

When Breath Becomes Air



INTRODUCTION

BRIEF BIOGRAPHY OF PAUL KALANITHI

Paul Kalanithi was born in New York. His father was a doctor, and when he was ten years old his family (he was the middle of three brothers) moved to Kingman, Arizona. He graduated as the valedictorian of his high school and went on to graduate with a B.A. and M.A. in English Literature and a B.A. in Human Biology from Stanford University. He earned an M.Phil in History and Philosophy of Science and Medicine from the University of Cambridge before going to medical school. He attended medical school at Yale University and graduated *cum laude*. While at Yale, he also met his future wife, Lucy Goddard, and the two married shortly after graduating. Post-Yale, Kalanithi returned to Stanford for his residency training in neurological surgery and a postdoctoral fellowship in neuroscience. In May 2013, Kalanithi was diagnosed with stage IV metastatic lung cancer. After a round of successful treatment, he returned to work as a chief resident, but the following spring the disease relapsed and he underwent intensive chemotherapy. In July 2014, his daughter Cady was born, and he died the following year on March 9, 2015 at age 37. *When Breath Becomes Air* is Kalanithi's only book and was a finalist for the Pulitzer Prize in Biography/Autobiography in 2017.

HISTORICAL CONTEXT

When Breath Becomes Air takes place largely within the present-day, and its personal nature detaches it from most historical events. It is worth noting two ways in which Kalanithi's story builds on historical foundations, however. Kalanithi's circumstance as a first-generation Indian-American born to immigrant parents was hardly unique, as in the 1980s and 1990s, Asians made up about half of the immigrants coming to America. Kalanithi's experience mirrored the tales of many others: parents who worked hard, put a premium on education, and encouraged and supported their children as they strived for a better life than the one their parents had. Kalanithi describes himself as having just this same sort of attitude toward life; an attitude that he describes as spending all of his time "building potential." The memoir also deals with cancer treatment, which, as Kalanithi acknowledges, is a constantly shifting field. Stage IV lung cancer was and remains a fatal illness, but one with emerging therapies that are for the first time providing years of life to those who have been diagnosed with it. The fact that these treatments are still in the process of being created, however, both offered hope and at the same time made Kalanithi less certain about his future and whether

he could expect to live or to die.

RELATED LITERARY WORKS

Kalanithi's love of literature is evident in *When Breath Becomes Air*, and throughout the novel he quotes T. S. Eliot's *The Waste Land* in particular. He is greatly affected by its themes of meaninglessness, isolation, and the desperate quest for human connection. Additionally, Kalanithi refers to his experience reading Sherwin "Shep" Nuland's 1995 book *How We Die*, one of the first books that confronted the topic of death head-on and fueled a national conversation about end-of-life decisions and reckonings. Beyond the literature that Kalanithi discusses, readers might see connections with *The Bright Hour*, a 2017 memoir by Nina Riggs about her own experience with breast cancer just prior to her death. This memoir has been widely compared to *When Breath Becomes Air* because of its discussions of meaning in life and death and its deep connection to literature. Riggs was a descendent of Ralph Waldo Emerson, and she finds solace in her ancestor's work as a means of understanding her own existence, just as Kalanithi does with Eliot and Whitman.

KEY FACTS

- **Full Title:** When Breath Becomes Air
- **When Written:** February 2014-March 2015
- **Where Written:** Stanford, California
- **When Published:** January 2016
- **Literary Period:** Contemporary nonfiction
- **Genre:** Memoir
- **Setting:** Kingman, Arizona; Yale Medical School; Stanford, California
- **Climax:** Paul passes away from stage IV lung cancer
- **Antagonist:** Cancer; death
- **Point of View:** First person. The first three sections of the memoir are told from Paul's perspective; the epilogue is told from Lucy's perspective.

EXTRA CREDIT

Prehumously Published. Although *When Breath Becomes Air* was published posthumously, many passages are drawn from articles Kalanithi published during his lifetime in *The New York Times*, *The New Yorker*, *Stanford Medicine Magazine*, and *The Paris Review*.

Homage to Whitman. The section headings of the memoir, "In Perfect Health I Begin" and "Cease Not til Death," are drawn

from Walt Whitman's "Song of Myself." In the memoir, Kalanithi explains that his Master's thesis at Stanford focused primarily on Whitman.



PLOT SUMMARY

In a hospital room at the Stanford Medical Center, Paul Kalanithi flips through his CT scan images, which show that his lungs are filled with tumors. His wife Lucy is by his side. Paul is a neurosurgical resident in his last year of training at Stanford. He had earned the respect of his professors and had won prestigious national awards, which had led to job offers from major universities. He is looking forward to finishing the grueling demands of residency, having children, and spending more time with Lucy. But the scans, which show advanced cancer, put that future in jeopardy.

Before getting the CT scan, Paul had been experiencing back pain. X-rays of Paul's back had shown no issues, but as the condition worsens, he gets X-rays of his chest. Lucy, meanwhile, has been feeling that Paul has not been confiding his worries to her, and has decided to move out for a week. After the scans come back and Paul tells Lucy that he has stage IV lung cancer, though, she vows never to leave him. Paul is admitted to the hospital, and he feels his future evaporate.

In Part I of the memoir, Paul jumps back to his early life spent in Kingman, Arizona. Though his father is a doctor, as Paul prepares to go to college, he doesn't see himself as ever being a doctor. Instead, he wants to be a writer. His mother had instilled in him a love of literature, while his father, a cardiologist, had often been absent. Paul does admire the way his father earns his patients' trust and give them comfort.

As an undergraduate at Stanford, Paul pursues degrees in both English literature and human biology. He is driven by the question of what makes life meaningful, and feels that both of these fields provide different perspectives on human experience and consciousness.

Paul applies for a master's in English literature at Stanford and studies Walt Whitman for his thesis. But he realizes that he doesn't quite fit into the English department because of his interest in science and his desire for practical experience. He then decides to apply to medical school, and is accepted to the Yale School of Medicine, where he meets Lucy. Paul also describes how, at medical school, he comes to experience death. He dissects cadavers. Lucy discovers that a patient she saw as she practiced doing an EKG had later died. They med students also read Shep Nuland's book *How We Die*, a book that is unflinching in its description of death.

After two years of studying, Paul's final two years of med school are spent in the hospital and the clinic, where Paul comes to understand that practical experience, not just theoretical knowledge, is imperative for doctors, whether delivering babies

or performing surgery. Paul also discovers how much mental fortitude is required of doctors because they are responsible for their patients' well-being.

After graduating from medical school, Paul decides to specialize in neurosurgery because he is interested in the brain's relationship to a person's sense of identity. Paul returns to Stanford for his residency. At first his paperwork seems very dry, but he quickly realizes that people's lives lie behind that paperwork. His schedule is intense, which only grows worse during his second year when Paul is on call for emergencies. He begins to worry that being so close to death only blinds him to it, as he and a fellow doctor named Jeff develop inside jokes about patients' prognoses. After learning that a friend of his has died in a car accident, Paul resolves to take care of his patients emotionally as well as physically. He helps one of his patients decide to undergo surgery by gathering her family and talking calmly through the options with her. The surgery goes successfully.

Paul realizes that there is also a price to the empathy he offers, because it makes him open and vulnerable and in the field of medicine he has chosen so many patients die regardless of his best efforts. Still, he never questions whether his work is worthwhile. In the middle of residency, doctors train in additional fields, and Paul opts to study neuroscience. The head of the neuroscience lab is a man nicknamed V, whom Paul views as a mentor. While Paul works at the lab, V is diagnosed with pancreatic cancer, but after treatment he is able to return to work. Paul completes his work with the lab and enters his sixth year of residency.

Paul describes his sixth year as a black hole time-wise because he spends so many hours in the operating room. He never feels like time is passing when he operates because he is so intensely focused on the task at hand. Being technically precise, he says, is crucial because a mistake with a **scalpel** in brain surgery can be catastrophic for a patient. Some areas of the brain—primarily the areas that control language—are even off-limits to surgery most of the time because the risk of harming them is too great.

As Paul nears the end of his residency, he once more becomes acutely aware of the weight of responsibility doctors bear, when he learns that his friend from medical school, Jeff, had a patient die from a difficult complication. That evening, Jeff committed suicide. Paul wishes he could have shared with Jeff what he had learned thus far in his career: that death will always win, but it is still valuable to strive for one's patients.

In the second part of the memoir, Paul returns to the day he is diagnosed with cancer. The tumors have invaded multiple organ systems, and he believes that his death is imminent. He meets with his oncologist, Emma, who steps him through his treatment plan but refuses to tell him the statistical probability of his death in order to allow him to remain optimistic.

Paul had grown weak leading up to his diagnosis, making basic functions difficult. His family works to help Paul adjust to a new life. When tests conclude that Paul's cancer is treatable because of a mutation in his tumors, he grows more hopeful for his future. Emma explains that she hopes to help him return to neurosurgery, if that's what he would like to do.

Paul begins physical therapy and gradually regains strength and stamina. He and Lucy contemplate whether they should have a child, which they had planned to do when Paul had finished residency. Lucy wants the choice to be Paul's because he would likely be spending the majority of his remaining time as a new father and would not get to watch that child grow up. Paul feels that the decision should be Lucy's because she would likely have to raise the child alone. They agree to have a child, knowing that it would bring them and their family much-needed happiness in a trying time.

Six weeks after starting treatment, Paul has another CT scan and discovers that his lungs are almost completely clear of tumors. His cancer is stable, and he is relieved. He pushes himself to return to the operating room, refusing to give up his career until he has to. He alters his physical therapy program to build the kind of strength required of a surgeon, such as being able to stand for long hours.

His first day back in the operating room, Paul's muscle memory kicks in and the surgery is going smoothly, until he gets nervous and feels faint. He has a junior resident finish the surgery for him. Each day, he remembers more and more skills and takes on more and more of a workload, until he is not only operating but is also working with patients again, which also returns some of the joy of the work to him.

Seven months after Paul returns to surgery, he takes another CT scan—his last before graduating and becoming a father. Paul's scan reveals a new tumor growing in his lungs. It is Thursday, and his next oncology appointment isn't until Monday. Paul goes to the hospital the next day for his final day of work. His last surgery goes smoothly, until the attending doctor accidentally opens up the patient's spine and spills fluid. Paul finishes the case, gathers his things, and leaves. Sitting in his car, he begins to cry.

Paul begins chemotherapy every three weeks, which wears him down. Various complications prevent him from returning to work. On the day of his graduation, he begins vomiting uncontrollably and spends a week in the hospital, severely dehydrated and deteriorating. He eventually stabilizes and is released from the hospital.

Two days after he is released, his daughter Cady is born on July fourth. She brings Paul and the rest of the family a lot of joy, and he is happy to have created something that will last beyond his own lifetime and will affirm his existence in the future. He ends the book with a message to her, saying that she has given him the greatest joy of his life.

Lucy finishes the memoir with an epilogue, describing the circumstances of Paul's death. Around Christmas, Paul's third treatment option stops working, and the cancer spreads to his brain. He becomes completely focused on writing this book, something he had always imagined doing later in his career.

Spring rolls in, and Paul needs supplemental oxygen to make his breathing comfortable. In the last few days of his life, Paul struggles to breathe and is taken to the hospital. They give him a BiPAP machine as a temporary solution, but the next step is being put on a ventilator. Paul, worried that he would remain too sick to come off of the ventilator, instead chooses "comfort care." He tells Lucy he is ready to die, and says goodbye to his family, wife and daughter. They remove the breathing mask, and Paul slips into unconsciousness. That evening, Paul takes his last **breath**.

Lucy explains that *When Breath Becomes Air* is in a sense unfinished, even though Paul worked on it tirelessly. With the book, Paul wanted to help people understand death and face their mortality. She expresses how grateful she was to have been a part of what gave Paul's life meaning, and to have witnessed him face death with integrity.



CHARACTERS

MAJOR CHARACTERS

Paul Kalanithi – The subject and author of the memoir. *When Breath Becomes Air* is first and foremost an account of Paul's life as well as his exploration of what makes a virtuous and meaningful life in the face of death. Paul grows up the son of a doctor in Kingman, Arizona, before studying English and Biology at Stanford, then attending the Yale School of Medicine. After graduating from Medical School, he and his wife Lucy return to Stanford so that Paul can complete his residency. During his time as a practicing surgeon, he discovers how to guide patients with compassion and care through life-changing illnesses and injuries and learns how to have judgment in both treating patients and in speaking with them. At the tail end of his training, Paul is diagnosed with terminal lung cancer and must confront his own mortality. With the support of his mother, father, Lucy, and his oncologist, Emma, he identifies his own values and works to make his remaining time meaningful. Ultimately, he discovers his priorities in his desire to write a book, and in his desire to become a father. He spends much of the last months of his life taking care of an infant daughter, Cady, and in writing *When Breath Becomes Air*. With this book, Paul is able to explore meaning in others' lives and his own, and he leaves behind a legacy that will guide many readers through their own struggles.

Lucy Kalanithi – Paul's wife, who works as an internist (a type of doctor). She and Paul meet in grad school at Yale and marry after four years. After graduating, they move to Stanford

together. Though their marriage is strained at times due to Paul's long hours, the two remain deeply in love through Paul's deterioration, and Lucy works to support Paul in whatever ways she can. The couple always wanted kids, and Lucy lets Paul take the lead on whether he would like to spend his remaining time as a new father (eventually she does get pregnant and supports both her newborn daughter Cady and her dying husband). She works with Paul through physical therapy and supports his decision to return to surgery. Lucy also shepherds Paul's manuscript into existence after his death, and she writes the epilogue to *When Breath Becomes Air*. In this way, Lucy not only helps Paul to gain a sense of meaning in his final months, but she also preserves his legacy after he is gone.

Emma Hayward – Paul's oncologist. Emma is an intelligent, caring, and judicious doctor. She helps Paul through his struggle with cancer in the same way that Paul aimed to help his own patients with their struggles with mortality. She strategizes about how to allow Paul to return to work, and to preserve the parts of his life about which he cares the most. At the same time, she refuses to give him the statistical probability on his survival, knowing that it is better to maintain optimism than to present dry and possibly inaccurate facts. Even though Paul at first tries to become an expert on his own treatment, eventually Emma provides him with the great relief of allowing him to be a patient and letting her manage his illness. She provides him not only with physical treatment, but also with vital emotional and mental care.

Paul's Mother – Paul's mother grew up in India before marrying Paul's father. She values education highly and works to make sure that when the family moves from Westchester County in New York to Kingman, Arizona, that her sons will have as good an education as before. She finds a college prep reading list for Paul that gives him his love of literature, drives her sons to college prep courses over a hundred miles away, and works to get the school to offer AP classes. When Paul is diagnosed with cancer, she and the rest of the family also work to support Paul during his various treatments, remaining unwavering sources of comfort and security.

Paul's Father – A cardiologist and a devout Christian. At first Paul is hesitant to emulate his father, as his father was largely absent from Paul's childhood because of his long hours at his practice. Paul's father moves his family to Kingman because of the low cost of living, which would allow him to send his sons to college. Eventually Paul comes to see how respected and trusted his father is by his patients, which inspires Paul to earn that same trust and show that same compassion.

