situated on a scientific level. The scientific theories he defends still fruitfully exist today. Maybe his attempt at reform would have been more successful if he had tried to gain the benevolence of the medical establishment in Middlemarch. Although his scientific methodologies are deeply indebted to concrete medical realizations, his shot at reform is rather unprepared and uncontrolled: he involuntarily assaults and provokes his colleagues. His social skills towards his patients are productive, but when communicating with the senior physicians he is not exactly a smart speaker since he constantly provokes them by flaunting his revolutionary ideology. Below I will discuss some case studies from Middlemarch. One example is the case of Northrop Trumbull who suffers from pneumonia. Thanks to his social skills, Lydgate can convince him to try the expectant method as a cure. However, he does not manage to introduce these new ideas successfully to the Middlemarch medical establishment. I believe that a more sensible understanding between the old and the new generation would have been more prolific to realize medical reform.

The striking parallel between Lydgate and Vesalius was, of course, no mere coincidence. Eliot manages to integrate an overwhelming amount of medical facts which display a historical awareness, from Galen up to Vesalius and the fictional character of Lydgate, the nineteenth-century doctor. Through them some major evolutions within medicine are implicitly communicated. This historical accuracy implies a great knowledge of medical science and figures. In this brief passage, Eliot successfully introduces the ideology

29 Galvanism refers to the contraction of muscles stimulated by electric shocks. The term is derived from the Italian scientist who experimented with animals and electricity near the end of the eighteenth century because he believed that electricity was a true source of vitality. Galvani himself referred to this practice by using the meaningful term ‘animal electricity’.
of key medical figures to the uninitiated reader. In addition, she proves to be an extremely skilled novelist. The sharp delineation of the character of Lydgate, by means of crucial overlaps between him and Vesalius, is remarkable. This technique of mirroring\textsuperscript{30}, lifts Eliot to a higher level as an author: she appears to be ahead of her time by using such a modern device. Only a careful or trained reader can discover this doubling because one has to read between the lines. Beneath the surface of the basic text, clues concerning medical science are hidden. If the reader is prepared to put some effort in his reading, he is rewarded with an extremely rich extra dimension: one is initiated in a concise yet detailed history of medical science. Consequently, one can agree with Virginia Woolf who claimed that *Middlemarch* was “one of the few English novels written for grown-up people”.

\subsubsection*{2.2.2 After 1800}

The birth of ‘new medical science’, which would eventually shape the nineteenth-century medical field, is rooted in the diminishing supremacy of medical authorities like Hippocrates, Galen and Vesalius. New science ought to move beyond the empiricism of natural history to the realm of ideal construction: “the function of the scientist is no longer to simply describe the real” but to gain deeper insights (*George Eliot and nineteenth-century science* 144)\textsuperscript{31}. Describing vague entities like diseases depended on close observation, which was an essential part of the experimental method, but new science demanded more ardour from scientists. Therefore, new methods, like the differential diagnosis and the expectant method, were required. In order to support the elaboration of this chapter about medical science, the basis of so-called new science can be linked to one person in particular i.e. “the father of pathological anatomy”. His name was Giovanni Morgagni (1682-1771), an eighteenth-century Italian scientist who established some major breakthroughs in pathology and anatomy, two branches within medicine which the young Middlemarcher Lydgate cherishes in his quest for medical reform. Guided by the saying “Ubi est mortus?”\textsuperscript{32} (*TCHOM* Chapter 6), Morgagni retraced the symptoms of each disease to the malfunctioning of one specific organ. From now on, doctors believed that diseases were the consequence of local disorders instead of the result of a holistic imbalance of the entire human body due the four types of body fluids demarcated by Hippocrates. The task of the physician was to trace the

\textsuperscript{30} This doubling is to be linked with a technique from postmodern narratology which is called mise-en-abyme.
\textsuperscript{31} The acronym GENS will refer to *George Eliot and nineteenth-century science* by Sally Shuttleworth.
\textsuperscript{32} The Latin phrase ‘Ubi est mortus?’ can be translated as ‘Where is death?’ or better ‘Where is disease?’. This short line clearly demonstrates Morgagni’s, and later Bichat’s, preoccupation with localism.
deficient organ. The lines of reasoning propagated by Morgagni formed a modern approach to clinical thinking.

Coincidentally, in the same year that the renowned anatomist Morgagni died, in 1771 that is, his closest scientific successor Marie-François Xavier Bichat (1771-1802) was born. This Frenchman was deeply influenced by Morgagni’s philosophy of localism i.e. he ended up locating the origin of disease in one dysfunctional organ. Bichat refined the Italian scientist’s novelties in pathological anatomy, stressing the presence and importance of tissue in the human body. Furthermore, he discovered the existence of membranes in the abdominal cavity. Thanks to Bichat’s work the so-called ‘humores’ pathology designed by Hippocrates was transformed into a more solitary pathology: only the separate parts, the individual cells of the layers of tissue, could be infected, thus contaminating one organ in particular. It is clear that tissue pathology engaged in practices of minute localism from the nineteenth century onwards.

*This prosperous state of the science, brightened by such anticipations of prospective improvement, may be ascribed, mainly, to the splendid, useful and imperishable accessions which have been afforded to it by the genius and industry of Bichat and his élèves. The views of Bichat necessarily opened a large and unexplored field for pathological researches. His ‘Anatomie Générale’ must be adopted as the foundation of all correct pathological investigation, and the impulse which his researches and example have given to the medical inquiries of the present age, cannot but be attended with the happiest results, when the present system of physiological medicine shall have become better understood and more extensively adopted.*

*(The American Journal of Medical Sciences Volume 8, August 1829)*

As a consequence of his research major advances concerning the treatment of membranes, especially of the peritoneum, and the functioning of joints were achievable. Finally physicians were enabled to clearly distinguish the different organs within the torso and to delineate and examine the fitting tissue. Despite the fact that Bichat’s innovations were initially formulated according to more esoteric and philosophical patterns, his work was eventually valued for its

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33 Bichat discovered twenty-one types of tissue. He noted his findings in *Recherches physiologiques sur la vie et la mort*, a renowned book for its anatomical references.
great practicality. In summary, Morgagni located the origin of disease in organs, Bichat refined the entire anatomical concept by means of tissues.

In *Middlemarch*, the author alerts the reader to the fact that pathology was blossoming in the early nineteenth century. A firm core of pathological know-how already existed, although science had not yet reached its limits, thus there was still a great deal left to be explored to the fullest. What is more, Eliot draws a parallel between Lydgate the audacious reformer and pathology as a platform for adventure, challenging the scientist’ intellect. It is no surprise that precisely doctor Lydgate is a great aficionado of pathology. Both implicitly and explicitly, George Eliot indicates that Lydgate his career was not going to be smooth sailing all the way. His career, and new science in general, would definitely be a true adventure, an intense quest for innovation during which one would meet plenty of difficulties and numerous opponents.

*Perhaps that was more of a cheerful time for observers and theorizers than the present; we are apt to think it the finest era of the world when America was beginning to be discovered when a bold sailor, even if he were wrecked, might alight on a new kingdom; and about 1829 the dark territories of Pathology were a fine America for a spirited young adventurer.* (M. 147)

Lydgate’s medical ambitions perfectly match with Bichat’s new theories about tissue. Lydgate felt the need to investigate the origin of fever and disease in more detail, since he believed that a deeper knowledge of these phenomena would lead to crucial innovation and reform. The work left by Bichat provided ground for further exploration. Consequently, he did not shun to show his admiration towards Bichat, because he aspired to a similar short but fruitful career.