Cady Kalanithi – Paul and Lucy's infant daughter (whose full name is Elizabeth Acadia), born just over a year after Paul is diagnosed with cancer and eight months before Paul passes away. Despite knowing that Paul's time with her will be limited, Paul wants to have a child in order to leave a remnant of himself and his relationship with Lucy in the world. Not only does Cady

provide him with a legacy, she also provides him with immense joy in the final months of his life.

V – The head of the lab in which Paul works during his training as a neuroscientist. He is a professor of electrical engineering and neurobiology and a second-generation Indian, like Paul. When he is diagnosed with pancreatic cancer, he is able to work through treatment and returns to the lab just as Paul leaves, providing a model for Paul when he is diagnosed.

Jeff – A general surgery resident at Stanford who is a few years senior to Paul. The two become friends as they work traumas together, creating inside jokes about patients' prognoses. The two rely on each other for support when dealing with difficult and often tragic surgeries. Sadly, Jeff is unable to cope with the heartbreaking nature of the job, and after a patient dies from a particularly difficult complication, Jeff commits suicide.

MINOR CHARACTERS

Victoria – Paul's co-resident and friend at Stanford. She provides a parallel to Paul and serves as an example of how his life's trajectory might have continued, had he not been diagnosed with cancer.

Shep Nuland – a renowned surgeon-philosopher who lectured at Yale when Paul attended. Paul is particularly struck by his book, *How We Die*, which confronts the topic of death head-on and provides the model of a doctor who goes above and beyond for his patients.

Matthew – An eight-year-old whom Paul meets during his first year in residency at Stanford. A surgeon removes a brain tumor pressing against Matthew's hypothalamus, but his hypothalamus is damaged in the process and he is rendered a slave to his appetites.

Jeevan – Paul's younger brother, who comforts him when he is diagnosed and also supports him through treatment.

Suman – Paul's older brother, a neurosurgeon who also had attended Stanford, and who serves as another role model for Paul in the medical field.

Melissa – A resident working in the same ob-gyn in which Paul works while he is in medical school.

Mari – A fellow med school student who is on the same hospital rotation as Paul.

TERMS

Residency – A stage of graduate medical training after medical school. Physicians in this stage (known as residents) practice medicine in a hospital or clinic under the supervision of an attending physician. During residency, physicians choose a field in which to specialize. **Paul** completes his neurosurgery residency at Stanford, which spans seven years.

Metastases – When tumors spread from an initial site in the body to a secondary site, the tumors in secondary sites are called metastases (or mets). This is one of the hallmarks of widespread cancer, which is distinguished from benign tumors.

Paul's cancer has metastases, as it has infiltrated multiple organ systems.

BiPAP Machine – A bilevel positive airway pressure (BiPAP) machine aids in breathing. It consists primarily of a mask that forcefully blows air into a patient's lips to allow air to circulate in the lungs. Before **Paul's** death, he has a severe shortness of **breath** and must use a BiPAP machine to keep oxygen flowing.



THEMES

In LitCharts literature guides, each theme gets its own color-coded icon. These icons make it easy to track where the themes occur most prominently throughout the work. If you don't have a color printer, you can still use the icons to track themes in black and white.



TIME

When Breath Becomes Air, Paul Kalanithi's posthumously-published memoir of his battle with terminal lung cancer, details Paul's post-diagnosis grappling with how much time he has left. Paul has spent a third of his life working toward a career in neurosurgery, only to have the future for which he has worked so hard abruptly taken from him. In the face of this, Paul demonstrates that even though time is a fixed entity (one only has so much time left), a person's perception of time can rapidly change in the face of death. Ultimately, he argues, time creates a paradox: the most meaningful moments occur when one takes advantage of the present, yet there is no other way to live than by having faith in the future.

When Paul is diagnosed, he is in despair over his lost future, but his brother Jeevan tries to comfort him by saying that he has already accomplished so much. This upsets Paul; he tells the reader that he has spent most of his life "building potential," planning for a future that would no longer exist. However, Paul's oncologist, Emma, argues that instead of preparing to die by receding from work and spending time with his family, he should aim to return to neurosurgery and be optimistic about the time that he has left. Emma insists that, although the future might not look like he initially imagined, he may still be able to accomplish some of his goals. Paul takes this advice. When his first treatment successfully prolongs his life, he comes to the understanding that, in the absence of certainty, people have to assume that they are going to live a long time.

Despite deciding to live essentially as he always had—with the assumption that he will have a future—Paul also realizes that often the most precious experiences in one's lifetime occur

when a person is living fully in the present. Prior to Paul's diagnosis, he spends most of his time at the hospital (often working eighteen-hour days), but he never feels that this time was wasted. He describes how the clock seems particularly irrelevant when he is in surgery, because he is so focused on the vital and intricate task at hand. When Paul is diagnosed with cancer, he realizes that his future has flattened out into a "perpetual present," because, as with his experience with time during surgery, every moment becomes crucial for him. Thus, Paul realizes that he must take his ambitions for the future and make them happen in the present.

For example, Paul had always hoped to return later in life to writing, and after his diagnosis, he begins to write *When Breath Becomes Air*. Writing not only allows Paul to accomplish a goal within his limited time, but it is also a project that ensures that his legacy will last into the future. Paul also immediately jumps into fatherhood after he is diagnosed with cancer. He and his wife Lucy want to take advantage of whatever time he has and give him the experience of being a father, which he had always wanted sometime in the future. Their daughter Cady not only provides him with a means of carrying on his own legacy after he is gone, but she also provides him an immense amount of joy in the present. In the days leading up to his death, Paul decides that he only wants to be kept alive with the help of machines if the prospect remains of spending meaningful time. In the absence of that hope, he is not willing to be kept alive by those machines if they inhibit his enjoyment of the time he has left, and so he cuts his future short in order to interact naturally with his family.

Paul's perception of his future shifts rapidly and constantly as he grapples with his diagnosis. He maintains some optimism in the face of having little time left, and he also tries to achieve some of the goals that he had hoped to complete by the end of his life. The tragedy of the memoir lies in the fact that the book and his daughter outlive Paul significantly, but the fact that Paul becomes a writer and a father in the final months of his life suggests that in living for the present in the face of finite time, Paul is able to produce some of his most meaningful accomplishments and fully enjoy his remaining time on earth.



SCIENCE AND LITERATURE

Throughout high school and college, Paul believes that literature and language are the best way to understand the life of the mind, but eventually he comes to realize that biology and neuroscience determine the rules of the brain and are therefore vital to comprehending human existence. At various stages of his life, Paul turns from literature to science and back to literature in order to fully grapple with death, as he realizes that the two complement each other and offer different perspectives on the subject. Within his own experience and writing, Paul demonstrates that both language and science are integral to understanding human

life.

Throughout Paul's youth and college experience, literature is the primary shaper of his worldview. He sees language as the crucial means of enabling human connection and understanding death. Paul's mother aims to ensure that Paul is receiving a good education, and so she provides him with a college prep reading list. *Brave New World* becomes foundational for his moral philosophy and is the subject of his college admissions essay. He also notes that *Hamlet* helps him through adolescent crises. After setting aside literature during his years at medical school and in residency, Paul returns to reading when he is diagnosed with lung cancer. He reads many different works by authors who have written on mortality (Tolstoy, Nagel, Woolf, Kafka, to name a few), as well as memoirs of other cancer patients, in order to give himself a vocabulary for speaking about death and finding commonalities with his own experience. One work that emerges throughout the book is T.S. Eliot's *The Waste Land*, which resonates with Paul in college for its discussions of "meaninglessness, isolation, and the desperate quest for human connection." Paul quotes Eliot at other crucial moments in the memoir: when Paul discovers that his tumors are resisting his first treatment and have grown again; when his oncologist, Emma, releases him from the responsibility of being his own doctor; and finally, when he is told that he should be videotaped daily doing the same task to track any deficits in his speech, he opts to recite the poem from memory, demonstrating his personal use of literature to make sense of his own mortality.

Despite the centrality of literature to Paul's life and thought, his interest in science helps him realize that literature is limited in its ability to account for human existence. As he grows older, science becomes another way in which Paul grapples with philosophy, morality, and quality of life. While Paul is still in high school, he reads a novel called *Satan: His Psychotherapy and Cure by the Unfortunate Dr. Kessler, J.S.P.S.* Even though Paul says that it is a relatively simplistic novel, he is astounded by its assumption that consciousness isn't mystical, but rather a result of mechanical brain operations. Therefore, Paul realizes that the brain is the foundation of human experience. In order to better understand this revelation about human existence, Paul pursues a career in medicine, which confirms for him that the mechanics of the brain are a defining aspect of the humanity he finds in literature. For example, as Paul learns about neurosurgery, he becomes able to map essential human functions onto the physical structures of the brain. During a particularly tricky surgery, an attending doctor tells Paul that if he cut two millimeters deeper into the brain, the patient would be completely paralyzed, with the exception of the ability to blink. This underscores that humanity is, in some ways, mechanical: what makes people human comes from the physical operations of the brain. Furthermore, while working with cadavers in medical school, Paul finds himself

psychologically reducing human bodies to simple organic matter for study. Without cognition, Paul finds it difficult to recognize humanity in a cadaver, which shows him the paramount importance of the brain.

Yet the memoir argues that neither science nor literature alone can fully account for what makes people human. Paul comes to believe that combining the wisdom of science and literature makes life most meaningful by helping people understand themselves and the world around them. Paul relays that, during surgeries, the areas of the brain that control language are considered to be completely off-limits to operation, since the language centers in the brain are so central to human life and existence that doctors feel that the possibility of damaging them isn't worth the risk. For Paul, this shows that literature—an art form wholly dependent on language—is central to humanity. Paul also recounts an experience in college in which he visits a home for people who had suffered severe brain injuries, usually in their youth. Seeing that these people have very little means of retaining human connection because they lack many language functions, Paul realizes that the brain gives rise to the ability to form relationships and make life meaningful. Another interesting intersection between language and science lies in Paul's knowledge that statistics alone cannot help a patient understand their prognosis; the language that the doctor uses to describe their condition is equally important. Paul describes how, in a case like glioblastoma (an aggressive brain cancer), rather than saying "Median survival is eleven months," or "You have a ninety-five percent chance of being dead in two years," Paul explains, "Most patients live many months to a couple of years." This verbal nuance is not only more accurate, Paul finds, but it is also more comforting and compassionate.

In addition to realizing that science and literature are both vital to human existence, Paul uses both subjects to make his own life meaningful. He tells his oncologist that he always planned to spend the first twenty years of his career as a surgeon, and the last twenty as a writer. Faced with limited time, Paul blends this love of science and literature in writing this account of his neuroscientific education and career. *When Breath Becomes Air* not only proves how vital literature and science are in general, but also how important they were to Paul himself in his final months of life.



KNOWLEDGE, EXPERIENCE, AND JUDGMENT

Because Paul is a neurosurgeon, he spends much of his memoir writing about the brain: how it functions, how it fails, and the information it can store. However, Paul also understands that being a doctor does not solely boil down to the technical knowledge or skill that one has—a successful doctor must also have experience, which is much more challenging to acquire. Paul's journey through

residency leads him to discover that textbook knowledge is important, but the judgment that comes from facing problems on the ground is much more valuable.

When Paul is in high school, his mother places a high premium on her sons getting a traditional education. She would drive them more than a hundred miles to Las Vegas to take standardized tests to get into college, and she also demanded that their school add AP courses. Paul is eventually accepted to Stanford, fulfilling her expectation. But in Paul's sophomore year of college, he chooses to spend his summer as a chef at a camp rather than being an intern at a primate research center, which aligns more with his mother's vision for his life. Though Paul doubts his decision at first, he realizes how valuable his time exploring the lakes, mountains, and deserts near the camp is because it gives him first-hand experience of the natural world. Though this is unrelated to his future career, his comment that "every day felt full of life, and of the relationships that give life meaning" demonstrates how much he values real-world experiences in his quest for a meaningful existence.

As Paul goes through medical school and residency, he understands more and more the value of experience and developing his own judgment, rather than relying on the textbook knowledge he gained in medical school. During Paul's first day at the ob-gyn, for example, the resident explains that it's a judgment call on whether to deliver babies very early when they have abnormal heart rhythms or to wait longer in order to let them develop more. Paul understands that this kind of decision cannot be made through intelligence alone; one must also have experience, and with that experience, an ability to judge future situations. Similarly, when Paul is in residency, he describes how he aims to understand his own patients in order to make tricky judgment calls. He says that before he operates on anyone's brain, he first tries to understand his patient's mind: "his identity, his values, what makes his life worth living, and what devastation makes it reasonable to let that life end." This aids him in making such judgment calls about a patient's life and wellbeing. In this way, it is not just knowledge that helps him perform surgery—it is judgment that allows him to provide a future for patients that they would most want to have.

When Paul moves from the role of doctor to the role of patient, he also relies on his oncologist, Emma, for the same judgment and guidance he provides to his own patients. Emma uses her own experience and what she knows of Paul to determine the best treatment for him. Understanding that Paul's career is important to him, she helps him choose drugs that won't damage the nerves in his hands so that he can continue to perform surgery. Emma also refuses to tell him where he lies on statistical curves because she thinks that these dry facts will be damaging to Paul's hope in his future. Thus, knowledge here is not only insufficient, it is also potentially harmful. Instead, Emma uses her judgment and relays guidance on how Paul can

spend his remaining time meaningfully, helping him work towards recovery and get back to his job as a neurosurgeon.

Paul and his family clearly value knowledge and intelligence—concrete factual information and the ability to learn that information. But throughout his life, he also discovers the value of actual understanding. Both as a doctor and as a patient, Paul sees that the textbooks he reads in medical school have their limitations. He comes to realize that "no system of thought can contain the fullness of human experience." Thus, Paul's knowledge may help save lives, but Paul's judgment ensures that those lives can remain meaningful.



HUMAN MORTALITY, STRENGTH, AND SUPPORT

Paul relays his and others' struggles with confronting premature death. While facing mortality is a one-time occurrence for most patients, doctors encounter death constantly. Beyond providing physical care for their patients, Paul argues that two of the most crucial responsibilities of a doctor lie in having mental fortitude and being able to provide emotional support. These two types of strength allow doctors to alleviate suffering and distress, even when people are facing the inevitability of death.

When doctors reach the limits of the physical care they can provide, Paul feels that it is their duty to also provide emotional support. For example, Paul listens in as a pediatric neurosurgeon explains to a mother that her child has a large brain tumor. The doctor proceeds gently, acknowledging the tragedy of the situation, and counselling her on the possible operations and outcomes for her son. With this emotional comfort, the mother is able to make decisions about her son's medical care rather than succumbing to despair. One of Paul's own patients is a woman who experiences a seizure. A scan shows that she has a benign brain tumor pressing on her right frontal lobe, and Paul knows that an operation would have minimal risks and almost certainly eliminate her seizures. However, when he realizes that she is terrified of the idea of brain surgery, he gathers her family to calmly talk through the options rather than detailing all of the possible risks and complications. With his informed guidance, she chooses surgery, which goes successfully. Thus, in providing his patient with a network of support including himself, Paul ensures that she lives a healthier and longer life.