*Lydgate was ambitious above all to contribute towards enlarging the scientific, rational basis of his profession. The more he became interested in special questions of disease, such as the nature of fever or fevers, the more keenly he felt the need for that fundamental knowledge of structure which just at the beginning of the century had been illuminated by the brief and glorious career of Bichat, who died when he was only one-and-thirty, but, like another Alexander, left a realm large enough for many heirs.* (M.147)
On the same page, George Eliot continues to bestow essential details about Bichat ant his cellular pathology on the reader. This fragment is one of the rare moments when she explicitly shares her personal affinity with and knowledge about medical science with the reader.

That great Frenchman first carried out the conception that living bodies, fundamentally considered, are not associations of organs which can be understood by studying them first apart, and then as it were federally; but must be regarded as consisting of certain primary webs or tissues, out of which the various organs—brain, heart, lungs, and so on—are compacted, as the various accommodations of a house are built up in various proportions of wood, iron, stone, brick, zinc, and the rest, each material having its peculiar composition and proportions. No man, one sees, can understand and estimate the entire structure or its parts—what are its frailties and what its repairs, without knowing the nature of the materials. And the conception wrought out by Bichat, with his detailed study of the different tissues, acted necessarily on medical questions as the turning of gas-light would act on a dim, oil-lit street, showing new connections and hitherto hidden facts of structure which must be taken into account in considering the symptoms of maladies and the action of medicaments. (M. 148)

According to doctor Lydgate Bichat his studies, its principles again carefully explained by Eliot herself, provide sufficient apt material for future innovations.

But results which depend on human conscience and intelligence work slowly, and now at the end of 1829, most medical practice was still strutting or shambling along the old paths, and there was still scientific work to be done which might have seemed to be a direct sequence of Bichat’s. This great seer did not go beyond the consideration of tissues as ultimate facts in the living organism, marking the limit of anatomical analysis; but it was open to another mind to say, have not these structures some common basis for which they have all started, as your arsnet, gauze, net, satin, and velvet from the raw raccoon? Here would be another light, as of oxy-hydrogen, showing the very grain of things, and revising all former explanations. (M.148)
Of course, reform is right up Lydgate’s alley. According to him, Bichat’s work provided an unexploited source of new insights in the field of anatomy, a branch of science he glorified.

*Of this sequence to Bichat’s work, already vibrating along many currents of the European mind, Lydgate was enamoured; he longed to demonstrate the more intimate relations of living structure, and help to define men’s thought more accurately after the true order. The work had not yet been done, but only prepared to those who knew how to use preparation. What was the primitive tissue? (M. 148)*

One of the persons who actually sorted out Bichat’s theories was René Théophile Hyacinthe Laennec (1781-1826), who was, not surprisingly, a former pupil of Bichat. This Frenchman invented a life-saving diagnostic instrument, the stethoscope, although his career included other highlights as well, such as new theories, attitudes and methods concerning tumors, tuberculosis and tissues. In *Middlemarch*, this revolutionary device is to be linked with the fictional character of doctor Tertius Lydgate, the medical reformer. I will elucidate that this apparent banal instrument implies even more innovations within nineteenth-century medical science.

The stethoscope was invented in 1816. George Eliot started writing *Middlemarch* in 1869 and she situates the start of the story in 1829, a mere decade after the invention of the stethoscope. When compared to the temporal setting of the novel, the stethoscope was a rather recent invention, unknown by the majority of the population, but glorified by a handful of revolutionary physicians. Near the final quarter of the nineteenth century its use was widespread. In the novel, Laennec and his innovative device are mentioned a few times in the context of Dorothea Brooke’s husband Edward Casaubon’s heart attack, a case closely observed by Lydgate.

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34 In 1819 he wrote about his invention in *De l’Ausculation Médiate, ou Traité du Diagnostique des Poumons et du Cœur, Fondé Principalement sur ce nouveau moyen de Exploration*. He pointed out the benefits due to *mediate auscultation*. Note that the word ‘stethoscope’ is composition of two Greek words i.e. *stethos* and *scopos*. The former can be translated as ‘chest, the latter as ‘perceiver’.
[...] Lydgate seemed to think the case worth a great deal of attention. He not only used his stethoscope (which had not become a matter of course in practice at that time), but sat quietly by his patient and watched him. (M. 286)

On 13 September 1816 Laennec was doing his daily round in the hospital accompanied by his students. One of his pupils recorded that Laennec was listening to an overweight patient’s chest with his bare ear. Despite his well-trained hearing, the sounds of the heart, lungs and stomach were muffled because of the patient’s corpulent build. Laennec always detested the use of intermediate instruments like microscopes, because he preferred to see with his own eyes. Again, Eliot incorporates a subtle yet salient similarity between Laennec and his fictional counterpart Lydgate, the wannabe reformer. Both resist data gathering through a material agent.

Many men have been praised as vividly imaginative on the strength of their profuseness in indifferent drawing or cheap narration [...] But these kinds of inspiration Lydgate regarded as rather vulgar and vinous compared with the imagination that reveals subtle actions inaccessible by any sort of lens.
(M. 164)

In that respect, both medical men met the expectations of sensualistic medicine. However, on that early fall day in 1816, Laennec had to acknowledge that an instrument which intermediates between the patient’s body and his own senses could strengthen his findings. To amplify the internal sounds, Laennec rolled up some pieces of paper into a narrow cylinder. Indeed, heartbeats became better hearable. This primitive shape was rapidly replaced by a simple wooden instrument which was about 23 centimeters long and which could be unscrewed into two parts and carried along in a pocket of the doctor’s white jacket. Both the stethoscope and the white coat were prestigious symbols which provided status and recognition, reserved exclusively for doctors. Soon this small and compact device was indispensable to map the characteristics of disease. Its working was based on the knowledge

35 H.B. Granville
36 Wearing a white coat is a custom which also originated in the nineteenth century. New medical science reacted against the rising popularity of scientific mysticism and medical quackery by stressing its turn towards objectivity. Physicians needed the support of the preliminary symbol of the scientist, the white laboratory coat, to validate their modern scientific aptitude. However, some profess that the white coat for doctors is just an feeble replica of the uniform for nurses. Others aver that this coat was officially introduced by the nineteenth-century Canadian Dr George Armstrong.
of normal and abnormal breath. Laennec was an amateur musician with a very sharp sense of hearing. Since the stethoscope, and even before, he based his diagnosis on the usefulness of listening to internal body cavities. The difference between mute or sonorant, loud or rather dull sounds could lead to a heterogeneous array of disorders e.g. cardiac arrhythmia or pulmonary ailments. Literally listening to the human body proved to be a diagnostic goldmine, which was closely related to the need for experiment, objectivity and change in the nineteenth-century medical field.

This invention of the stethoscope entailed some major advantages for medicine. By looking at and listening to the deeper structures of the body, a better analysis of symptoms was established. At first, the stethoscope enabled physicians to link the sounds caused by the sick patient with the visible disorders which were detected during the dissection of the body of that same, unfortunately, deceased patient. From 1816 onwards, the stethoscope offered audible info, just like autopsies granted reliable visible data. The difference between stethoscopes and autopsies implied one chief plus: from now on doctors did not have to wait until the patient had died to figure out what was wrong. After some years of practice, medical science was able to predict the right disease by means of sounds only. It was the physician’s task to link the audible to the visible by means of the differential diagnosis instead of dissection. Doctors could prevent fatal outcomes by offering the right cure for the particular infection: many lives could be saved. Morgagni too already formulated the wish to encounter life-saving diagnostic methods a century before. In the nineteenth century, the stethoscope finally fulfilled that need. Since patients could be treated and healed, death rates diminished. In general, the early Industrial Revolution cost too many lives due to the outbreak of epidemics like, for example, cholera. Thanks to new inventions like the stethoscope, symptoms of such epidemics could be detected and denominated more rapidly. Consequently, science could avoid many deaths. Near the end of the century, the population exploded because of better primary health care, initiated by inventions and better hygiene. Nonetheless, despite the fact that disorders could be denominated more easily since the invention of this diagnostic instrument, this does not imply that every disease could be cured accordingly. In the illustrating fragment, Lydgate successfully diagnoses Casaubon. His apparent casual remark about Laennec entails that his verdict is actually sustained by the infallible objectivity.