Another example Paul gives of his own patients is a woman named Mrs. Lee. He realizes that her local ER had sent her to him so that he would break the news to her that she had brain cancer. Paul refuses to dodge questions and is both direct and caring with her, taking her step by step through surgery, and then through what chemotherapy and radiation treatment will entail. He understands that in cases like this, the first

conversation with a neurosurgeon will forever color how a patient chooses to proceed, and that “when there’s no place for the **scalpel**, words are the surgeon’s only tool.” Emotional support, then, can be just almost as vital as medical care to a dying person. Paul’s own oncologist, Emma, provides mental support for him, as well. Initially, Paul tries to do as much research as he can and become an expert in his own treatment. Emma allows him to do this, but when his first treatment eventually becomes unsuccessful, she tells him that he can just be the patient, and that she can be solely responsible for his care. Paul is shocked, but he is eventually grateful to be relieved of the burden of being his own doctor, allowing him to put his energy back into recovering.

Yet at the same time, doctors also struggle with the human frailty of their patients, and they require mental and emotional fortitude in order to continue to work in a field in which the patients they treat often die. Patients quickly become more than paperwork, such as in an early example that Paul gives about his wife Lucy’s experience. While in medical school, Lucy studies EKGs and identifies one example that shows a fatal arrhythmia. She begins to cry as she realizes that wherever the example had come from, the patient had not survived. In order to perform even everyday tasks, doctors need to develop an ability to cope with fear and death. Paul describes a med school professor, Shep Nuland, who wrote about being a young medical student and cutting open a patient whose heart had stopped in order to squeeze the life back into the person. Though he is ultimately unsuccessful and Nuland’s patient dies, Paul calls his actions heroic. Despite the gruesomeness of the situation, Nuland is willing to go above and beyond what is normally expected of medical students in order to save his patients.

One of Paul’s doctor friends, Jeff, fails to keep up this emotional strength in the course of dealing constantly with death in his job. During residency, one of Jeff’s patients has a particularly difficult complication and dies. Jeff commits suicide that night, unable to bear the responsibility for the deaths of others. Paul experiences his own struggle in maintaining resilience in the face of constant death around him. He describes how in a single day, he had failed to save a child who had been shot in the head for wearing the wrong color shoes, and then had to explain to a mother that her newborn child, who was born without a brain, would not live much longer. Even though these experiences bring him to tears, Paul understands that the work he does is important.

Initially, Paul feels somewhat inured to the death around him, trying to protect himself from his work’s tragedies. Along the path of this career, however, Paul becomes impressed by those around him who are able to withstand the grief and provide emotional comfort for their patients, viewing these qualities as being equally important as a surgeon’s technical skills. Even though his failures are emotionally taxing and fighting against

death is a losing battle, Paul understands that it is vital to keep striving for his patients.



LEGACY

Paul’s attempts to live a meaningful life in the face of terminal cancer make him intent on living in the present, but his reckoning with death also makes him consider how to leave behind a legacy through which he can positively impact the world once he is gone. As such, Paul spends the majority of his remaining time nurturing a new daughter and writing *When Breath Becomes Air*. He chooses to put his time into writing and fatherhood because he realizes that the way to make his remaining time most meaningful is to put effort into the things that will outlast him and will make a positive impact on the world.

When Paul learns that he has terminal cancer, he and his wife Lucy decide to have a child together. In a way, Paul sees their daughter Cady as an essential part of his legacy: she is a person whom he created who will remain in the world once he is gone. This is particularly important to Paul because of Lucy, as Paul worries that when he dies he will leave Lucy without love and family. Cady, then, is a way to make sure that Lucy is not alone and that she has someone in whom she can see Paul and with whom she can share Paul’s importance. Paul also argues that even though having to say goodbye to a child might add to the pain of his death, life isn’t about avoiding suffering, but rather about appreciating what one is able to leave behind. When his daughter Cady is born, Paul describes how he no longer looks at his future as “an empty wasteland,” but rather as “a blank page on which he would go on.” Whereas before he worried that he had not made an impact on the world, his daughter’s birth gives him hope for an unknown future that he had a part in creating. At the end of Paul’s writing, he thanks his daughter for providing him with happiness, and notes that the joy she gives to him and to the rest of the family will add to her own legacy in the world.

Paul doesn’t comment much on the book that he is writing, but in the epilogue, Lucy explains Paul’s desire to finish *When Breath Becomes Air*. The book was important for Paul to write, even in the face of immense emotional and physical distress, because it is an essential part of his legacy: it documents his life and helps others by sharing the insights that Paul gained throughout his career and his struggle with cancer. Throughout the early part of the book, Paul hints at the fact that he always imagined he would return to writing. Paul tells the reader that if someone had asked him just before he left for college what career path he might choose, he would have said a writer, because he had been so inspired by other writers grappling with human existence. When Paul is diagnosed with cancer, writing returns to the forefront of his mind as something he always wanted to do, saying that if he knew he only had two years left, writing would be the way he would choose to spend his last days. In the final

passages of the memoir, Lucy provides more of a backstory for Paul's tirelessness in writing *When Breath Becomes Air*. She describes how he wrote while his cancer was in remission, while in chemotherapy, and even when it was painful to type, fueled by the desire to help others understand death and face mortality. Ultimately, Lucy writes, Paul's book becomes not only a way of making sense of his own life, but also a narrative from which others could seek guidance, just as Paul himself seeks guidance from other writers when he is initially diagnosed.

In the face of impending death, Paul must identify his values to discover how to make his remaining time meaningful. Rather than making an explicit argument about what he cherishes, Paul's actions reveal what he finds truly important: creating a legacy that will outlive himself. For proof of this legacy, readers need look no further than the book in their hands, as Paul's words have been read by over one million people in thirty-nine different languages.



FAMILY

When Breath Becomes Air centers primarily on Paul's career as a neurosurgeon and his battle with lung cancer. But on the periphery of these two

narratives, Paul relays stories of his childhood and the importance of his family. In the memoir, Paul demonstrates that family helps him determine his values in his youth and keep him grounded throughout his early career, but eventually family itself becomes one of his most important values, as he chooses to spend his limited time becoming a father.

When Paul is growing up, his family determines much of what he will come to value later in life, particularly in education and religion. Paul's mother values education highly, and one of the greatest gifts she gives him is a college prep reading list, which would become foundational for his love of literature. This is a value she had gained from her own father, who championed her right to an education in 1960s rural India, demonstrating how values are often passed down from parents to children. Paul's father, a devout Christian, also gives him his religious beliefs. Paul describes how prayer and Scripture readings were a nightly ritual in his home as a child. Though he moves away from religion at times, he returns to Scripture because of the values within it that he finds so compelling throughout his life: sacrifice, redemption, and forgiveness.

Even though Paul is initially hesitant to follow in his father's footsteps and pursue a career in medicine, he comes to realize that his father is someone whose characteristics he wants to emulate, demonstrating what personal and professional qualities Paul aims to have as an adult. As a child, Paul had decided that he didn't want to be a doctor, because his father, a cardiologist, was so often absent from his life. But when Paul decides that he does in fact want to study medicine, he also realizes how caring his father is toward his patients. Paul recounts a story in which his father jokes with a woman about

getting her lobster and steak for dinner—which might look more like a turkey sandwich. Paul's father's compassion and genuine care inspire Paul to earn the trust of his own patients.

When Paul is diagnosed with cancer, the value that he places on his family becomes immediately clear, and he realizes how vital family is to his future. Due to his long hours in residency and constant absence, Paul and his wife Lucy had been having marital issues just before he was diagnosed with cancer. But when he is diagnosed, their values are thrown into stark relief, and their love rekindles as they fight Paul's cancer together. Paul and Lucy make the decision to have a child, although they know that Paul may not survive very long into the child's life. Paul not only wants to have a child because of the joy it would bring him; he also wants to leave Lucy with a remnant of himself and of their relationship. The fact that Paul wants to spend much of his remaining time as a new father demonstrates that having a family is a high priority for him, and having his daughter Cady becomes a source of immense joy in his last months.

Though it is clear in the memoir that Paul's career is integral to his identity, his family is no less important. Paul's parents provide him with a foundation from which Paul inherits his own set of values. But even more importantly than that, the newest members of Paul's family—his wife and infant daughter—bring him a lot of joy and purpose in the final months of his life. Thus, for Paul, family transitions from shaping the ideas that give his life meaning to giving his life meaning in itself.



SYMBOLS

Symbols appear in **teal text** throughout the Summary and Analysis sections of this LitChart.



SCALPEL

The scalpel—a small knife used in surgical operations—represents the double-edged sword of operations and medicine in general. In order for many of Paul's patients to be treated or operated on, their bodies or their brains must first be cut open with a scalpel. Paul describes how cutting a body open, though necessary, is also a “trespass on the sacrosanct.” The use of a scalpel mirrors the cost/benefit question that all patients must face, particularly when undergoing brain surgery. For instance, is saving a life by cutting out a tumor worth the risk of accidentally also cutting the hypothalamus, which could then cause that patient to become a slave to his or her appetites? This is no mere hypothetical question. It is something that actually happens to one of Paul's patients, and therefore the kind of practical question that surgeons must always ask themselves. During a surgery on a brain-stem malformation, an attending doctor tells Paul that if he were to cut two millimeters deeper, the patient

would have locked-in syndrome and would be completely paralyzed, except for the ability to blink. Thus, the scalpel is not only a tool for excising diseases and defects, but also a representation of the risks of surgery and medicine.



BREATH

In *When Breath Becomes Air*, breath stands in for life. The “breath” of the title is derived from the poem that becomes the memoir’s epigraph: “Caelia 83,” by Baron Brooke Fulke Greville. The poem reads, “You that seek what life is in death, / Now find it air that once was breath.” The difference between “air” and “breath” is mostly semantic: breath is simply air that had once flowed through a living human. Therefore, the moment in which breath becomes air describes the act of dying, with breath representing life. Using breath as a stand-in for life is apt for the memoir because breathing is automatic, just as the way people treat their time on earth is often automatic. People don’t often think about their remaining time or whether they have had meaningful lives until they truly confront their mortality, as Paul does. Additionally, Paul is dying from stage IV lung cancer, and in his final months his breath becomes labored and eventually he must use a BiPAP machine, a breathing support system. Paul decides he would rather take the mask off and spend time with his infant daughter Cady, instead of prolonging an existence tied to machines. Breath literally becomes the crux of his life, and without it, he feels he does not possess the hope of more meaningful time on earth.

Explanation and Analysis

At the very beginning of the memoir, just before Paul is diagnosed with cancer, he explains how he had worked for so long to achieve his position as a top medical resident at Stanford, fielding many job offers from different top universities. Paul explains that, having reached the height of his field, he was very close to the point in his life in which he believed he would be able to focus on things other than his career: spending time with his family, taking vacations, etc. After Paul is diagnosed with cancer, however, he says that he has spent his life “building potential” for the future—a future which no longer exists. Here that idea is clear: he has spent his life building potential with the assumption that once he established his career, he could then move on to other things he values, such as spending time with family and having children. His cancer takes this future away from him, which means that he has to spend time with his family now in order to have even a semblance of the life he wanted. It’s also worth noting that the Biblical references here (Promised Land, Gilead, Jericho) suggest that Paul is interested in Christianity.

●● And with that, the future I had imagined, the one just about to be realized, the culmination of decades of striving, evaporated.

Related Characters: Paul Kalanithi (speaker)

Related Themes: 

Related Symbols: 

Page Number: 16

Explanation and Analysis

Once Paul is diagnosed with cancer, he realizes how much of his life has been spent in anticipation of future accomplishments. In the absence of this future, he must figure out what to do with his remaining time. The use of the word “evaporate” here is particularly noteworthy in the context of the title. “When breath becomes air” literally implies the evaporation of breath as it dissipates into the air, particularly once a person has died and the air in their lungs can no longer be described as “breath.” Because breath serves as a metonym for life in the book, what Paul describes here is feeling that the meaning of his past accomplishments—and with it his whole life—evaporate, because he no longer has a future to make his accomplishments worthwhile.



QUOTES

Note: all page numbers for the quotes below refer to the Vintage edition of *When Breath Becomes Air* published in 2017.

Prologue Quotes

●● At age thirty-six, I had reached the mountaintop; I could see the Promised Land, from Gilead to Jericho to the Mediterranean Sea. I could see a nice catamaran on that sea that Lucy, our hypothetical children, and I would take out on weekends.

Related Characters: Paul Kalanithi (speaker), Lucy Kalanithi

Related Themes:  

Page Number: 7

Part 1 Quotes

☞ I knew medicine only by its absence—specifically, the absence of a father growing up, one who went to work before dawn and returned in the dark to a plate of reheated dinner.

Related Characters: Paul Kalanithi (speaker), Lucy Kalanithi, Paul's Father

Related Themes:  

Page Number: 20

Explanation and Analysis

Paul's father's absence during Paul's childhood suggests one possible reason that Paul is initially more interested in pursuing literature than science: he perhaps resented medicine for keeping his father away from home so much, and he likely doesn't want to be absent for his own family's day-to-day life like his father was for his. However, Paul disregards his initial reservations and eventually becomes a doctor, adopting some of his father's habits along the way: before his diagnosis, Paul is often absent from home—to the point where his wife Lucy wonders if they should take a break from their marriage. After his diagnosis, when the two of them consider having a child, Paul worries that he will not live long enough to see his child grow up and therefore also be absent in the way his father was, but by this point he has come to understand his father's decision making better: his father's absence at home was a result of his dedication to his patients. Even if he was an absent father, he was a present and empathetic physician, which is also tremendously valuable. Perhaps this insight allows Paul to have a family when he knows he won't be there for much of his daughter's childhood.

☞ My mother, afraid the impoverished school system would hobble her children, acquired, from somewhere, a “college prep reading list.” [...] She made me read [1984](#) when I was ten years old; I was scandalized by the sex, but it also instilled in me a deep love of, and care for, language.

Related Characters: Paul Kalanithi (speaker), Paul's Mother

Related Themes:   

Page Number: 26

Explanation and Analysis

As Paul explains some of his early teenage experiences, his mother becomes another central factor in his preference for literature over science. She values education highly and works to make sure her sons can get into good schools. Thus, the reading list she gives to Paul provides him with many formative works of literature, including *Brave New World*, *Hamlet*, and “To His Coy Mistress.” Paul begins to see that language and literature not only communicate information, but also evoke feelings and provide a means for people to relate to each other and the world. Paul's mother, therefore, sets some of Paul's own early values.

It's also worth noting that Paul's mother's approach to literature was purely instrumental: she wanted him to read literature not necessarily for meaning, but rather as a practical way to get into a good college. For Paul, literature is something more: a passion that helps him understand who he is and why he is alive. This is an early example of “textbook learning” giving way to more complicated insights that come from experience; instead of remaining dry and instrumental, the books take on a life of their own and affect the rest of Paul's life.

☞ Though we had free will, we were also biological organisms—the brain was an organ, subject to all the laws of physics, too! Literature provided a rich account of human meaning; the brain, then, was the machinery that somehow enabled it.

Related Characters: Paul Kalanithi (speaker)

Related Themes: 

Page Number: 30

Explanation and Analysis

After Paul reads a low-brow novel that makes the assumption that the conscious mind is simply a result of the mechanical operation of the brain, he becomes intrigued by biology's relationship to identity and life. It prompts him to realize that both literature and science provide different perspectives on how to understand life and its meaning: while literature can provide a narrative “account” of meaning, all life is meaningless without the brain, which controls—through physical laws—the details of a person's identity and experience. This realization, as well as the courses he takes in college that further both of these interests, set him on the path towards becoming a neurosurgeon. Despite his career choice, he never abandons his love of literature. Throughout his life, the

insights of both science and literature guide him, as he uses science and literature to think about identity and meaning in different ways.

☞ It was as if this were the moment God said, “Let there be light!” You could not help but feel your specklike existence against the immensity of the mountain, the earth, the universe, and yet still feel your own two feet on the talus, reaffirming your presence amid the grandeur.

Related Characters: Paul Kalanithi (speaker)

Related Themes: 

Page Number: 30

Explanation and Analysis

During Paul’s sophomore year of college, he decides that instead of working at a primate research center (a choice that would further his career interests), he will be a chef at a summer camp in a national forest. Paul chooses the camp because he reasoned that he could either study meaning or he could experience it, and he wanted to experience it through being in the wilderness. In this passage, Paul appreciates the grandeur of the natural world, finding meaning in his life through nature, much as he had found it through literature before this. In the presence of nature, he is prompted to think about the biggest questions: his “specklike” existence in the face of the world’s “immensity,” a thought that makes him feel meaningful, rather than insignificant or alone. This shows Paul’s commitment to experiencing life in tandem with studying it, his humility in the face of forces outside of his control, and his curiosity about big questions. These are all characteristics that will make him a great neurosurgeon, which shows that his choice to be a chef at camp (rather than working in a lab) is not irrelevant to his career after all. In addition, true to the Christian values of his family, he describes the experience of twilight on Mount Tallac using a Biblical reference, which emphasizes the singular significance of this experience by comparing it to the beginning of life itself.

☞ Only later would I realize that our trip had added a new dimension to my understanding of the fact that brains give rise to our ability to form relationships and make life meaningful. Sometimes, they break.

Related Characters: Paul Kalanithi (speaker)

Related Themes: 

Page Number: 38

Explanation and Analysis

In Paul’s senior year of college, his biology course takes him to visit a home for people with severe brain damage, most of whom have lost their capacity for communication. This visit makes Paul realize how crucial language is to forming personal identity and interpersonal relationships, and that these fundamentally human qualities can vanish if the mechanics of the brain break down. Paul’s professor suggests that perhaps, in these cases, it might have been better for the patients to die, and Paul is angry with this at first. Later in his career, however, Paul will often make the same kinds of judgments for those who have severe damage to the language centers in their brain. He comes to realize that prioritizing meaningful life over life at all costs is important, and if language—which is central to identity and friendships—breaks down, then patients will often not consider their lives to be meaningful.

☞ Stepping back, I realized that I was merely confirming what I already knew: I wanted that direct experience. It was only in practicing medicine that I could pursue a serious biological philosophy.

Related Characters: Paul Kalanithi (speaker)

Related Themes:  

Page Number: 43

Explanation and Analysis

As Paul gets his master’s degree in English literature and then goes to Cambridge to pursue a degree in the history and philosophy of science and medicine, he begins to realize how weightless philosophical arguments are without having personal experience to back up those claims. He wants to gain this experience, and he decides to attend medical school because he believes that practicing medicine is the best way to fulfill his thirst for experience. Interestingly, he doesn’t frame this as a departure from his study of philosophy, but rather as a next step in an abiding commitment to philosophical thought: in order to be “serious” about the biological elements of philosophy, he must learn about the body through experience, not just

through secondhand sources.

☛ How could I ever learn to make, and live with, such judgment calls? I still had a lot of practical medicine to learn, but would knowledge alone be enough, with life and death hanging in the balance? Surely intelligence wasn't enough; moral clarity was needed as well.

Related Characters: Paul Kalanithi (speaker), Melissa

Related Themes:  

Page Number: 66

Explanation and Analysis

When Paul first begins treating patients, he sees a resident perform an emergency C-section on twins who are only twenty-two weeks old. Paul asks her whether it is better to deliver babies with complications too early or too late, and she responds that doctors have to make a judgment call. Here, Paul worries that he wouldn't be able to make these judgment calls, since the stakes are life and death and, besides, he still has textbook learning to do in addition to all the practical experience he has yet to gain in the hospital. Even though all of the knowledge, experience, and “moral clarity” that goes into making such high-stakes judgments seems, at first, overwhelming to Paul, he actually becomes quite adept at and interested in how to make such difficult judgments. Since Paul was never interested in medicine as a purely academic exercise (something that could be learned in a textbook), but rather as a way to simultaneously help others and investigate life's biggest questions, it makes sense that Paul would be drawn to these thorny judgment calls. Paul is a scientist with an abiding interest in ethics, and it's only years of experience making both good and bad calls that gives Paul intuition about what to do and confidence in having such a tremendous responsibility.

☛ When there's no place for the scalpel, words are the surgeon's only tool.

Related Characters: Paul Kalanithi (speaker), Jeff

Related Themes:  

Related Symbols: 

Page Number: 87

Explanation and Analysis

Paul makes this statement after a lengthy section in which he worries that being so close to death has only inured him to it. Upon hearing of a friend's death in a car accident, Paul realizes that he would want her doctor to treat her with compassion and respect. This realization is a turning point for Paul, as he begins to value not just taking care of his patients physically (with the scalpel), but also emotionally and mentally (with words). In a way, this circles back to what drew Paul to neurosurgery in the first place when he heard a neurosurgeon explaining to two parents that their son had brain cancer. Knowing that all surgeries and treatments in his field are life-altering, Paul's statement represents a recognition of the fact that being an empathetic doctor can be just as crucial as being a skilled surgeon.

This statement can also be seen in the context of Paul's dual interest in science and literature, as he posits the idea that the scalpel (science) can be helpful, but in the absence of science, words can attempt to heal, as well.

☛ Being with patients in these moments certainly had its emotional cost, but it also had its rewards. I don't think I ever spent a minute of any day wondering why I did this work, or whether it was worth it.

Related Characters: Paul Kalanithi (speaker), Jeff

Related Themes: 

Page Number: 97-98

Explanation and Analysis

After Paul realizes how desensitized he has become to his patients' suffering, he resolves to be as empathetic as possible. Though the price of this compassion is high, such as when he and Jeff commiserate about the tragedies they have seen in their operating rooms (Paul witnessed a child shot in the head for wearing the wrong shoes), Paul is able to steel himself against these tragedies in order to support his patients more fully. In supporting them, Paul feels that the work he is doing is truly meaningful, and this reinforces the idea that empathy is just as crucial to being a good doctor as technical precision. In fact, not only is it crucial for the patients, but it is also crucial for the doctors themselves. Feeling that the work has meaning is what allows Paul to continue to perform such grueling surgeries and break bad

news to patients. This fact is echoed later in the memoir when Paul returns to surgery after treatment, and at first he doesn't feel fulfilled because he is not working with patients. After he works back up to a full load, he feels once more that the work is worth it, in a way allowing him to reclaim his old identity after being away from his calling.

☛ If boredom is, as Heidegger argued, the awareness of time passing, then surgery felt like the opposite: the intense focus made the arms of the clock seem arbitrarily placed.

Related Characters: Paul Kalanithi (speaker)

Related Themes: 

Page Number: 104

Explanation and Analysis

During Paul's sixth year of residency, his time disappears entirely because of long hours spent in the operating room. The amount of time he spends there also depends on how fast he personally operates. Paul describes how in the OR, time feels irrelevant. Paul's intense focus shows that he is fully immersed in the present moment. When Paul is later diagnosed, he will discover that the things that require him to live fully in the present are the things that make his life most meaningful, like raising his newborn daughter. Thus, neurosurgery not gives him purpose and meaning because his work feels worthwhile as he's doing it. This is reinforced by the fact that after Paul is diagnosed with cancer, he works hard to return to surgery. Even though his time is limited, he feels that surgery is a valuable use of that time. Since much of Paul's book (and Paul's life) is concerned with discovering what makes life meaningful, finding experiences that seem to make the most of that time is vital.

☛ Good intentions were not enough, not when so much depended on my skills, when the difference between tragedy and triumph was defined by one or two millimeters.

Related Characters: Paul Kalanithi (speaker), Matthew

Related Themes:  

Related Symbols: 

Page Number: 105

Explanation and Analysis

In his final year in residency, Paul describes how he had assumed full responsibility for his patients, and that means that he also must take full responsibility for any mistakes made. He describes various cases in which patients are drastically affected by one or two millimeters of damage, which demonstrates the relationship between the physical structures of the brain and identity. This relationship is one of the reasons that Paul had been drawn to neurosurgery in the first place, as the intersection of biology and philosophy has always been his passion. However, many of Paul's cases represent how science and surgery can provide a lot of benefits to patients, but they also come with their own risks. Often, discoveries about the brain can only come through mistakes, and the cost of those discoveries is far too great. Here, Paul understands it is the responsibility of doctors to minimize those risks through their technical excellence, because success comes not through discoveries about the brain, but instead through maintaining as much of a patient's identity as possible.

☛ The secret is to know that the deck is stacked [...] and yet still struggle to win for your patients. You can't ever reach perfection, but you can believe in an asymptote toward which you are ceaselessly striving.

Related Characters: Paul Kalanithi (speaker), Jeff

Related Themes: 

Page Number: 115

Explanation and Analysis

At the end of Paul's residency, Paul is told that his friend Jeff had committed suicide because one of his patients, who had a particularly difficult complication, had died. Paul knows that incidents like this place a lot of responsibility on physicians' shoulders, and he relays what he had learned in his time as a doctor. Though it requires mental fortitude on the doctor's part, and though it might ultimately be a fruitless goal, it is always valuable to strive for one's patients. This is certainly true of Paul's time as a surgeon, as he sometimes makes mistakes, but he admits responsibility for them and works to fix them or adjust next time. Over the course of his career, he also strives not only to be a more technically skilled doctor, but also a compassionate doctor. Eventually, Paul's statement comes to apply to his own struggle against death. He knows that after discovering his cancer, he will never fully return to the life he had been

expecting prior to his diagnosis; however, he works to regain as much of his old identity as possible through returning to surgery, becoming a father, and writing his book.

Part 2 Quotes

☛☛ My life had been building potential, potential that would now go unrealized.

Related Characters: Paul Kalanithi (speaker), V, Jeevan

Related Themes:  

Page Number: 120

Explanation and Analysis

When Paul is diagnosed with stage IV lung cancer, his brother Jeevan arrives at the hospital to support him. His brother tries to comfort him by saying that he has already accomplished so much, but Paul is not reassured by this statement. This statement shows Paul's concern that his life has not held meaning, one of the major explorations of the memoir. Paul understands that he had spent so much of his life up to this point preparing and training for a future career and life after he finished residency. Now, faced with a limited amount of time, Paul must identify his values and live his life with the assumption that he does not have a future. He works to accomplish some of his goals—like having children and writing a book—in a relatively short amount of time, in order to feel that his life has had the meaning he had wanted and expected. This statement is resonant not only with Paul, but also with other characters in the memoir (such as V), and with humans broadly: people live with the assumption that they will live a long time, but faced with the understanding of more imminent death, they work to make sure that they have felt their lives were well-spent.

☛☛ The angst of facing mortality has no remedy in probability.

Related Characters: Paul Kalanithi (speaker), Emma Hayward

Related Themes:  

Page Number: 135

Explanation and Analysis

When Paul is diagnosed with cancer, his oncologist Emma

refuses to give him detailed statistics about how likely it is that he will survive. Earlier in the memoir, Paul himself had said that it is better to be accurate than precise when it comes to telling patients how long they will live, and that it is important for doctors to leave room for both nuance and hope in their language in order to support their patients as best they can. Even though he is initially frustrated with Emma for denying him this information, Paul comes to understand that it is probably for the best. He knows that statistics will not provide him with concrete answers nor assuage his fears about death. Thus, this is one of the moments in which science, though it might provide more factual information, is not as useful as language in understanding humanity. When Paul is diagnosed, he turns back to literature to read the words of others who have grappled with mortality, as statistics are not only unemotional, but also often inaccurate.

☛☛ “Will having a newborn distract from the time we have together?” she asked. “Don’t you think saying goodbye to your child will make your death *more* painful?”

Wouldn’t it be great if it did?” I said. Lucy and I both felt that life wasn’t about avoiding suffering.

Related Characters: Paul Kalanithi, Lucy Kalanithi (speaker), Cady Kalanithi

Related Themes:   

Page Number: 143

Explanation and Analysis

After Paul's first treatment starts working, he begins to have more confidence in his future. One of the larger questions that looms over Lucy and Paul is whether they should have a child. They had planned on having a child after Paul's residency had finished, but faced with limited time, they must make their decisions with more consideration. Their dialogue here represents one of the major conflicts of terminal illness: how to make one's remaining time meaningful. Though Paul is worried about leaving Lucy to raise a child on her own in the future, he is spurred by the fact that a newborn will provide him and the rest of the family with a lot of joy. Even more than that, Paul's statement explores how the love one brings to family can make those relationships both joyful and painful, and that there is meaning in both joy and pain. This is an idea that relates to Paul's experiences treating patients, as well, since he experiences both elation when declaring someone cured

and also immense sadness when breaking bad news or seeing patients die. But another strong reason that Paul wants to have a child is that having a child represents a way by which Paul can leave something behind to carry on his own life into the future.

☛ I got out of bed and took a step forward, repeating the phrase over and over: “I can’t go on. I’ll go on.”

Related Characters: Paul Kalanithi (speaker)

Related Themes:  

Page Number: 149

Explanation and Analysis

When Paul’s cancer becomes stable, Paul returns to literature to try to make sense of his mortality. He reads works by many different authors to add to his knowledge of death—everything from philosophy, to memoirs by other cancer survivors. When Paul is struck by immense pain one morning, he uses these words as a mantra, which are drawn from Samuel Beckett’s *The Unnamable*. Thus, literature serves a dual purpose as he works through his treatment. It not only gives him a framework for understanding his impending death by reading the works of others, but it also provides him with strength in using the words as a mantra, inciting him to get out of bed and go about his day. As he draws on the words of those who have come before him, and others who have asked crucial questions about life, death, and meaning, readers can’t help but see the way in which Paul has also entered this literary legacy through his own words in *When Breath Becomes Air*. One of the book’s intended purposes, as Lucy writes later, is to provide others with a means of confronting and understanding their own mortality, because Paul understands how useful this literature is for him.

☛ Maybe, in the absence of any certainty, we should just assume that we’re going to live a long time. Maybe that’s the only way forward.

Related Characters: Paul Kalanithi (speaker)

Related Themes: 

Page Number: 162

Explanation and Analysis

Following his first treatment, Paul works through grueling physical therapy and reads diligently to get back into the routine of his residency. At first, he successfully returns to surgery, and then he returns to performing the full load of a chief resident. As he does this, it strikes Paul that he has gone through the five stages of grief, only backwards—ending in total denial. In this quote, Paul hits upon the paradox of knowing that he might die sooner than he thought. Even though he tries to take advantage of the time that he has, he is never truly certain of how much time he has left. Therefore, his only course of action is to have hope that he will live a long time. However, in a way Paul does this too successfully. He becomes so immersed in returning to surgery that he starts to run on autopilot again. When he eventually pushes off looking at his CT scans because he is so busy at the hospital, his cancer’s resurgence becomes doubly tragic. Yet it is difficult to argue that Paul was not making his remaining time meaningful, because his time in surgery and treating patients is extremely worthwhile—both for himself, and for others. Preventing himself from wallowing in grief and remaining optimistic about the future allows him to extend the lives of others, if not his own life.

☛ The physician’s duty is not to stave off death or return patients to their old lives, but to take into our arms a patient and family whose lives have disintegrated and work until they can stand back up and face, and make sense of, their own existence.