37 On page 443 Mrs Dollop explicitly doubts Lydgate his revolutionary reform. She distrust his will to dissect corpses. “A doctor, who if he was good for anything should know what was the matter with you before you died, and not want to pry into your inside after you were gone”.
of the stethoscope. What else would be the use of bringing up this device a second time? Even a naïve dreamer like Lydgate who loved to flaunt his knowledge favoured impartiality and directness when diagnosing for the sake of his patients’ health. Note that this fragment is a perfect illustration of Rylance his article about the medical narrative. Lydgate his diagnosis caters to the formal principles of old and new science. The harsh technical data is the result of increased ‘scientification’ in the nineteenth century, yet Lydgate is quite emphatic: his honesty caters to Casaubon’s personality.

I believe that you are suffering from what is called fatty degeneration of the heart, a disease which was first defined and explored by Laennec, the man who gave us the stethoscope not so many years ago. A good deal of experience -- a more lengthened observation -- is wanting on the subject. But after what you have said, it is my duty to tell you that death from this disease is often sudden. At the same time, no such result can be predicted. Your condition may be consistent with a tolerably comfortable life for another fifteen years, or even more. I could add no information to this beyond anatomical or medical details, which would leave expectation at precisely the same point. (M.423)

On the whole, it was easier to diagnose because sound indicated possible disorders in the organs and body cavities. A more minute and precise classification of disease was established: even the slightest difference in sound could indicate a motley company of diseases. The more nuanced the diagnosis, the better one could be treated, thus restoring health. What is more, the doctor could distinguish his personal ‘objective’ findings more clearly from the patient’s subjective description. After all, exact science engages in objective experiment. Personal descriptions of pain, no matter how precise they ought to be, were always susceptible to conscious and unconscious factors. By amplifying and magnifying sensorial findings by means of a neutral scientific instrument, one could enhance medical progress, innovation and reform. It is no surprise that doctor Lydgate is linked to this device. Since it was his objective to attain reform, he used to be well aware of medical science its most recent developments. Each innovation could support his personal research in anatomy and pathology.

At the beginning of chapter 31, which immediately follows the chapter where Lydgate examined Casaubon after his first heart attack, the following epigraph caught my attention.
How will you know the pitch of that great bell
Too large for you to stir? Let but a flute
Play 'neath the fine-mixed metal listen close
Till the right note flows forth, a silvery rill.
Then shall the huge bell tremble - - then the mass
With myriad waves concurrent shall respond
In low soft unison.
(M. 293)

I noticed a maybe somewhat farfetched, yet striking parallel between these words and the act of diagnosing with a stethoscope. The first line “how will you know the pitch of that great bell” seems to express the need for a better listening device to correctly diagnose. “Pitch” self-evidently refers to sounds, the “great bell” can be a metaphor for the central organ of the human body, the heart. In that respect, the epigraph seems to be a visionary metaphor for listening to someone’s heart. The “flute” stands for the primitive version of the stethoscope i.e. the narrow paper cylinder, which resembles a long small tube. Then “metal” indicates an anachronism, since the first stethoscopes were originally made of wood. One has to “listen close” in order to hear the “right note” which refers to correctly identifying a specific disorder by means of the differential method or it can be a metaphor for a normal, healthy internal sound system. Overall, these prophetical lines seem to allude to Casaubon’s death, which is presumably the consequence of a second heart attack, more than 100 pages later. When the huge bell shall tremble, Casaubon’s heart will beat a last time. Only through a deeper knowledge of nineteenth-century medical science, it becomes clear that the novel indeed contains numerous hidden allusions to this subject.

Like most innovations, the invention of the stethoscope did not arouse from scratch, but it relied on previous discoveries and methods. Before the stethoscope, medical men turned to a more primitive method i.e. percussion which was promoted by the Austrian doctor Leopold Auenburger. The doctor placed his hand on the trunk, stretched the middle finger of that hand, and tapped it with the stretched middle finger of the free hand. This method was rediscovered by the French practitioner Nicolas Corvisart, who valued the benefits of Auenburger’s examinational technique. Corvisart was a contemporary of Bichat and together with Laennec, they pertained to the Parisian School of Medicine, the institution where
Lydgate supposedly studied too. The University of Paris brought forth a sensualistic trend within medicine because research relied on the refined exploitation of the senses: eye, ear, touch, taste and smell. The invention of the stethoscope highly valued the former three senses: listening is only one step within the new sensualistic medical investigation which also included watching and touching. This new intimate methodology proved to be life-saving. Moreover, this sensualistic approach is a part of the experimental method, the human body being the object for experiment which depended on hearing, watching and touching. Like the first users of the stethoscope Corvisart desired to correlate the symptoms of the living patient and the state of the body after death. His methodology consisted of three steps: categorize a disorder based on the visible and audible symptoms, recognize the anatomical changes caused by the disease and identify the symptoms. In conclusion, doctors had to diagnose guided by their senses. The experimental method is still beneficial today. It combines the following factors: objectivity, practice, observation and experience. These four words perfectly summarize the basic principles of Lydgate’s methodology. This subchapter has attempted to delineate the medical-historical tendencies that preceded his new scientific thinking. George Eliot provided the reader with numerous references to several key figures which permit such a historical reconstruction. Consequently, one comprehends what nineteenth-century medical science really entails.
2.3 Infectious diseases and drug treatment: some case studies

The previous key medical figures indicate that the clinical focus of attention shifts from patients to disease in the nineteenth century: an organic disorder instead of a holistic imbalance causes illness. In general, medicine was approached in a more scientific way and doctors wanted to be perceived as true scientists. The famous French doctor and professor Pierre Charles Louis (1787-1872), who was a great typhus expert, embodied this revolution towards ‘scientification’. He valued the importance of statistics in medical examinations and stressed the necessity of distance between doctors and their patients, for the sake of objectivity, another hobbyhorse of medical science at the time. It does not have to surprise that Tertius Lydgate is associated with this medical man in *Middlemarch*, though Lydgate does not conform to Foucault his negative criticism (Rylance 2-4). On page 121 Lydgate is probably reading Louis’ *Recherches Anatomiques* (1828).


\[...] his more pressing business was to look into Louis’ new book on fever, which he was especially interested in, because he had known Louis in Paris, and had followed many anatomical demonstrations in order to ascertain the specific differences of typhus and typhoid (M. 164)

Knowing Louis implies a fair knowledge of his typhus theories. That is probably the reason why Lydgate identifies Fred Vincy’s illness as a case of typhus i.e. typhoid fever.\textsuperscript{38} Fred Vincy has been feeling unwell for a while: after a visit to the “unsanitary Houndsley” he returned with the “further misfortune of some ailment which for a day or two had seemed mere depression and headache” (M. 259). After a superficial examination, Dr Wrench diagnoses him to suffer from some “slight derangement” and prescribes the usual medicines i.e. mixtures from the druggist. When these fail to alleviate the pain, Fred’s mother calls for Dr Lydgate, for a second opinion. Lydgate “was convinced that Fred was in the pink-skinned stages of typhoid fever” (M. 260). Indeed, the most prominent symptom of this infection is a rash of rose-coloured spots. Its stages evolve from fever, headache and delirium (M. 264) to the possible final and fatal stages, which were prevented in the case of Fred Vincy due to Lydgate his expertise.

\textsuperscript{38} Typhus and typhoid fever are related ailments, though symptoms and treatment greatly differ. In other words, a wrong diagnosis can have fatal outcomes.
In *Middlemarch* George Eliot is apparently more preoccupied with another infectious disease, cholera. Mentioning it occasionally seems to symbolize its latent presence in nineteenth-century England. Before an actual breakout, the disease slumbered around, creating fear amongst the citizens of nineteenth-century provincial towns like Middlemarch. Kenneth F. Kiple calls cholera “the scourge of the nineteenth century” (*TCIHOM* 41). In her ‘Quarry’39 George Eliot registered an outbreak of cholera in England in 1831 which corresponds with the second pandemic of this infection, which moved from Russia to England. The virus spreads through water i.e. through contact with contaminated water40 or through contact with faeces or vomit of patients. Only thirty minutes after the first contact the *vibrio cholerae* bacteria41 starts multiplying by division. After an incubation period of two to six days, symptoms like nausea, vomiting, stomach ache and diarrhea could appear. This extensive loss of body fluids could result in death by dehydration. The most simple and effective remedy was drinking healthy water to prevent dehydration and subsequent shocks. No actual cure was invented until the twentieth century, hence one had to appeal to traditional modes of prevention, like disinfectant bonfires.

According to the World Health Organization, cholera is a key indicator of social development. It is hard to believe that even during those nineteenth-century pandemics the vast majority of the medical establishment was convinced of the fact that contamination did not play a role in the spread of disease. They believed that the bacteria of the plague, yellow fever, tuberculosis and cholera could not be transferred from human upon human (*Geschichte der Medizin* 382)42. It was Max von Pettenkoffer, a nineteenth-century hygienist, who discovered that the human environment, virulence and resistance played a role besides begetters. Even before this was officially confirmed, the medical world was gradually divided into two groups: so-called ‘contagionists’ and ‘anti-contagionists’. The former believed that disease originated in living organs, the latter claimed that disease was caused through contact with garbage. Famous followers were respectively Louis Pasteur and Rudolf Virchow. Of

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39 Eliot started composing leather-bound notebooks in 1868, the year before she started writing ‘Miss Brooke’, the first part of what was to culminate in her masterpiece *Middlemarch* in 1872. They contained numerous facts about politics, geography, manners and ethics, history, literature, education and science. One of the notebooks is referred to as George Eliot’s ‘Quarry for Middlemarch’.

40 Contamination is often the result of drinking infected water, eating fish and vegetables that lived or were cleaned in the contaminated water.

41 The causative agent of cholera, a bacterium called *vibrio cholerae*, was first isolated by Robert Koch and his colleagues in 1883 (Kiple *TCIHOM* 42). They also discovered the transmitter of tuberculosis.

42 I will refer to *Geschichte der Medizin* as *GM*. 
course, the inventor of vaccinations Edward Jenner merits an honourable mention in the novel as well (M.145).

In the long term, hygiene played a major role in preventing and exterminating infectious diseases like typhoid and cholera. Therefore, hygiene is often considered to be a type of treatment. Nineteenth-century England desired to become a healthy new world power. This sudden urge for hygiene arose from multiple sources: the appalling work conditions due to the Industrial Revolution, religious movements that cherished purification to wash off sins and utilitarian beliefs which promoted health and happiness for everybody. Consequently, public health and sanitary reform were main points on the political agenda. Personal hygiene, sanitary regulations against water and air pollution and sanitary public places were topical subjects in early nineteenth-century provincial towns, like Middlemarch. George Eliot refers to a life-changing hygienic act when Lydgate and Bulstrode return from the hospital.

A motion was to be held in the Town Hall on a sanitary question which had risen into pressing importance by the occurrence of a cholera case in the town. Since the Act of Parliament, which had been hurriedly passed, authorizing assessments for sanitary measures, there had been a Board for the superintendence of such measures appointed in Middlemarch, and much cleansing and preparation had been concurred in by the Whigs and Torries. (M. 725)

In 1828 a motion that ensured the digging of new sewers and sluices was passed. This implied better drainage, thus creating possibilities to permanently deal with infectious diseases which were passed through contact with water. Also in France, hygiene was highly valued since physicians realized that infections were exchanged through human contact. La Charité, the famous Parisian hospital where Bichat, Laennec and presumably Lydgate studied, propagated the so-called one-patient-per-bed policy, which was much more hygienic and consequently, much more effective in eradicating infectious diseases. The hospital of Bulstrode and Lydgate also has one bed for each patient. The 1828 Act stimulated further sanitary reform: for example, the Public Health Movement (1840), a Report on the Sanitary conditions of the

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43 Today cholera still remains a challenge for countries where safe drinking water and adequate sanitation cannot be guaranteed.
labouring population of Great Britain (1843), the Public Health Act of 1848 and the 1848 International Hygiene Exposition in London.

Throughout the century various traditional treatments, based on the supposition that the causative agent of disease was overstimulation, persisted. Common cures contained blisters, bloodletting – sometimes by means of leeches –, diet, drainage, emetics, hot tubs and sweating. The primary goal was to restore the holistic imbalance of body fluids, a theory propagated by Hippocrates which persisted until the end of the nineteenth century. A horrid example of restoring balance was to treat diarrhea by means of placing bloodsuckers near the anus. Occasional positive effects were generalized and thus claimed to be successful and effective. Consequently, some treatments were prescribed for similar ailments. Unfortunately, generalization often had a totally misplaced effect. In chapter 45 Lydgate ironically refers to these antique practices as “the heroic treatment, bleeding, blistering and starving patients” (M. 447). As a medical reformer Dr Lydgate supported the experimental and the expectant method. The latter has been explained in the context of the stethoscope, a revolutionary diagnostic instrument. The latter will be illustrated here.

Just like the experimental method, the expectant method relies on observation beside the patient’s bed. This conviction goes hand in hand with abstinence from drug prescriptions. This causes conflict, distrust and suspicion among the Middlemarchers.

One of the facts quickly rumored was that Lydgate did not dispense drugs. This was offensive both to the physicians whose exclusive distinction seemed fringed on, and to the surgeon-apothecaries with whom he ranged himself [...] But Lydgate had not been experienced enough to foresee that this new course would be even more offensive to the laity; and to Mr Mawmsey [...] he was injudicious enough to give a hasty popular explanation of his reasons, pointing out to Mr Mawmsey that it must lower the character of practitioners, and be a constant injury to the public, if their only mode of getting paid for their work was their making out of long bills for draughts, boluses and mixtures. (M. 325)

The ideology behind his stance was a grave insult towards the medical establishment. Lydgate, who lacked every form of medical etiquette, bluntly shared his opinion, claiming that “hard-working medical men may come to be almost as mischievous as quacks” by
dispensing drugs. As a consequence, the older generation of medical men sceptically sneered at Lydgate his experimental method.