Related Characters: Paul Kalanithi (speaker), Emma Hayward

Related Themes: 

Page Number: 166

Explanation and Analysis

As Paul draws near the end of his residency, his cancer remains stable and he begins to receive job offers. One of those jobs would take him to Wisconsin, but Paul worries that if he were to relapse, he would be away from his family as well as from his oncologist, Emma. Emma has earned his deep trust and respect, for the reasons he explains here. Not only has she taken care of him physically, but she has also taken care of him mentally. This is one of the characteristics that Paul views as crucial to being a good

physician, as he recounts his own journey earlier in the memoir, striving to be more compassionate. Unlike before, however, Paul is working through this realization as a patient rather than a doctor, acknowledging that she has not returned him to his old life, but has instead allowed him to create a new life and make sense of the remaining time that he has. Where before the emphasis was on comforting the patient, Paul realizes that it is just as valuable to push patients to continue their lives in whatever way they can.

☛ Scientific knowledge [is] inapplicable to the existential, visceral nature of human life, which is unique and subjective and unpredictable.

Related Characters: Paul Kalanithi (speaker), Paul's Father

Related Themes:  

Page Number: 170

Explanation and Analysis

When Paul's cancer is stable, Paul and his family attend church together during Lent. This prompts Paul to muse about his feelings on God, religion, and scientific knowledge. Paul wavers between practicing Christianity and being an "ironclad" atheist. Here, Paul does not necessarily place religion and science at odds with one another, but instead asserts that they explain different aspects of the world. Scientific knowledge can explain matter and energy, but it cannot explain so many of the experiences and emotions that humans have and grapple with every day, such as love, hate, and meaning. Religion instead provides a path for understanding these existential concepts.

Through the juxtaposition of religion and science, particularly in the context of a visit to church with Paul's family, one can also see how Paul's father influences him in his thoughts and values. Paul's father is a cardiologist himself and thus he highly values science, but he is also a devout Christian. This sets up Paul's appreciation for both of these ideas as well.

☛ Feeling her weight in one arm, and gripping Lucy's hand with the other, the possibilities of life emanated before us [...] Looking out over the expanse ahead I saw not an empty wasteland but something simpler: a blank page on which I would go on.

Related Characters: Paul Kalanithi (speaker), Cady Kalanithi, Lucy Kalanithi

Related Themes:    

Page Number: 195-196

Explanation and Analysis

Just two days after Paul spends a week in the ICU because his chemotherapy has weakened him so severely, his daughter Elizabeth Acadia (Cady) is born. Here, Paul affirms one of his strongest values: spending time with his family. After Paul is no longer able to perform surgery, family becomes his top priority, and having a baby signals his intensifying commitment to investing in family while he can. Additionally, this quote implies Paul's desire to have a legacy, which will be carried on through his newborn daughter. His daughter's birth gives him hope in the possibilities of the future, whether he is directly a part of that future himself or indirectly a part of it through her.

Additionally, Paul's word choice here once again connects to literature. He contrasts "an empty wasteland"—another clear reference to T.S. Eliot's *The Waste Land*—and "a blank page." Using this metaphor, readers can see the connections between his daughter and the book he is in the process of writing, which also gives him a legacy and allows him to take part in the future.

☛ Words have a longevity I do not.

Related Characters: Paul Kalanithi (speaker)

Related Themes:   

Page Number: 199

Explanation and Analysis

At the very end of Paul's section of the memoir, he explains that his life is now spent perpetually in the present because his future is so uncertain, and that his goals at this point have been either achieved or abandoned because of his lack of time. However, he, like many authors before him (perhaps the most famous example is Shakespeare's 18th sonnet), realizes that literature can outlive authors by many centuries. Paul's words can carry him into the future and allow him to impact the lives of many people he does not know. Thus, this book becomes one of his primary legacies, and readers finish the book with the knowledge that they are helping Paul achieve one of his goals simply by reading the words he has written.

Epilogue Quotes

☞☞ This book carries the urgency of racing against time, of having important things to say. Paul confronted death—examined it, wrestled with it, accepted it—as a physician and a patient. He wanted to help people understand death and face their mortality.

Related Characters: Lucy Kalanithi (speaker), Paul Kalanithi

Related Themes:    

Page Number: 215

Explanation and Analysis

In the epilogue, Lucy emphasizes how much of Paul's last months he spent working on his book and why he wanted it published. The book represented many things to Paul; it was an example of a goal he had had before he was diagnosed that he could still accomplish after; it was a way to carry on his legacy in the future and make an impact on others after his death; but perhaps most importantly, it was a way for Paul to continue the part of his work as a neurosurgeon that he found most fulfilling through offering existential understanding. If he couldn't treat people or perform surgery, he could continue to do what he found to be an equally as important aspect of the job: providing patients (and others) with comfort and with a way of facing their existence, just as he had been inspired by literature in his youth and taken comfort from many authors and works himself after his diagnosis.

☞☞ Caring for our daughter, nurturing relationships with family, publishing this book, pursuing meaningful work, visiting Paul's grave, grieving and honoring him, persisting...my love goes on—lives on—in a way I'd never expected.

Related Characters: Lucy Kalanithi (speaker), Cady Kalanithi, Paul Kalanithi

Related Themes:    

Page Number: 224

Explanation and Analysis

At the very end of the memoir, Lucy explains how she did not lose her love for Paul even after his death. Each of the ideas she touches on here represents a way that Paul strove to make his life meaningful, and which she takes on after his passing. Even though Paul was able to identify and work towards several different values towards the end of his life (forging a legacy, raising a daughter, continuing to perform neurosurgery while he still could), perhaps the most important is that of family. Family gave Paul strength, hope, and meaning in his remaining time, and Lucy in particular gave steadfast support in Paul's most dire time of need. She helped him work through physical therapy to be able to return to neurosurgery; the two had a daughter together even though she knew she would likely be raising Cady alone; and she worked to make sure his manuscript was published. Thus, spending time with Lucy not only became an important value for Paul, but she also made his other values and achievements a possibility.



SUMMARY AND ANALYSIS

The color-coded icons under each analysis entry make it easy to track where the themes occur most prominently throughout the work. Each icon corresponds to one of the themes explained in the Themes section of this LitChart.

PROLOGUE

The memoir opens on Paul flipping through his CT scan images, seeing that his lungs are matted with numerous tumors. He explains that he's very familiar with these scans, as he himself is a neurosurgical resident in his last year of training at Stanford. His wife Lucy sits by his side, and asks if he thinks it could be something else. Paul tells her he knows that it is cancer.

The opening of Paul's memoir introduces not only its primary theme but also its primary purpose. Paul realizes that he is going to have to confront his death much more immediately than he had previously thought. Though the reader doesn't realize it directly from the outset, Paul wrote the book in order to allow others to confront their own mortality as well.



Paul describes the circumstances that led to this moment: he had been losing weight and experiencing ferocious back pain. His primary care doctor had suggested that he take X-rays to try and determine the cause. Paul had worried that he might have cancer but reassured himself that cancer is improbable at thirty-six years old.

Paul's confrontation of mortality comes as a surprise to him, particularly so early in his life. His discussion of probability will recur later in the memoir when he realizes the limits of textbook knowledge, understanding that there must be room left for some optimism.



The X-rays had not indicated any issues, and Paul had chalked it up to hard work and an aging body. Paul explains that this hard work had earned him the respect of his seniors and won him prestigious national awards, followed by job offers from major universities. He describes that he had "reached the mountaintop," and looked forward to a more manageable life with Lucy and their future children.

Paul reveals some of his values early on in his narration: spending time with family. However, it is clear that he places achievement of these values in the future—they are a goal towards which he is working. When Paul's time is cut short, he must work towards his goal more immediately.



A few weeks later, Paul's weight drops again and he has severe chest pain. He decides to get another X-ray, this time of his chest. Lucy sees that Paul is researching the frequency of cancer in people his age, and she is upset that he isn't confiding in her.

Paul's worry spurs more research, but as he describes later, statistical research rarely provides comfort. What does support him and provide that comfort is his family, but as he is confronted by fear, Paul turns away from his wife.



Lucy decides not to join Paul on a vacation they had planned to take to New York City to see some of his friends, saying that she had decided instead to move out for the week. She expresses concern that they want different things from their relationship. Paul is absent much of the time, and she worries that his schedule won't change once he becomes an attending neurosurgeon.

Even prior to Paul's diagnosis, there is a conflict between the time he possesses and the values on which he chooses to spend it. He aims to become a successful neurosurgeon, but at the expense of spending time with his family. This will become Paul's major dilemma as he realizes that he has much less time left in his life than he had previously thought.



Paul offers to skip the trip and see a couple's therapist, but Lucy is adamant about needing time alone. Paul decides to go on the trip, figuring that if he has severe cancer, as he suspects, this may be the last time to see his friends. Lucy tells him she loves him as she drops him off at the airport.

Paul begins to make those decisions. Even as Lucy pulls away from him, Paul recognizes that it might be valuable to be able to spend time with his friends before he discovers whether he has cancer.



Paul's back stiffens in pain during the flight to New York. He hopes his symptoms will clear after a few days away from his hectic life, but he quickly realizes that this is not the case. He confesses to his friend Mike that he may have cancer. Paul's doctor calls, telling him that the X-rays look blurry, and that she's not quite sure what that means. Paul knows that it likely means he has cancer.

Paul's years of experience with various forms of brain cancer provide him with his own diagnosis, even if his doctor isn't quite certain. Throughout the book, as here, Paul attempts to handle much of his own medical care, and is relieved when his oncologist eventually releases him from that burden.



Lucy picks Paul up from the airport. He tells her that he has cancer. She affirms that she will never leave him, setting aside her previous concerns.

Just as with Paul, the cancer diagnosis also clarifies the value that Lucy places on family.



Paul is admitted to the hospital. As he sits in a room in which he has seen many of his own patients, he reflects on his time as a doctor—that in this room, he had congratulated patients on being cured of a disease, and had pronounced patients dead. In his mind, he sees the future toward which he had been striving for the majority of his life evaporate.

Paul's reflection here marks a break in the narrative and Paul's life. Prior to this moment, Paul had been exclusively living for the future: setting up a career, a family, and waiting on goals that he planned to accomplish later in life. Here, his future "evaporates" and he must focus on the only thing he has definitively: the present.



PART 1: IN PERFECT HEALTH I BEGIN

Paul jumps back in his narration to his teen years. He is sitting on a desert plateau above his house in Kingman, Arizona, weeks before leaving for college. Paul recalls that he had been certain that he would never be a doctor. He had believed that he might be a writer, but he was relatively unconcerned with his career path before college.

As Paul opens on this section, he sets up a theme that will be prevalent throughout Part I: the tension between science and literature. Here, Paul recounts his early focus on literature, but because Paul has already admitted that he will in fact become a doctor, the reader can foresee a shift that will occur from literature to science.



Paul recounts how he was familiar with medicine only because his father—a cardiologist—was so often absent from the house. At ten years old, the Kalanithi family had moved from Bronxville, New York, to Kingman, Arizona, to lower their cost of living. His father began a practice of his own and worked to put his sons through college, but at the cost of seeing them grow up.

Paul's father perhaps represents why Paul particularly shies away from medicine in the first place. He identifies his own values as a reaction to his father, who was often absent. Perhaps this is also an unspoken concern when Paul decides to become a father, even though he knows he will be absent from most of his daughter's own life.



In his childhood, Paul enjoys the freedom of the desert and grows familiar with the pantheon of wild animals around him. He describes how advice about how to handle these creatures lay in what he calls “country facts”—the rural cousin of the urban legend. One country fact explains “if you kill a rattlesnake on your doorstep, its mate and offspring would come and make a permanent nest there.” When Paul discovers a rattlesnake outside his front door, he and his brother Jeevan manage to get the snake into a pillowcase and hurl it back into the desert to avoid the vengeance of its family.

Paul gives a little more background on his family: his mother and father had eloped and moved from southern India to New York City. He was a Christian and she was a Hindu, and their marriage was condemned on both sides of the family.

Paul’s mother’s greatest fear is the lack of good education in Kingman, which had been identified as the least educated school district in America at the time. She finds a college prep reading list for Paul, and he describes how this list instills in him a deep love of language.

Paul elaborates on the books that sparked his passion for literature: *Brave New World* gives him a philosophical foundation; *Hamlet* helps him through adolescent crises; and “To His Coy Mistress” and other romantic poems lead him on many late-night escapades. Books become Paul’s “closest confidants.”

Paul’s mother also drives Paul and his brothers, Suman and Jeevan, to Las Vegas to be able to take their SATs and ACTs. She also joins the school board to demand that AP classes be added to the curriculum. Her work not only enables Paul to get a good education, but it also helps many other students in the school. One such student is his friend Leo, who is motivated to go to Yale despite being told by his guidance counselor that he should join the army. Leo becomes the class salutatorian and is accepted to Yale, and Paul is accepted to Stanford.

Paul’s early experience in the desert opens up another recurring theme. As he describes later when he decides to spend a summer going to a camp in order to experience nature, here he enjoys his childhood home because it gives him real-life experience with beauty and wilderness. The “country facts” also provide an early example of how textbook knowledge may be important, but knowledge that is passed down and experienced is sometimes more valuable.



Paul’s background illuminates some of the family’s early values: not only his father’s devout Christianity, but also his values as a son of immigrants, striving to provide their children with opportunities in the future.



Paul’s mother demonstrates the value she places on education and traditional textbook knowledge. Not only does this provide Paul with opportunities in the future but also gives him a lifelong love of literature and language.



Paul continues to emphasize his early love of literature over science. The inspiration and understanding these books afford him spur his desire to be a writer later in life.



Once again, Paul’s mother’s values determine much of his life path. Her dedication to her sons’ educations not only causes them to value education themselves, but also allows them to follow more rigorous career paths. Paul finishes college at twenty-three years old, med school at twenty-nine, and residency at thirty-six, showing how much he values training and preparation in pursuit of finding a meaningful career and life.



As Paul finishes high school, Paul's girlfriend Abigail (who attends a local college) suggests he should read some lowbrow work. She gives him a five-hundred-page novel called *Satan: His Psychotherapy and Cure by the Unfortunate Dr. Kassler, J.S.P.S.* Paul admits that it's not a good novel, but he is struck by its assertion that the mind is simply the operation of the brain, and that it is subject to scientific laws just like any other organ. Paul starts to mark biology and neuroscience courses in his Stanford catalogue in addition to the literature classes he had picked out.

This moment is one of the first instances in which literature and science combine to spur Paul's curiosity and understanding of the world around him. Though the book his girlfriend gives him is not of high quality, its descriptions and assumptions about science, which cause him to investigate science classes in college, proves to be as formative as any classic work of literature.



Paul pursues degrees in both English literature and human biology at Stanford, his studies driven by the question of what makes life meaningful. He feels that "literature provided the best account of the life of the mind, while neuroscience laid down the most elegant rules of the brain." He names a few more authors and works that are formative for him in his search for meaning, including T.S. Eliot's *The Waste Land*.

This juxtaposition of science and literature continues through college for Paul, each serving its own purpose in providing meaning. T.S. Eliot's work in particular will recur throughout the memoir, as Paul quotes it in other key passages when coming to terms with his illness, proving how he uses literature to make sense of his own life.