A medical man should be responsible for the quality of the drugs consumed by his patients. That is the rationale of the system of charging which has hitherto obtained; and nothing is more offensive than this ostentation of reform, where there is no real amelioration. (M. 447)

Despite their scepticism, they had to acknowledge that Lydgate indeed “knew a thing or two more”. In addition, his expectant method proved to be efficient. Slowly but surely he gains the trust of the Middlemarchers. For example, Mr Powerdell genuinely believed that Lydgate was in “pursuit of a better plan”, though he was on the safe side when secretly administering his wife “Wigeon’s Purifying Pills, an esteemed Middlemarch medicine” (M. 449). Mr Powerdell was willing to embrace innovation, but not at the expense of his beloved wife, so he turned to the common practice of restoring the internal balance of the human body. Anyhow, most patients recovered rapidly under Lydgate’s supervision.

Various patients got well while Lydgate was attending them, some even of dangerous illnesses; and it was remarked that the new doctor with his new ways had at least the merit of bringing people back from the brink of death. (M. 449)

Also Mr Borthrop Trumbull supported Lydgate and the new method. Mr Trumbull suffered from pneumonia and Lydgate thought him to be “a good subject for trying the expectant method upon – watching the course of an interesting disease when left as much as possible to itself, so that the stages might be noted for further guidance”. If guided by a licensed practitioner, who carefully controlled the temperature of the patient, the human body was often able to recover without additional drugs. Thus, Mr Trumbull was “partner in his own cure” (M. 449). The body could overcome disease by means of the so-called vis medicatrix naturae, the healing power of nature.

Actual breakthroughs in pharmacology, thus in drug treatment, were established after 1800. As the result of critical investigations and the subsequent itemization of the constituents of old-tried medicines, Friedrich Sertürner managed to isolate the alkaloids of substances in
1804 (GM). In that way, he discovered that morphine was the principal ingredient of opium. The attentive reader of George Eliot her novel already picked up that the most popular drug in the early nineteenth century was opium, a very common medicine at the time. In other words, unlike today, it was not necessarily associated with substance abuse and addiction. Drug treatment was mostly involved with pain control since it was intended to alleviate pain. However, the temporary assuaging effect did not provide an actual cure. Since morphine and opium are fantastic analgesics, extensive use had an addictive effect because of the release of dopamine.

In Middlemarch, the reader is introduced to both sides of the coin. First of all, opium is used for medical purposes. In general, drugs served to treat pain, nerves and sleeplessness. In the case of Mr Raffles, who suffered from severe alcohol poisoning, Lydgate “was strongly convinced against the prevalent practice of allowing and persistently administering large doses of opium; and he had repeatedly acted on this conviction with a favourable result” (M. 700). Raffles has to detox, but because he does not manage to catch some sleep, Lydgate prescribes some mild doses of opium, a tranquilizer.

The chief new instruction that Lydgate had to give was on the administration of extremely moderate doses of opium, in case of the sleeplessness continuing after several hours. He had taken the precaution of bringing opium in his pocket, and he gave minute descriptions to Bulstrode as to the doses, and the point at which they should cease. He insisted on the risk of not ceasing; and he repeated his order that no alcohol should be given. (M. 706)

However, Bulstrode detested this man because he was an accomplice in his obscure financial business. In addition, Bulstrode knew that “human prescriptions were fallible things: Lydgate had said that treatment had hastened death – why not his own method of treatment?”. When Mrs Abel relieves him during the night shift, he forgets to mention when the doses of opium should cease. Consequently, Raffles’ condition worsens and Mrs Abel thinks he is dying. Instead of correcting his mistake, Bulstrode deliberately agrees with Mrs Abel to grant the poor man some final pleasures, port and brandy, a lethal mixture in combination with opium.

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44 From course material Bachelor 2 in Psychology at UGent 2008-2009: An introduction to psychiatry, part 3 about substance abuse, pp. 50-59.
Indeed, Raffles’ slow and respiratory failure results into death by overdose. Through this case the reader is acquainted with the medical purposes and dangers of drug treatment.

Besides its medical purposes opium was regularly used and abused for its pleasurable effects. Two characters in *Middlemarch* suffer from substance abuse. Both Will Ladislaw and Tertius Lydgate cope with drug addiction. Whereas Ladislaw simply enjoyed experimenting, Lydgate intended to cope with stress and worries by means of narcotics.

*He [Will Ladislaw] was not excessively fond of wine, but he had several times taken too much, simply as an experiment in that form of ecstasy; he had fasted till he was faint, and then supped on lobster; he made himself ill with doses of opium. Nothing greatly original had resulted from these measures; and these effects of the opium had convinced him that there was an entire dissimilarity between his constitution and De Quincey’s.* (M. 83)

The last line of the quote explicitly refers to Thomas de Quincey’s work *Confessions of an English Opium-Eater* (1821), a personal account in which he confesses his laudanum addiction and alerts the reader to the double effect – pleasure and pain – of substance abuse. In *Middlemarch* Ladislaw represents pleasure, Lydgate embodies pain. This early book reference might foreshadow the doubling of Ladislaw’s addiction in the character of Lydgate. Near the end of the novel, the young doctor steadily sinks away in debts. In addition, “he had no longer free energy enough for spontaneous research and speculative thinking., but by the bedside of patients, the external calls on his judgement and sympathies brought the added impulse needed to draw him out of himself (M. 668)”. He repeatedly resorts to opiates.

*Lydgate […] sank back in his chair in silence, but with a strange light in his eyes. “He may have been taking an opiate,” was a thought that crossed Mr Farebrother’s mind -- “tic douloureux perhaps -- or medical worries”.*

(M. 640)

The “strange light” presumably refers to miosis, the enlarging or reducing of the pupil as a symptom of substance intoxication delirium. His ambiguous attitude towards his profession might be another symptom: apathy, sedation and analgesia are opposed to rare sentiments of euphoria and enthusiasm. Based on the possible symptoms, it is not illogical to interpret Fred
Vincy as a closeted former drug addict. Throughout the novel, the description of his character seems to mirror several possible symptoms of drug withdrawal. He “looked quite pale” and had a quasi-permanent “dull despairing glance in his eyes”. Furthermore, he suffers from delirium, copes with mood swings – he feels ecstatic and troubled at the same time - and has goose bumps. Generally, one is considered to be abstaining from drugs, when at least three symptoms of forbearance are met. As I pointed out before, Lydgate diagnoses Fred as an early case of typhoid fever. However, when keeping in mind the symptoms of drug abstinence, also described by De Quincey, it is not unlikely that Fred Vincy has or had a drug problem. Such presumptions can only be made by means of a deeper knowledge of nineteenth-century medical issues, issues that are frequently touched upon in Middlemarch.
2.4 Concluding remarks: invention and debate

The nineteenth century, so far as it has elapsed, forms a brilliant era in the history of medical science. In the wide range of twenty centuries, which exact history claims as her own, we here and there may mark the recorded labours of a great and distinguished genius, which shine with redoubled splendor amid the surrounding darkness; and we may also notice occasional groups of distinguished contemporaries improving and adorning the respective ages in which they flourished. It was, however, reserved for the present era, by an unanimity of co-operation unexampled in past ages, to place medical science upon the firm bases of correct observation, critical research, and strict philosophical deduction – to discard all the idle speculation and vain hypotheses, and by endowing it with the attributes of an exact science, to render utterly inapplicable to it, at no very distant period, the opprobrious epithet of ars conjecturalis.

(The American Journal of Medical Sciences August 1829, Volume 8, 403-442)

New nineteenth-century medical science is seriously indebted to the revolutionary theories of great medical men like François Bichat and René Laennec. Their pioneering work allows me to draw some general conclusions. In general, science and medicine praised objectivity: practice, observation and experience were highly estimated. Both the experimental and the expectant method served one major goal: save patients. The focus of medical science shifted from the patient to disease. One of its consequences was the foundation of the patient-as-a-person movement. This ambiguity – better treatment versus the patient’s resentment – is typical of periods that experience radical changes. In other words, the findings of Foucault, Sacks and Rylance are fulfilled. This dichotomy between tradition and reform constantly shines through the pages of Middlemarch and, consequently, through nineteenth-century medical science. Medically, Lydgate is a reformer who embodies numerous new techniques, but historically, he is a transitional figure: he cherishes the scientific approach to medicine but his emphatic attitude towards his patients is more traditional. With regard to medical novelities, Lydgate was always up to date. He was well aware of the most recent scientific innovations: he met many innovators like Bichat and Laennec, who were renowned medical men, in Paris. Since Lydgate addresses these men in a respectful yet intimate tone, I thought them to be classmates at first. However, their respective
birth dates imply that Lydgate must have been one of their students. The twofold effect of one pillar of nineteenth-century medical science i.e. reform will be elaborated below.

In general, medical reform had a double effect. On the one hand, medical inventions benefitted from it. On the other hand, discussions amongst the medical establishment were incited. First of all, following the track of nineteenth-century anatomy and pathology, other areas in medicine – for example, hygiene, bacteriology, clinical medicine, dentistry, ophthalmology, otology, gynecology and surgery – improved as well. Only by means of actual breakthroughs in the medical field, doctors could investigate the breeding grounds of disease when the patient was still alive. In the nineteenth century numerous life-saving diagnostic devices were invented. 45 The stethoscope itself supplied a resource for further modification. The original design was criticized for being too long, too small and too unhandy. Soon physicians started contemplating its user-friendliness, brainstorming about more flexible materials, in order to enhance its practicality. In 1829 Nicholas Comins proposed the use of both ears and in 1855 George Caman designed a double stethoscope (DTBOM Chapter 8). The result, that we still know today, is a tube which splits in half, providing two ears near the end, comparable to the headset of a walkman. The microscope and the thermometer are two other inventions which got introduced in this progressive century, though their basic design already existed on beforehand. The microscope reached university medicine in the 1840s and was central in diagnosing the true cause of death from tissue taken at autopsy (TCIHOM 140). The family doctor used it for studying blood samples and urine of patients, the primary disturbers of normal physiology. The thermometer was another device that underwent severe changes over the ages. Ludwig Traube introduced the thermometer into clinical medicine around 1850 (TCIHOM 140). Only by the 1880s the thermometer had become part of the doctor’s medical bag because of its ability to measure fever. In this context, I detected an anomaly. In the case of Mr Trumbull, Lydgate feels “sustained by application of the thermometer which implied the importance of his temperature” (M. 452). Based on the previous information, I dare state that Eliot failed to avoid the pitfall of anachronism. The thermometer became a mainstream diagnostic instrument several years after the period in which Middlemarch is situated. In addition, fever was recognized as a symptom of disease by Karl Reinhold Wunderlich in 1868 (GM), only a year before Eliot started writing Middlemarch. It is probable that Eliot was influenced by the

45 The constant stream of new inventions is most likely related to the march of the Industrial Revolution.
practices of Dr Paget, the physician who treated her stepson Thornton.\textsuperscript{46} Then again, it is possible that Eliot deliberately turned Lydgate’s dreamy reform statements into visionary medical practice. Maybe it is better to give Eliot the benefit of the doubt.

Secondly, dissension due to radical medical changes arose in the medical world. This discord often crystallized in fervent debate. An example from \textit{Middlemarch} is the dispute concerning forensic medicine. Whereas the older generation believes that coroners should get a legal education, Lydgate thinks that they should enjoy medical training. The debate is incited by Mr Chichely who exclaims: “Hang your reform […] there’s no greater humbug in the world”. He hopes that Lydgate is “not one of the Lancet’s men […] wanting to take the coronership out of the hands of the legal profession” (M. 157). He refers Thomas Wakley, the founder of the medical magazine \textit{The Lancet} who put forward the opinion that the duties of a coroner required medical rather than legal expertise. Dr Sprague considers this man to a dubious figure.

“I disapprove of Wakley,” interposed Dr Sprague, “no man more: he is an ill-intentioned fellow, who would sacrifice the respectability of the profession, which everybody knows depends on the London Colleges, for the sake of getting some notoriety for himself. There are men right sometimes,” the doctor added, judicially. “I should mention one or two points in which Wakley is in the who don’t mind about being kicked blue if they can only get talked about. But Wakley is right.” (M. 157)

Supporting Wakley, Lydgate pleas for professional specialization. In her article ‘Medicine of the 1820s’ Louise Penner notes that “medical debates of the 1820s involved issues of professionalism, ethics, and the proper means of scientific research into pathological anatomy and fevers” (1).

“In my opinion,” said Lydgate, “legal training only makes a man more incompetent in questions that require knowledge of another kind. People talk about evidences as if it could really be weighed in scales by a blind Justice. No man can judge what is good evidence on any particular subject, unless he

\textsuperscript{46} See below.
knows that subject well. A lawyer is no better than an old woman at a post-mortem examination. How is he to know the action of a poison? You might as well say that scanning verse will teach you to scan potato crops.” (M. 157)

This fragment perfectly illustrates how nineteenth-century medical science got stirred by discussion because of deviating medical beliefs. Strong opinions caused commotion, which was needed for actual reform.

To conclude, I would like to close this chapter with a quote that summarizes the core of all scientific change, including medical reform. On page 640 Lydgate says that “there must be a systole and diastole in all inquiry”. The terms refer to the vital contractions of the heart: systole is the phase where the heart contracts and pumps blood into the body, diastole is the subsequent phase where the heart muscle relaxes and blood withdraws to the heart. Each part lasts approximately four tenths of a second, yet their collaboration is crucial for the working of the human body. On the narrative level, the quote implies that medical and scientific reformers, like Tertius Lydgate, constantly must navigate between their own innovative intellect and the objective findings provided by diagnostic instruments. George Eliot notes that “a man’s mind must be continually expanding and shrinking between the whole human horizon and the horizon of an object-glass” (M. 640). Lydgate embodies this “ideal rhythm of contraction and expansion”, though near the end of his plot line, he faces failure and is forced to abandon his beliefs (Menke 18). In general, one should specialize in one professional field, though one’s worldview should not be too narrow. On the coordinating medical-scientific level, the quote implies that every form of radical change is marked by an overall division. The modern scientist permanently struggles with contrasting aspirations: the desire to innovate opposes the undeniable reliance on previous breakthroughs. Both on a scientific and a professional level, the modern doctor is susceptible to this duality. However, the systole and diastole are indispensable for further growth. In that respect, these two cardiac concepts refer to the fact that every form of innovation initially meets pro’s and con’s. The ‘systole supporter’ propels progress, while the ‘diastole-opponent’ counters this with firm protest and debate. All opposition will eventually stimulate reformers until true change arrives. So George Eliot and Tertius Lydgate were right: each inquiry needs a systole and diastole.
CONCLUSION

Biographical facts about George Eliot

To conclude my thesis about the subject matter of nineteenth-century medical science in George Eliot’s masterpiece Middlemarch I would like to draw the attention to some biographical information about Mary Ann Evans (1819-1880), better known by her pseudonym, George Eliot. Like every author, Eliot’s writing was influenced by her immediate surroundings. Therefore, I would like to highlight two biographical aspects, her education and her marriage, which provided sufficient inspiration and which will clarify the presence of some medical-scientific aspects of the novel. These topics will allow me to draw some final conclusions concerning the fact that Middlemarch is indeed a work of fiction which is seriously indebted to factual data from medical science, a topic which systematically has been neglected in previous analyses.