Heading into Paul's sophomore summer, he is torn between getting an academic internship at a primate research center and becoming a chef at a camp, which would allow him to explore the Eldorado National Forest. Weighing his decision, he thinks, "I could either study meaning or I could experience it."

Here, Paul experiences tension between his desire for textbook knowledge (represented by the primate research center, a man-manipulated form of nature) and real-life experience (actually experiencing nature and various animals at the camp).



Paul chooses the camp. He describes the beauty he finds in the lakes and the mountains, and the rich connections and friendships he forges with others at the camp. He compares the dawn on Mount Tallac to the moment in which God declared, "Let there be light!" He is in awe of the expanse of the mountain and the earth, but also sees that his own presence is affirmed by his two feet standing on that mountain.

Thus, the first conflict between textbook knowledge and real-world experience ends in Paul's decision to truly experience nature. The importance placed on experience will recur in Paul's medical school experience as well. Additionally, the reader can also see Paul's religious background, which was passed down from his father, aiding in his awe of nature.



Back at Stanford, Paul continues to study philosophy, literature, and neuroscience. He also works in an fMRI lab and enriches his relationships with friends on campus through various escapades and pranks, such as raiding the school cafeteria dressed as Mongols and creating a fake fraternity.

At the end of Paul's college career, he seems to have found an idyllic balance of his interests, and between learning and experiencing. The remainder of the memoir, then, will explore how he carries these interests beyond school and into his career.



Senior year of college, Paul visits a home for people who had suffered severe brain injuries for a neuroscience class. The guide explains that many of the residents had nearly drowned as young children, and that gradually the parents stop visiting them. Paul is upset to hear that parents abandon their children, especially after he sees one girl smile at him.

Paul's first encounter with the tragedies of brain injuries is another formative experience for him. He discovers that the study of the mind is not only scientific, but extremely personal as he sees how catastrophic brain damage can truly be.



When the class returns to campus, Paul vents to his professor about the parents of the children in the home. The professor is sympathetic to Paul's feelings, but also tells him that he sometimes believes it would be better if the children had died. As he leaves the classroom, Paul realizes that brains give rise to the ability to form relationships and make life meaningful, but sometimes that ability breaks.

As graduation looms, Paul wants to continue his studies, so he applies for a master's in English literature at Stanford. He comes to see language as "an almost supernatural force, existing between people, bringing our brains, shielded in centimeter-thick skulls, into communion." He aims to explore how language relates to the brain and other functions of the body.

Paul studies Walt Whitman for his thesis, a poet who also wanted to find a way to understand the "Physiological-Spiritual Man." Though his thesis is well-received, he increasingly realizes that literary studies are not the field for him. The field seems averse to science, and Paul's varying interests don't quite fit together in the department. One day, he is struck with the realization that practicing medicine would allow him to get much more direct experience exploring the intersection between biology, morality, literature, and philosophy.

Paul begins to prepare his medical school application, loading up on chemistry and physics in his final year at Stanford. Discovering that he would have a free year once his classes were over because of the timing of applications, Paul pursues a one-year degree in the history and philosophy of science and medicine at Cambridge. During his time there, Paul realizes that words feel more and more inadequate, confirming his desire for more direct experience with questions of life, death, and meaning. He finishes his degree and returns to the U.S. to attend the Yale School of Medicine.

Paul describes the first time he dissects a dead body, and how strangely normal it feels. The **scalpel** unzips the body, an action that constitutes both a medical rite of passage and a "trespass on the sacrosanct." Gradually the revulsion, exhilaration and awe are reduced to monotony by the repetition of dissection. He marvels at a professor's ability to rest an elbow on his cadaver's face without batting an eye.

Paul faces his first assessment of what makes life worth living—assessments he will have to make often as a neurosurgeon. Life without language, Paul argues, can deprive a person of their most fundamental human connections. Being unable to communicate with family members deprives life of much of its core meaning.



Paul's desire for more education continues, as does his interest in language and literature. At the end of his studies, however, he aims to connect literature more concretely to his scientific studies, finding both to be crucial in his understanding of life.



Paul aims to link his two interests in his master's thesis. But as he states, the English department at Stanford doesn't allow for the kind of interdisciplinary study Paul seeks. Instead, he begins to realize that he has come to the limits of book knowledge and the limits of understanding that literature provides, and works instead towards practicing medicine.



Whereas before Paul felt that words were a "supernatural force," here they start to lose power without real-world experience to back them up. Additionally, readers can see how Paul is "building potential" for his future: he continues his studies while his application takes a year to process, which will then lead to four years of medical school and seven years of residency. His lack of a future beyond his training underscores the tragedy of his situation.



Paul's descriptions of dissection not only signal a shift in subject but a shift in writing style: whereas before Paul had focused on words, here Paul focuses on concrete actions and visceral feelings. This is also an early example in which physicians become inured to the conditions of those with whom they work.



Paul explains how cadavers end up on the table. They donate themselves to schools, unlike in the nineteenth century when students had to bring their own bodies. He wonders if the “donors” (the preferred term for cadavers) would have done so had they been more informed about dissection’s gory details. He recalls one son who requested his mother’s half-dissected body back in the midst of their lab.

Though a cadaver’s humanness is undeniable, Paul confesses that it is easy to forget that they are human when reduced to piles of flesh and bones. He realizes that doctors transgress against patients in many ways, seeing people at their most vulnerable, scared, and private. Even though anatomy professors are sometimes cavalier in dealing with the donors, at other times they retain a feeling of kinship towards the bodies on their table, as when one professor says that he is the same age as the man whose pancreas they are examining.

Medical students, Paul writes, experience death and suffering but are also shielded from the brunt of responsibility. But Paul’s girlfriend (and future wife) Lucy understands the subtext of the work. While studying EKGs, she identifies one which came from a patient who did not survive, and begins to cry.

Paul and Lucy attend Yale when Shep Nuland still lectures there. Nuland’s work *How We Die* is eye-opening for Paul in its head-on confrontation of the topic of death. Paul is particularly struck by Nuland’s description of the death of his grandmother, and how she gradually succumbs to congestive heart failure and also gains a shortness of **breath** because older blood is less able to take up oxygen from older lungs. Nuland describes how when she stops praying, she stops virtually everything else as well.

Another story of Nuland’s proves particularly important for Paul: when Nuland was a young medical student, he was alone in the OR with a patient whose heart had stopped. He then cut open the patient’s chest to try to pump his heart manually. Though the patient died, Paul views this action as the true image of a doctor: bearing a heroic responsibility amid blood and failure.

After two years of studying, Paul begins the next phase of medical school. The final two years, he explains, are spent in the hospital and clinic, putting theoretical knowledge to use in order to relieve concrete suffering. His first assignment is in the graveyard shift in the labor and delivery ward of an ob-gyn.

Paul understands that even though he is working with dead bodies, human lives and identities are sacred. Though he too seems to become somewhat numb to his “donors,” there are moments in which he remembers that they too had meaningful lives.



One of the hallmarks of human life is cognition, and without this cognition, it becomes easy for many medical students and doctors to ignore the humanity of the cadavers, until some small connection awakens their empathy. This will parallel Paul’s later journey in his neurosurgery residency. He becomes numb to his patients until hearing of a friend who died in a car crash, reawakening his empathy for those in these tragic situations.



Lucy realizes earlier than most other doctors how much their lives will be surrounded by death, and how much mental strength will be required to aid their patients and deal with their fatalities, as well as to perform their everyday tasks.



Nuland’s work is a direct precedent for Paul’s own writing. Nuland also describes the gradual deterioration of the human body, with it the human mind. Nuland’s grandmother’s prayers not only represented her language ability, but also her ability to hope. Without hope and prayer, which are predicated on a belief in the future, a resignation to death settles in.



Nuland’s actions are heroic to Paul because they demonstrate his intense dedication to his patients. He is willing to go above and beyond what is standard for medical students in order to save the life of a patient, something that Paul believes all doctors should do.



Paul finishes the phase of medical school that focuses on textbook learning, moving on to getting practical experience as he is assigned to various hospitals and clinics. He quickly comes to realize that these two educations will be extremely different.



His first night in the hospital, Paul meets the resident he'd be working with, Melissa. Melissa tells him to keep an eye on a patient with preterm labor and twins who have only been developing for twenty-two and a half weeks. As Paul asks a nurse to explain a monitor that tracks Garcia's contractions and the fetal heart rates, she becomes worried at signals on the monitors and begins to prepare for surgery.

Paul figures out that something has gone wrong, and the twins' only shot at survival is an emergency C-section. The attending doctor cuts open the woman's stomach and uterus with a **scalpel**, and pulls out the two babies. They are rushed to the intensive care unit.

Melissa sews up the woman's wounds, and asks Paul if he'd like to place the last two stitches. Paul's hands shake as he does it, and his stitches are uneven. Melissa pulls out his stitches and redoes his work, demonstrating the proper technique.

Paul explains that the twins are considered to be on the edge of viability and that their organs are not quite ready to sustain life. Paul thinks to himself that he also feels unready for the responsibility of sustaining life.

The next night, Paul returns to work and helps with a more routine pregnancy. Melissa pushes Paul to the front of the action, and he helps deliver a baby for the first time. He realizes that learning to be a doctor in practice is a very different education from the one he acquired in classrooms and textbooks: knowing that one must use judgment when pulling on the head during birth is not the same as doing it. Pulling too hard would cause irreversible nerve injury, and he marvels at how the human brain has rendered reproduction such a dangerous task.

Paul informs the baby's family of the good news. Afterwards, he asks Melissa about the twins from the night before. She says that both babies had died during the day. Paul is at a loss for words, imagining the contrast between the family of the baby that had just been born and the reactions of the parents whose newborns had just passed away.

Paul's first two nights at the ob-gyn give him immediate experience with the two extremes of his job: life and death, and how there is no in-between. He sees the doctors work as hard as possible to ensure that the babies survive, even if their chances are grim.



The scalpel represents the paradox of surgery: in order to improve someone's (or in this case, the babies') health, they must first be cut open. This is true not only at the ob-gyn, but also in Paul's later surgeries.



Textbook knowledge does not prepare Paul for various skills he must practice, such as performing surgery and sewing up wounds. The remaining part of his medical school education will focus on gaining these crucial capabilities.



For the first time, Paul fully realizes his duties as a doctor. To him, the service he provides is not only a job but also a calling and a responsibility to support and care for human life to the best of his capabilities—a responsibility in which he must grow to be comfortable.



Even with routine pregnancies, Paul understands the magnitude of delivering a baby and the experienced hand it requires. The care with which Paul must deliver babies is not unlike the care with which he must operate on patients' brains later in his career. In both circumstances, Paul has a responsibility to be careful, or to risk doing irreparable damage.



The contrast between the two families' states represents the difference between success and failure for a doctor, and the life-changing consequences that their actions can have. At the same time, it demonstrates how senseless, random, and sometimes certain death can be. Even so, doctors still strive to ensure their patients' survival.



Paul asks Melissa if doing an emergency C-section was the right thing to do. She responds that if they hadn't, they probably would have died from a multitude of different complications because abnormal fetal heart tracings show up when something is going seriously wrong. When Paul asks how a doctor knows when the heart tracings look bad enough, she tells him it is a judgment call. Paul wonders how he could learn to make such calls.

Paul's ob-gyn rotation ends, and he is next placed in surgical oncology. A fellow med student named Mari is on the same rotation as Paul, and a few weeks into a grueling schedule she is assigned to a particularly complex operation during which she must stand still for up to nine hours straight. The surgeon begins by inserting a small camera to look for metastases, because widespread cancer renders the operation useless and causes its cancellation.

Standing by, Mari has a small thought, hoping for metastases so that the operation will be cancelled. The surgeons discover metastases and the procedure is called off. At first Mari is relieved, but when she leaves the OR she confesses her guilt to Paul.

Paul jumps to his fourth and final year of medical school. He watches as his classmates elect to specialize in less demanding areas in order to have jobs with more humane hours, higher salaries, and lower pressures. As graduation approaches, the students sit down to write a collective commencement oath, borrowing from the words of medical forefathers—a Yale tradition. He is shocked when several students express desire to remove language insisting that they place patients' interest above their own. Paul treats his work not as a job, but instead as a calling, and he refuses to see the language taken out.

Paul chooses neurosurgery as his specialty. This decision is cemented for him when he listens in on a pediatric neurosurgeon explaining to parents that their son has a large brain tumor. The neurosurgeon explains not only the clinical facts, but the "human facts" as well, providing guidance to the parents and making them able to face the operations and treatments that lay in their son's future.

Paul is also drawn to neurosurgery because of the brain's relationship to patients' sense of self, as every operation on the brain is a manipulation of one's identity. He poses questions about what makes life meaningful enough to live: "Would you trade your ability—or your mother's—to talk for a few extra months of mute life? Your right hand's function to stop seizures?"

Though Paul at first seems dubious about being able to make judgment calls about a patient's survival prospects and quality of life, throughout his career, as he gains more and more experience, he grows more and more accustomed to the idea and makes these calls frequently.



Mari represents another example of how doctors must be willing to take mental and physical beatings for their patients. The possibility of standing nine hours straight eventually becomes much of Paul's reality, as he frequently performs many complex and long operations during his neurosurgery residency.



Mari's mental strength slips in this moment, as she quietly hopes for a worse condition for the patient so as to avoid the surgery. When the surgery is cancelled, she realizes how shameful this hope was.



Unlike some of the other students in his class, Paul understands the essence of being a doctor for him. Physical, mental, and emotional strength are all required in order to be able to put patients' needs above their own. Paul loses some of his empathy over his career, but gradually refocuses it and works to be "with" patients in their most vulnerable moments instead of simply "at" those moments, as he says later.



It is striking that the first reason Paul gives for choosing neurosurgery stems not from the discipline itself, but rather from a doctor who provided advice and support in this family's most dire time of need, and his judgment in this guidance in providing clinical facts as well as "human facts."



Paul's attraction to neurosurgery also stems from his primary drive: to find what makes a meaningful life. But the questions he poses also serve as examples of judgment calls that he and his patients sometimes have to make before and during surgery.



Paul and Lucy marry just after they finish medical school, and then head to California to begin their residencies: Paul at Stanford; Lucy at UCSF. Paul's first year of residency is concerned mostly with paperwork, which is not without its challenges. Paul doesn't leave the hospital for the first two days, but he is able to quickly reduce mounds of paperwork.

Paul's paperwork, however, reveals fragments of patient's narratives, such as the story of an eight-year old named Matthew. Matthew has a tumor pressing against his hypothalamus, which regulates basic drives: sleep, thirst, hunger, and sex. Removing his tumor would avoid the cancer consuming his childhood, but would risk damaging his hypothalamus and rendering him a slave to his appetites. The surgery goes successfully.

Paul describes the first patient he loses—an eighty-two-year-old woman named Mrs. Harvey who is admitted for bowel obstruction. After a minor operation, Mrs. Harvey is doing fine, until Paul returns home to get some rest. Around midnight, Paul's phone rings—Mrs. Harvey is struggling for air, her heart is racing, and her blood pressure is collapsing. Paul rushes back to the hospital. That night he is the only general surgery intern on call, and his pager buzzes relentlessly. Paul feels as though he is drowning, and the next day, Mrs. Harvey dies.

Paul resolves to treat his paperwork as patients, and not the other way around. Paul describes a few other patients he loses: an alcoholic who bled to death, a pathologist, dying of pneumonia, and many, many cases of head trauma—suicides, gunshots, and car accidents. At times, Paul feels suffocated by the weight of stress and tragedy in the hospital.

In his second year of residency, Paul is the first to arrive in an emergency. The schedule takes its toll on him: he works as many as one hundred hours a week, even though regulations cap doctors' hours at eighty-eight. Not all residents are able to withstand the pressure. Paul describes a fellow resident who refuses to accept blame or responsibility for his mistakes, and Paul knows that this person will not survive a career in neurosurgery.

Paul admits that he also made mistakes. He comes to believe that saving only enough of a patient's brain to confine a person to life support for the rest of their time is a more egregious failure than if the patient were to die.

Though Paul and Lucy's relationship prior to his diagnosis is not explored very fully, later Lucy explains how deeply in love they were throughout the various stages of the relationship. Lucy becomes his biggest caretaker and advocate in the final years of his life, and helps Paul to determine his own values as well.



Paul's cases in residency begin to demonstrate the scientific relationship the brain has with identity. In Matthew's case, surgery could (and as the reader sees later, does) alter his life by damaging a part of his brain. Again, this represents a case of "judgment calls": that removing a tumor has a greater cost than the potential risk of surgery.



Even before Paul starts to work with patients directly, he sees the necessity of treating them with care rather than simply trying to complete their paperwork. The night that Mrs. Harvey begins to falter, Paul also sees the mental fortitude it requires to be a doctor. It is interesting that he uses the word "drowning," because it literally means a loss of breath, which relates to Paul's own death from lung cancer and lung failure (as well as the title of the book).



Paul again underscores how he will need to support his patients and have a strength of his own to get through the day. Using the word "suffocating," like drowning, is particularly significant in the context of Paul's own death.



Though Paul's days are spent doing important work, time continues to slip away from him in service of building a future career. The pressure of this schedule once again demonstrates the stamina required of doctors in order to make it through medical school and residency.



This perhaps represents the most difficult of judgment calls that doctors must make, and Paul must face it often. It returns to a question he asks earlier: what makes life meaningful enough to live? Paul will make this same call with his own life at the end of the memoir.



Paul worries that being so close to death only blinds him and dulls him to it. He tries to keep lightness in his job when he bonds with a fellow resident, Jeff. One day Jeff asks Paul for his prognosis on a patient's head trauma, and Paul jokes that he could only be a senator from a small state. From then on, state population becomes their barometer for the severity of head injuries.

Paul describes another instance in which he rushes to the trauma bay with an ice cream sandwich, which he sets down behind a computer. After he is unable to save the patient, he must return to the trauma bay while the patient's family says goodbye in order to save the ice cream sandwich before it melts all over the desk.

Paul hears that his friend, Laurie, has died in a fatal car crash. These words conjure up gory images for Paul, and he fears that he has become desensitized and unempathetic when dealing with patients. He worries he is losing sight of the importance of taking care of patients and their families emotionally as well as physically, knowing that the family's first conversation with a doctor can color how they view the death of their loved one. He realizes that "When there's no place for the **scalpel**, words are the surgeon's only tool."

Paul remarks that if he had been more religious in his youth, he might have become a pastor, and he renews his focus on being a more empathetic doctor. He makes an inner vow to earn patients' trust and guide them through their decisions, not just drily inform them of risks and benefits.

Paul draws a connection to his father, who brought comfort and levity to his own patients. For example, his father once told a patient that he would make sure she got lobster and steak before joking that it might look more like a turkey sandwich upon arrival. The easy human connections his father formed inspired Paul to do the same.

Paul describes the guidance he provides to a thirty-five-year-old woman who is rushed to the hospital after experiencing a seizure. He sees that she is terrified of the idea of brain surgery, even though he knows that her surgery would have little operative risk and would almost certainly eliminate her seizures. Instead of simply giving her all the possible risks, he gathers her family and calmly talks through her options. She chooses surgery, which goes successfully, and she never seizes again.

As Paul changes subjects, he begins to establish a shift in the way he treats patients. While Paul reveals how important it is to find a little bit of levity in the job, he comes to see his jokes with Jeff as making too much light of patients' conditions.



Paul provides another example of a lack of sympathy he exhibited. This anecdote demonstrates how, upon reflection, he was not fully emotionally supportive of patients and their families, instead trying to distance himself from tragedy.



The death of Paul's friend Laurie marks a turning point for Paul. Whereas before he attempted to separate himself from death, he knows that instead he must treat each patient with the care that he would treat a close friend. Though he always strived to provide the best care for patients in treatment and surgery, he sees that the way in which he speaks with patients can be just as important.



Paul makes his commitment to providing better emotional support for patients very clear. Putting his statement into a religious context also highlights the connection with the values of his Christian father, who he goes on to admire in the next few paragraphs.



Paul's father provides a good example for Paul in giving emotional support to patients. Whereas in his childhood Paul worried about being like his father (largely absent), he comes to see his father as a model physician in the way he treated patients.



Though Paul knows the risks of brain surgery, he also sees that it would likely have little negative effect on her life and would prevent her seizures. He exercises not only care but also judgment in gathering her family and speaking to her calmly, as he begins to gain experience in helping patients deal with difficult decisions.



Paul speaks about how brain diseases are often strange and somewhat incomprehensible to people. Often news of brain diseases is so shocking for patients that the brain suffers an electrical short. One of his patients, upon being diagnosed with brain cancer, falls suddenly into a coma. After a battery of inconclusive tests, Paul realizes that the patient is simply in shock—the cure for which is speaking reassuringly until the patient awakens.

Paul moves to the topic of brain cancer, describing its two varieties: primary cancers, which are born in the brain, and metastases, which come from another part of the body. Surgery usually prolongs life, but most people die within a year or two. Paul recounts a patient named Mrs. Lee, who has an aggressive brain cancer called glioblastoma. She obtains an MRI from her ER and is passed on to him because the doctors in the ER did not want to break the bad news to her.

Paul informs Mrs. Lee of her prognosis and of the surgery and treatments that she will undergo. Paul explains to the reader that detailed statistics are usually not explained to patients. One statistic, the Kaplan-Meier curve, measures the number of patients who survive over time. For glioblastoma, only five percent of patients are alive after two years. He reasons that doctors must be accurate but must also leave room for hope. A nuanced description, like “most patients live many months to a couple of years,” proves more helpful than giving a finite number of months someone will live.

Paul says that there is also a price to empathy and bearing responsibility for patients. In his third year, he runs into Jeff, and they note each other’s sadness. Paul explains that a patient of his—a child shot in the head for wearing the wrong shoes—had been so close to making it, but had ultimately died. Jeff remarks that he should always go to Paul when he’s feeling down about his work, in order to cheer himself up.

Even with the job’s hardships, Paul never questions the value of his work. Before operating on a patient’s brain, Paul knows that he must first understand the patient’s mind and what makes the person’s life worth living.

In the middle of residency, doctors train in additional fields. Paul chooses “the most rigorous and prestigious path”—that of a neurosurgeon-neuroscientist. He begins to work in a lab developing technology that would allow paralyzed people to mentally control a computer cursor or a robot arm.

Paul’s description of the brain’s own mechanisms for protecting itself from bad news shows another protective feature of the brain in trying to shield itself from tragedy, in the same way that some doctors protect themselves. However, this story highlights emotional support as an extremely important aspect of being a good doctor, as reassuring words literally lift a patient out of his coma.



Once again, Paul sees the potential harm in doctors trying to separate themselves from tragedy. In passing on the responsibility of breaking the bad news to Mrs. Lee, the doctors in the ER attempt to remove themselves from more death, but also delay her diagnosis and rob her of more of her valuable time.



The Kaplan-Meier curve serves as an example of the limits of pure science. Paul must use the tact of language in order to provide Mrs. Lee with room for hope. Verbal nuance is not only more accurate but also more compassionate here. This example demonstrates Paul’s emotional support of his patients and also his judgment in not providing her with too much specific statistical information.



This story foreshadows some of the hardships to come—not with Paul, but with Jeff. Both of them are faced with daily heartbreaks, but while Paul is able to move forward even in his sadness, Jeff becomes overwhelmed by the constant tragedies.



Paul’s hard work in identifying patient’s values allows him to make those difficult judgment calls during surgery in order to give patients a future that they would want to have.



Paul continues to develop his interest in science, even beyond becoming a neurosurgeon. His work in the lab not only tries to understand the brain but also works to restore certain functions that make people’s lives easier.



The head of the lab is a professor of electrical engineering and neurobiology and a fellow second-generation Indian affectionately called “V.” With V’s permission, Paul sets out to develop technology that could write signals into the brain (not just read signals from the brain), allowing the possibility for treatment of various neurological disorders.

Paul meets with V weekly and comes to respect him deeply for his avoidance of the politics and competition that plague many scientific careers. One day, V confesses that he has pancreatic cancer, which has a dismal prognosis. V asks Paul if his life has meaning and if Paul thinks he has made the right choices. Paul is shocked by these questions, because he believes V to be a “moral exemplar.”

V undergoes surgery, chemotherapy, and radiation treatments. They are successful, and V returns to work a year later, just as Paul returns to his clinical duties at the hospital. On his first day back, V confesses that this is the first day the suffering seems worth it. Paul thinks about how doctors so rarely understand the suffering of their patients.

Paul is now in his sixth year in neurosurgical residency, which he describes as a black hole for his time. His day begins at six A.M. and lasts until the operating is done, which depends on how quickly he operates. He describes the conflict between being precise and being fast as the race between the tortoise and the hare: take too long with precision, and nerves can be damaged, muscles can break down. Too fast, and work needs to be redone or mistakes are made.

The intense focus required in surgery, Paul says, makes the clock feel arbitrary—two hours can feel like a minute. He feels that time only restarts when the surgery is finished.

Now a chief resident, Paul acknowledges that responsibility rests primarily on his shoulders. Technical excellence, he says, is a moral requirement, because being one or two millimeters off can represent the difference between tragedy and triumph. This is clear when Matthew, the little boy with the brain tumor, is readmitted to the hospital. His hypothalamus had in fact been slightly damaged by his surgery. He never stops eating and throws violent fits. Eventually he is institutionalized, all because of one millimeter of damage.

Paul’s interest in science also proves his continued empathy. His search for meaning in his own life is furthered by providing others with meaning in theirs, demonstrating his deep compassion.



Though Paul doesn’t know it at the time, V will serve as a model for how Paul deals with his own illness: worrying about the lack of time, questioning whether his life has had meaning, and working to return to his career and further his work.



Paul’s own path is similar to V’s, as he undergoes treatment and returns to his work, trying to make his efforts to get well meaningful and provide him with more time. The irony in Paul’s statement, of course, is that he will very soon understand the suffering of his patients, and he will only grow more empathetic as a result.



Again, Paul emphasizes how much time is lost in building up potential for the future. Yet at the same time, he doesn’t question how meaningful the work is. As he goes on to explain, being technically precise is a moral imperative, because any mistakes can be detrimental to a patient’s life.



In surgery, time almost becomes irrelevant. This reinforces the idea that time is spent most meaningfully when one is fully engrossed in the present.



Part of what drew Paul to neuroscience is the brain’s relationship to identity and learning how to map that relationship. But he quickly understands that any mistakes he makes can alter patients’ lives, as with Matthew. Thus patients depend on him for his skill and experience in surgery as well as his guidance in treatment, and Paul feels the weight of that responsibility very tangibly.



Paul provides other examples in which his precision is crucial. One day, he is performing surgery on a patient with a Parkinson's tremor, and when they turn on an electrode, the patient becomes overwhelmingly sad. They reinsert the electrode two millimeters to the right, the tremor goes away, and the patient's mental health is undamaged. In another surgery, the attending doctor points to Paul's incision and tells him that if he had cut two millimeters deeper, the patient would be paralyzed except for the ability to blink—which had happened the third time he performed the surgery.

Paul tells the reader that certain parts of the brain are considered off-limits to surgery because the cost of damaging them is considered too great. These are primarily the regions that control language. If a patient has experienced destruction in these areas, surgeons are sometimes more hesitant to save the patient's life, as Paul questions what kind of life exists without language.

Paul describes a patient, Mr. Michaels, who experiences this kind of damage to his language centers. He is only able to speak in streams of numbers, though he is still able to emote. Paul is deeply saddened, as no one is able to understand the meaning of the numbers.

Surgeries that involve these language centers involve many precautions, and the patients are often awake and talking during the surgeries. Another of Paul's patients insists on having surgery to remove his tumor even though the board of doctors at the hospital advises against it because it is so close to his language centers. The patient swears through the entire surgery, and Paul realizes that the size and location of the tumor may have only left the patient with profanity, because profanity runs on a slightly different circuit from the rest of the brain than language.

Paul draws near the end of his residency, and he fields job interest from all over the country. He is satisfied that he has developed a coherent worldview for himself, and has a sense of his place in the world.

Paul's other examples again reinforce this dependency that his patients have on him and how he must earn their trust in order to operate. Mistakes in the cuts Paul makes in patient's brains can result in irreversible damage to mental or physical health. Here he also relies on the experience of the attending physician to prevent a catastrophic outcome.



This is one example in which science and language work together to make up human identity and experience. The brain's language centers are off-limits because the brain's language abilities are essential to forming human relationships, and doctors sometimes make judgment calls not to save patients if these abilities have been lost.



Mr. Michaels is an example of a patient who has lost these crucial language functions, and therefore loses the ability to form human connections. This connects to Paul's earlier question of what kind of life exists without language.



Paul continues to be intrigued by the connection between science and language as developed by the brain. Throughout the memoir, including here, Paul makes several off-handed comments, wondering if certain parts of the brain relate to other parts because of patient's experiences. It is this type of first-hand knowledge that enables neurosurgeons to be able to map the brain and form an idea of how it works.



At this point, Paul has built his potential and is beginning to envision what the rest of his life looks like. Of course, Paul uses dramatic irony here, as the reader understands that Paul will never fully realize that potential because of his lack of time.



Paul receives a phone call from his friend and co-resident, Victoria. She tells him that Jeff committed suicide the night before. One of his patients died after experiencing a difficult complication, and Jeff had then jumped off the roof of a building.

Paul finishes the first section of his memoir by revealing the death of his friend, demonstrating that the lives of doctors can be just as tragic without the mental strength needed to endure constant death around them.



Paul wishes that he could have spoken with Jeff and offered some comfort with what he had come to understand about being a doctor. Paul knows that death always wins out, but it is still valuable to struggle for one's patients.

While Jeff is lost, Paul embodies this strength as he works to provide physical and emotional care despite the fact that he knows fighting death is a losing battle—an idea that will be true as he fights his own death.



PART 2: CEASE NOT TILL DEATH

Paul's narration jumps forward to the day he is diagnosed with cancer, where the prologue left off. He and Lucy look at the CT scan images, which show that the tumors have invaded multiple organ systems. The prognosis is grim, and the two of them begin to cry. Lucy tells Paul she loves him; Paul tells her that he is afraid to die. He then begins to think of Lucy's future, and tells her to remarry.

Paul's first thoughts after his diagnosis immediately jump to what will be most valuable for him going forward: his remaining time (and lack of it), and ensuring that his wife has a good future. Lucy, for her own part, begins to take on her own role in providing Paul with the support that he showed so many others.



Paul's friend Victoria stops by his room, and the two discuss the scans and his treatments. She begins to talk about the logistics of Paul returning to residency, but Paul stops her, believing that he will never return to the hospital as a doctor.