The great thematic diversity in the novel is probably due to Eliot her great literacy which was intensively stimulated from her early childhood onwards. For example, Middlemarch covers subjects like politics, religion and science at the same time. Eliot attended school from 1824 until 1837 in various institutions: she had the privilege of enjoying primary and secondary education which was enriched with numerous moments of private tutoring. Through reading and studying she constantly expanded her view on the world. In Victorian England girls were usually only allowed some basic levels of education, mostly involved with etiquette. Luckily, the young Mary Ann was encouraged by her father who wanted to proffer a rich intellectual life to both his sons and daughters. A later consequence of this unconventional attitude was that Mary Ann refused to go to church one day. Because she incurred to her father’s displeasure by casting away this aspect of Victorian life, it would cause a definitive rift between them. Nonetheless, throughout her life she maintained an ambiguous attitude towards Victorianism. On the one hand, she was intellectually active, instead of domestically passive. She strove for wisdom and autonomy, thus aspiring to an independent and intellectual existence, unlike the average heroine in her stories. On the other hand, she considered the male dominated outside world as the supreme place where talent and debate blossomed. This ambiguity is apparent in Middlemarch. The reader notices that Dorothea craves for wisdom, yet she prefers a moderate role in the shadow of her husband.
Casaubon. Another illustration of this ambiguity is Rosamund who enjoyed an education as a young woman, but who remained extremely superficial despite that education. Her character seems to suggest that female education is superfluous anyway. Also Lydgate’s urge for reform exemplifies Eliot her personal concern with reformation in social, political and gender related matters. In that respect, Lydgate’s ardour for medical change might have been a conscious choice or an anachronism since Eliot (un)deliberately integrated topicalities of the 1860s in a story that is situated in the 1830s. Nevertheless, the themes reform and change are personified through a male character. Eliot her ambivalent mind-set is due to two factors: she is prone to Victorian conceptions, though her father stimulates her to break that pattern by means of a proper disclosing education. In that respect, the excellent medical training that Lydgate enjoyed in Edinburgh, London and Paris might be a tribute to her father who granted her an intellectual future by letting her go to school.

Not only her education, but also her encounter with her future husband George Henry Lewes (1817-1878) in 1851 stimulated her passionate medical-scientific expertise which is apparent in Middlemarch. Lewes was a renowned literary critic, philosopher and aspiring scientist who had a keen interest in Darwinism and positivism. He was the one who stimulated Mary Ann her intellectual growth during adulthood. In addition, Lewes had contemplated a career as a doctor as a young man (Menke 3).

One of the main strengths of Lewes as a man of science, as it had been when he was principally a man of letters, was his familiarity with European thought and his devotion to popularizing it in England. (Menke 3)

His interest in the medical trade and his cosmopolitan outlook in general can explain why Eliot herself knew so much about medical science, especially about French clinical medicine. She seems to canalize a significant part of Lewes’ knowledge through the character of Tertius Lydgate, who also fancied “a certain showiness as to foreign ideas” (M. 157). As a token of their cosmopolitan spirit, the Lewes’ successively visit Italy, Switzerland, Germany, Spain, England and France. During these trips they met foreign scholars and ideologies which might have nourished Eliot’s literary career. For example, they met Ernst Renan, a famous French philosopher, and the inspiring intellectual couple Barbara and Eugene Bodichon, a suffragette and a radical Republican. These encounters might have been an extra stimulus for Eliot to write about medical reform. Apart from visiting the European mainland, the Lewes’ also
explored England. For example, in 1868 they visited a new hospital in Leeds. This hospital was constructed according to the example of the major European hospitals at the time which praised hygienic innovation. The Leeds Hospital possibly inspired the rough design for the new Middlemarch hospital. It is clear that Mary Ann her marriage with George provided fertile grounds for her intellectual growth through, for instance, international encounters which inspired her writing. As a consequence, her fiction bulges with references to politics, religion, philosophy, literature and, of course, medical science.

George Eliot was quasi constantly influenced by the fields of interest of her husband, George Henry Lewes. Not only did he influence his spouse as a literary critic, his scientific opinions affected her style of writing in Middlemarch too. In his article, Richard Menke draws a parallel between vivisection and fiction, thereby stressing the role of G.H. Lewes in Eliot her act of fiction writing. Moreover, this article explicitly recognizes the scientific value of Middlemarch; implicitly this scientific recognition implies the acknowledgement of medical science as a key theme in Middlemarch. According to Lewes “facts are mere letters which have their meaning only in the words they form; and these words again have their meaning, not in themselves alone but in their positions in the sentence” (Menke 2). Inspired by these words Eliot accepts her role as a creative author. In general, she uses and abuses resources from myth and symbolism to generate new writing. In that respect, Menke claims that Eliot engages in “the ideal experiment of her novel”. Instead of rendering writing into a creative history, Eliot wants to complete a creative experiment since fiction could explore what laboratory experiment could not i.e. dissect the inner self because fiction is able to give free reign to human imagination. Therefore, I would like to highlight the overlaps between the scientific method that Lydgate propagates and Eliot’s scientifically inspired imagination.

Just like vivisection, fiction is based on the minute observation of the processes of life. Eliot understood this very well since she engaged in a very close investigation of a dynamic provincial town, Middlemarch. This statement is based on the scientific ideology of Eliot’s husband. Lewes was actively involved in studying the nerves and human psychology; Eliot mirrors him by analyzing the thoughts of her characters. Both engage in a “vivisection of consciousness” (Menke 3). Additionally, Lewes’ resurrection as a man of science mirrors the birth of Evans’ new literary identity as George Eliot (Menke 5). This scientific-creative doubling between Lewes and Eliot finds a literary equivalent in the fictional character of Lydgate who struggles to raise the medical profession by importing the techniques of French
clinical medicine and anatomy to rural England of the 1830s (Menke 15). He handles the experimental and the expectant method which rely on observation, experimentation and objectivity. In fact, Lydgate his goal as a scientist mirrors Eliot her goal as a novelist. Both desire to “toss away all cheap invention” (M. 165).

*Physiology as the objective side and psychology as the subjective side of the same, unified process; both may be probed by experiment, the “testing vision” that Lydgate seeks to bring to pathology.* (Menke 19)

The social web of the novel mirrors the complexity of the human body that Lydgate seeks to uncover. In other words, both engage in a scientific experiment. Eliot seeks to write a scientifically elaborated novel and at the same time she manages to integrate the basic principles behind that ideology by creating a fictional persona who tangibly incorporates these beliefs since he pleads for medical reform by means of an increasingly scientific approach. In other words, *Middlemarch* is a novel about medical science written by means of a scientific methodology.

However, before continuing Eliot her indebtedness to Lewes’ views on science and literature, I would like to bring up another biographical fact. The most traumatizing experience from George Eliot’s personal life, which was probably one of the major mainsprings for writing *Middlemarch* from a scientific-medical point of view, is the sickness and death of her stepson Thornton Lewes. After a trip to Italy in 1869, ‘Thornie’ was extremely skinny and suffered severe pains. Their family doctor, Sir James Paget, diagnosed a gradual deterioration because of a severe spinal ailment. Instead of hiring palliative care, Mary Ann herself offered to nurse her stepson. She constantly attended him, so she witnessed his continuing decline. After he had been bedridden for months, his condition worsened and he got paralyzed. Eventually, Thornton dies in her arms. This personal tragedy clearly inspired some medical-scientific aspects of her masterpiece. Firstly, she probably coped with this trauma through writing. Moreover, she got familiar with the practices of doctor Paget, who was believed to be the founder of medical pathology. He was very much concerned with anatomy and physiology, two branches within medicine to which Lydgate devoted his heart and soul. Then Paget’s failure to save her stepson seems to be exemplified through Lydgate’s overall failed attempt to reform medical science. Apart from Lewes himself, Paget too unmistakably provided inspiration for the character Lydgate. Finally, Fred Vincy might be the
fictional equivalent of Thornton Lewes. Both men are young and carefree until a cruel ailment brings them down. I noticed that Fred is the sole character who is exclusively portrayed as being friendly, pleasant and sociable. If Fred indeed doubles Thornton, Eliot seems to refuse to speak badly about the dead. So Fred’s recovery represents Mary Ann her vain hopes for ‘Thornie’. Eliot started writing *Middlemarch* in 1870, a year after Thornton’s death.

After this short but tragic intermezzo, I would like to draw some final conclusions. According to Sally Shuttleword, the object of science is not to record the already known but to reveal the hidden connections (*GENS* 144). She bases these words on Lewes’ ideas about fiction writing: he grants a creative role to the author. Eliot engages in a literary experiment that is mirrored in Lydgate’s fictional medical reform aspirations which heavily rely on the experimental method. The phrase “reveal the hidden connections” summarizes what I intended to achieve in this dissertation. Whereas Eliot wanted to reveal the underlying order of society, I tried to demonstrate that *Middlemarch* holds numerous references to nineteenth-century medical science.

After a close reading of the novel, and guided by the young doctor Tertius Lydgate, I reconstructed a history of medical science based on clues provided by the author. Shuttleword also claims that Lydgate observes science not simply as a process of observation and classification, but rather as the pursuit of ideas. In that respect, I followed the hypothesis that *Middlemarch* contains a serious amount of uncovered material about the neglected theme medical science. But did I reach my goals?

This thesis intended to answer the following basic question which was formulated in the introduction: what does *Middlemarch* teach its readers about nineteenth-century medical science? Since medical science is systematically forgotten in thematic analyses of this novel, I wanted to prove that medicine is an unexplored line of approach which holds extremely rich medical-historical information. Consequently, this dissertation can be regarded as a literary approach to nineteenth-century medical science, or vice versa, as a scientific or historic approach to a literary classic.

Throughout this dissertation the findings formulated by Rick Rylance proved to be relevant for my approach to *Middlemarch*. Its denomination as a medical narrative is the only systematic medical recognition that the novel has gained the last decades. Apart from the
stylistic qualities that this genre delineation implies, the medical background of the genre is pertinent for my investigation, especially since the article deals with the differences between the early nineteenth-century and the twentieth-century medical narrative, and thus, the overall nineteenth-century climate of change. The genre started altering in the nineteenth century due to an overall paradigmatic shift in medical science which started around 1800. Indeed, the book deals with change i.e. medical reform. The reader senses the fluctuating medical-scientific climate of the nineteenth century through the eyes of Tertius Lydgate, who is concerned with medical reform, since he incorporates the best of two generations. His practices appear to be more scientifically funded than the practices of the previous generation of medical men, though he genuinely believes in a more personal approach to his patients for their well-being. Foucault and Sacks articulated differing ideas about medical discourse: the former stresses the increased scientific and impersonal discourse of nineteenth-century medical narratives, the latter expresses the warm personal stories told by nineteenth-century patients. Lydgate meets both criteria, his methods are personal and professional. Accordingly, his character reflects the medical climate of the 1830s and the 1870s, the periods in which Eliot situated and wrote her story.

Since the main goal of my dissertation is to reveal that Middlemarch enlightens the subject matter of medical science, I delineate two central chapters to explore this theme. The introduction, which included generic features, mainly served to emphasize the importance of change in the nineteenth century and in the novel. In the first chapter about doctors Tertius Lydgate was my guide. His character exposed plentiful practicalities about the medical profession that allowed me to answer the following questions: who was the doctor-figure in nineteenth-century society, what education was required and how did a medical man have to comport towards his clientele, his patients? I tended to provide answers to these questions with the help of useful fragments from Middlemarch. The doctor was expected to be a wealthy wise man whom his patients trusted deeply. Lydgate fulfils these expectations, though his attempts at reform meet resistance from the Middlemarch medical establishment. The figure of Lydgate displays numerous practicalities which relate to the medical trade, a trade which equals an essential active and humanitarian part of medical science. Eliot grants her reader a profound understanding of a future doctor’s education, the doctor-patient relationship and the animosity between the previous and the new generation of medical practitioners. The implicit and explicit clues are usually very brief remarks. I attempted to indicate and elaborate that these superficial hints rely on medical, scientific and historic facts.
by reconstructing a coherent account about the medical trade. In the second chapter about medical science I turned to the purely medical-scientific approach of *Middlemarch*. Since the nineteenth century was an era of radical change, medical science changed too: new methodologies were born. In *Middlemarch*, these methodological changes are palpable. Gradually, medicine got more concerned with practice instead of theory. In that respect, Lydgate glorifies three methodological novelties which are opposed to the methodologies of his older colleagues: the differential diagnosis, the experimental method and the expectant method. The reader discovers its underlying principles by means of comparisons between Lydgate and actual historical medical figures like Galen, Vesalius, Bichat and Laennec. Since nineteenth-century medical science is largely indebted to the work of previous medical generations, these comparisons were indispensable. Lydgate propagates beliefs that rely on their modes of thinking. Furthermore, for centuries, that is to say, until the end of the eighteenth-century, medical science progressed steadily but slowly. Occasionally, figures like Vesalius implemented reforms, but the flux of continuous change initiated in the nineteenth century. Only after these comparisons, I was enabled to explore topics like infectious diseases and drug treatment.

In short, my elaboration of divergent topics – the role of the doctor, required education, doctor-patient relationships, the generation gap, historical medical figures, infectious diseases, drug treatment and medical inventions – within the field of medicine, proves that medical science is indeed a key theme in *Middlemarch*. Numerous fragments, passages and quotes allude to the abundant presence of this long-neglected topic in George Eliot her exquisite work of fiction. Eliot has written a powerful all-embracing novel that houses plenteous themes.

This classic originated as a creative experiment by its author Eliot, who decided to narrate, among others, the story about a doctor who wanted to reform medical science according to the experimental method. She was primarily inspired by her private environment. Her own education stimulated her unstoppable desire to expand her intellect. In addition, the scientific endeavours of her husband G.H Lewes encouraged her to adopt a creative scientific style of writing. Consequently, Eliot managed to write a novel about medical science by means of a scientific methodology. She incorporated the methods of both her husband and the fictional protagonist of *Middlemarch*: both reflect upon the overall changing nineteenth-century climate, thus, including medical reform. Moreover, since Sally Shuttleword claims
that any scientific experiment attempts to broadcast hidden connections, this dissertation can be perceived as a scientific experiment because it uncovers the hidden medical layers due to Eliot her expertise as a novelist.

In conclusion, I confirm that the novel extensively deals with the subject matter of medical science. Moreover, it deserves praise for its medical-scientific value. According to the example of Virginia Woolf, I dare state that *Middlemarch* is one of the few English medical narratives written for grown-up people. The initiated and enthusiastic reader who is willing to put some more effort in his reading, will discover a richly detailed history about medical science. Hopefully, this innovating thematic experiment will be a useful guideline for future students of literature, history and medicine. Within literature, the literary approach to such a scientific subject can be valuable; history students can gain insight in the scientific climate of the nineteenth century; and aspiring doctors can get acquainted with some basic principles within medicine. In other words, regardless of one’s specialization, reading George Eliot’s *Middlemarch* guarantees a meticulous comprehension of nineteenth-century medical science.
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