Again, Paul has little hope in his future, believing he has very little time left. However, with the help of his oncologist, he is eventually able to return to residency in order to keep his life and his career going.



Paul's brother Jeevan arrives and tries to comfort Paul by telling him that he has already accomplished so much. Paul is upset by his words, knowing that so much of his life has been spent "building potential," and now that potential will be unfulfilled because his future has been taken from him.

The fact that Jeevan arrives so soon again identifies another value: family. In the absence of time, family itself becomes a value. Jeevan's statement, however, is less than comforting to Paul because so much of his life thus far had been building up to a future that would no longer exist.



That night, Paul briefly meets his oncologist, Emma Hayward, prior to a more official appointment the following week. Emma begins to step Paul through his treatment plan, which will depend on the results of certain lab results from Paul's tumor sample. Paul asks to know about the Kaplan-Meier survival curves for his type of cancer. Emma refuses to share the statistical details.

Paul is initially frustrated with Emma's treatment of him. Yet many of the things she does echo Paul's own thoughts on what makes a good physician, particularly refusing to give patients detailed statistical data. At this moment, however, Paul has not yet become accustomed to being a patient, and being taken care of.



Emma continues stepping through what Paul's treatment might look like and offers to discuss how Paul might be able to return to work. Paul is baffled by this offer, believing that returning to work was an impossibility given the severity of the tumors. He begins to wonder if he is wrong about his prognosis.

Even in their first conversation, Emma offers Paul hope and confidence in the idea of having a future, and she follows through in her work to set him back on his feet and forge a new chapter of his life.



Emma leaves, and Paul, Lucy and his family begin to search their network of medical colleagues for the best lung cancer oncologists. They quickly discover that Emma is not only one of the best oncologists for lung cancer but is also known for her deep compassion.

Paul at first does not trust Emma, but hearing confirmation that she not only has technical excellence but also immense empathy reassures him, demonstrating his own priorities in finding a doctor with these qualities.



Paul had grown noticeably weaker over the previous week, and basic functions like going to the bathroom become difficult for him. Paul marvels how less than a week earlier he had spent nearly thirty-six straight hours in the operating room. He worries that being released from work, and no longer bearing a sense of duty to his patients, will cause him to grow even weaker.

Prior to treatment, Paul's condition quickly deteriorates. This weakening also demonstrates that without a clear sense of one's values and future goals, life can quickly slip away. Paul, unsure of his identity because he can no longer practice medicine, worries that without motivation, he will quickly die.



Paul begins to do research on his cancer, but the sheer amount of information overwhelms him, and he feels he is unable to find information and statistics that are specific to himself.

The incomprehensibility of cancer statistics demonstrates that dry knowledge is not always helpful information. What he really seeks is nuanced language about his survival prospects.



Paul's family works to help Paul adjust to a new life, creating an account with a mail-order pharmacy, buying a new mattress for his back pain, and setting up financial safety nets for himself and Lucy. Paul's father believes that these modifications represent Paul's resignation to his disease. He believes that Paul will beat his cancer. Paul doesn't know what to say to his father.

Paul's family provides emotional and physical support for him as well; however, his father's confidence about the future also worries Paul because he isn't as certain about his survival. Facing death, Emma's ability to provide both treatment and hope becomes more valuable than false optimism and denial.



Paul and Lucy return to the hospital for his first official appointment with Emma. Emma explains the two likely treatment options: the first is chemotherapy, which targets rapidly dividing cells—not only cancer cells but also hair cells, intestines, and bone marrow. The second option involves newer therapies, targeting specific mutations in cancer cells, which can lead to long-term survival in some patients.

Like Paul had done with his own patients, Emma meets with Paul and his family to calmly discuss the different options. Like Paul's own patients, this allows him to see the way forward and make informed decisions about his treatment.



Emma explains that the results of the tests for a common mutation, EGFR, will come back the next day. If Paul has this mutation, he can take a pill called Tarceva instead of chemotherapy. If not, Emma sets up an appointment for chemotherapy on Monday just in case. Paul feels a kinship with Emma, saying that he also liked to have contingency plans during surgery.

Emma tells Paul that if he has to have chemotherapy, she will swap out one of the drugs because it is more toxic, and she wants to protect the nerves in his hands if he aims to return to neurosurgery. Paul begins to hope for the possibility of returning to work. He again asks about the Kaplan-Meier statistics, and she again refuses to tell him.

Paul explains one of the paradoxes of coming so close to death: before he was diagnosed, he knew that he would die, just not when—a circumstance that had not changed after his diagnosis. The difference is that Paul feels his impending death more acutely, but he says that there is no other way to live than having hope in the future.

Paul does a bit more research and discovers that having an EGFR mutation seems to add a year of life on average, with the potential for long-term survival. Not having this mutation suggests an 80 percent chance of death within two years.

The next day, Paul and Lucy visit the sperm bank to preserve options because the cancer drugs might affect Paul's sperm. The two had planned on having kids at the end of Paul's residency, but the uncertainty of Paul's future also creates uncertainty about whether they should have children.

Paul contemplates the idea of hope in a statistical context. He questions whether hope is merely represented by a section of the probability curve that is above average—leaving room for the possibility of a better than normal survival rate. He explains how difficult it is to give patients specific prognoses because what they're really looking for is existential comfort, which cannot be remedied by probability and statistics.

It is only when Paul understands Emma's different strategies to fight his lung cancer that he realizes how similar he and Emma are in their desire to provide both physical and emotional support in as many ways as possible.



Again, this highlights other similarities between Paul and Emma. Emma seeks to understand his priorities and chooses treatments accordingly. Paul still doesn't understand her withholding of statistical information, but she does so because (as he points out earlier) it can be potentially harmful to be specific rather than leaving room for hope.



Paul's situation has not only changed in that he knows "acutely" that he will die, but he also knows that he likely has less time than he did. Without specific information, however, he struggles with how to move forward, knowing that he must identify specific values and goals to pursue in what little time he has left.



Paul's own research, with its nuance ("adding a year of life on average") and its room for hope ("potential for long-term survival") becomes much more helpful than had Emma told him the detailed statistics, as Paul explained in the first section of the book.



With their visit to the sperm bank, Paul begins to identify one of his core values and one of the things that becomes most important to him in his last two years: having a daughter to carry on his life.



Paul comes to realize what Emma had known—and what he himself had known earlier in the memoir: that specific statistics are not actually helpful to patients. What is helpful instead is providing a frame of reference for patients' prognoses but still leaving room for hope—a compromise between science and language.



Paul and Lucy return home from the sperm bank and learn that he does have the treatable EGFR mutation. Chemotherapy is off, and Paul instead begins to take the Tarceva pill. He quickly begins to feel stronger and puts on weight.

As Paul had researched, taking Tarceva is a much better initial option than chemotherapy. Now armed with the idea that Tarceva adds time to his life, he begins to have confidence in the potential of a future.



At Paul and Emma's first appointment after his treatment begins, the two discuss Paul's future. Emma tells him that if he wants to return to surgery, he should be able to work back up to it. Paul says that it is hard to identify his values without knowing how much time he has left, saying that if he had two years, he would write. If he had ten, he'd return to surgery.

With this confidence in a potential future, Paul begins to hope for the ability to return to work with Emma's help. As before, working is a long-term value, predicated on the idea of a future. However, he is still unsure whether he has much of a future, and wonders whether he should focus on creating something—like this book—instead.



Paul becomes slightly frustrated that Emma is not giving him more of a sense of how long he might survive. But Paul also remembers instances in which his own predictions had been wrong, such as when he had counseled a family to withdraw life support for their son, only for them to return two years later with a video of him playing the piano and thanking Paul for saving his life.

Paul's frustration in Emma's lack of specifics continues, but each time he mentions it he seems to temper his annoyance by remembering that he would offer the same kind of advice and support, and had made mistakes of his own in his counsel. He is still becoming accustomed to the idea of being the patient rather than the doctor.



Paul and Lucy also start seeing a couple's therapist who specializes in cancer patients. The therapist tells them that they are doing better than any couple she's seen. Paul is pleased by this, but Lucy is not. She worries that if they are the best at handling their situation, their current state won't improve.

Paul and Lucy's visit demonstrates their commitment to each other and to being a family, and her commitment to support him through his cancer treatment. These factors give Paul the energy to continue treatment and give his life meaning.



Paul realizes that he is starting to see death as both a doctor and a patient. He uses his medical background to learn detailed information about stage IV lung cancer, which has emerging therapies that are providing years of life for the first time. At the same time, as a patient, he sees that he must understand what gives his own life meaning to be able to rebuild his life, or to forge a new path forward.

Paul's interest in science and wanting to find out how biology and identity allow him to understand his treatments and provide a roadmap for him in how to face his mortality. There is a tragic irony in the fact that someone so familiar with death and cancer falls victim to it himself, but Paul works just as hard to recover as he does to treat his patients.



The bulk of Paul's time is now spent in physical therapy. Paul's body at this point is frail, but he is determined to regain strength and stamina. Gradually, he works up to being able to go to restaurants with friends, and then to biking again.

With the love and support of his family, and with the dedication and treatment from Emma, Paul begins to regain some of his old abilities and strength.



The largest decision that looms over Paul is whether he and Lucy should have a child. Lucy feels that the choice should be Paul's, because he would be spending a majority of his remaining time as a new father. Paul worries about leaving Lucy both husbandless and childless, but he believes the choice should be hers because she would likely have to raise the child on her own. Lucy asks if having to say goodbye to a child would make Paul's death more painful, and Paul argues that life isn't about avoiding suffering.

Paul and Lucy agree to have a child. Because of the medications Paul is on, they decide to visit a specialist at a reproductive clinic. They create a few embryos using in vitro fertilization and implant the healthiest.

Six weeks after starting treatment, Paul has his first CT scan to measure any improvement against the cancer. The CT tech lets Paul glance at his images. Paul's lungs are almost completely clear of tumors. His cancer is stable, and he is relieved.

Emma concludes that Paul is well enough to meet every six weeks. That weekend, Paul looks forward to reconnecting with a few former Stanford neurosurgery graduates. Seeing his friend Victoria receive job offers, grants, and publications, however, only heightens the contrast between the success of his old life and the hardships of his new one.

Paul returns to reading literature. He reads works on mortality and memoirs of cancer patients in order to gain "a vocabulary with which to make sense of death." Struck by immense pain one morning, he begins to use the last seven words of Samuel Beckett's *The Unnamable* as a mantra: "I can't go on. I'll go on."

Paul pushes himself to return to the OR, refusing to give up his life and his career until he absolutely has to. He alters his physical therapy program to focus on building strength necessary for operating. Paul's next CT scan shows that his tumor has shrunk even more. Emma tells him that it is not out of the realm of possibility for Paul to live another ten years.

Paul is both excited at the prospect of another ten years, but also nervous about returning to the burden of neurosurgery. Yet Paul feels the weight of moral duty pushing him back to the operating room. He calls his program director to tell him he is ready to return.

Lucy's primary concern in having a child is time: how much time it would take of Paul's last few years? Paul's primary concern is the future: without him, how would motherhood work for Lucy? Ultimately, however, the choice comes down to the fact that a child would be a wonderful addition to the family, and would in a way allow Paul's life to go on after his death.



Even in the creation of a new life, death plays its part in the embryos that are not implanted—another way in which science has both costs and benefits.



The success of Paul's first treatment is a relief because it gives him more of his most valuable resource: time. This in turn allows him to spend more of that time on the things he values.



Once again, Paul realizes the cost of his disease on his life. Even without knowing how much time he has left, the inability to know whether he has a future career forces him to prioritize other pressing things, like having a family.



Paul turns away from science in this moment because he realizes that research can only get him so far. He wants to understand his disease through the experiences of others and make sense of his life and death through works that speak to mortality.



Even with more limited time, Paul understands that returning to surgery is something that is important to him—as he had said earlier, he had been working his whole life to pursue a career in neurosurgery.



Paul worries about the toll that surgery might take on his body, but feels compelled by alleviating the suffering of others, now armed with similar experiences as his patients as well.



Paul and Victoria discuss how best to reintroduce Paul to the daily routine. He would only do one case per day, and wouldn't manage patients outside the OR or be on call. Paul's first surgery back is a temporal lobectomy (an operation used to cure epilepsy), one of his favorite operations.

Paul pores over his textbooks the night before, reviewing the steps of the operation. He arrives at the hospital for the first time in five months. He begins the operation, feeling his muscle memory kicking in. After the first few steps of the surgery, Paul begins to feel faint. He goes to lie down, letting his junior resident finish the case. After lying down for twenty minutes, he realizes he was simply nervous.

Each successive day, Paul remembers more and more of his training. His strength improves, as does his fluidity and technique. After a month, he is taking on nearly a full load of operating. He admits, however, that operating has become joyless; he merely wants to restore his life to its prior trajectory. He comes home each night exhausted, sneaking into bed next to Lucy, who is now in the first trimester of her pregnancy.

At his next appointment with Emma, Paul confesses that he is disappointed that a surgeon-scientist position at Stanford had been filled when he was sick. He realizes he might have to give up on his interest in becoming a scientist because he lacks a long timeframe to complete projects. Emma reassures him that he is doing well given his circumstances.

Later that day, one of the professors at Stanford stops Paul in the hospital hallway. She tells him that some of the other professors are concerned about Paul graduating, because he is not performing the full load of a chief resident. In response, Paul starts to care for patients again and gets back to full speed. Though he still battles nausea, pain, and fatigue, he rediscovers meaning in his job by working with patients directly again.

Paul initially takes on a light load out of caution, but even returning for a single surgery is a major achievement for him. He is still helping patients, but without the added burden of taking care of them emotionally as well as physically.



Paul returns to his textbooks to go over the basics, but no textbook is a replacement for the years of experience that Paul has had in the operating room. However, remembering his responsibility and that his mistakes can be detrimental, his nerves overwhelm him.



Paul's experience allows him to return to full speed in surgery. However, his joylessness at regaining his prior path could be due to the fact that he has returned to an automatic way of life, instead of living in the present and appreciating time with his family and making an impact on patients by working with them directly.



Paul provides one of the other reasons why he begins to move away from science. Technology is moving at a rapid pace, but it is unlikely that he will have the time to complete long-term projects. He must still identify a path for himself within the time that he has.



Not only does caring for patients put Paul back on his prior path to graduating, but it also restores some of the joy that he had found in his job, as he had previously confirmed that caring for patients mentally as well as physically is a part of the job he considers equally as vital. Additionally, because of his cancer, he is uniquely equipped to speak to patients about their fears.



It strikes Paul that he has gone through the five stages of grief (Denial, Anger, Bargaining, Depression, and Acceptance)—only he has done it backwards. He had been ready to die, then depressed because of his lack of understanding when he might die. He begins to ask God why he couldn't have had an easier test of faith (somewhat in jest), but also has flashes of anger that he has worked his whole life to become a neurosurgeon, only to get cancer. Finally, he arrives at denial, considering, "Maybe, in the absence of any certainty. We should just assume that we're going to live a long time. Maybe that's the only way forward."

Paul continues to work towards graduation, only a few months away. His body is wearing out, and he takes daily doses of Tylenol and anti-inflammatory drugs called NSAIDs. He flies to Wisconsin for a job interview, but fears scenarios in which his cancer relapses two years down the line, forcing Lucy to care for a newborn and a dying husband away from family and friends.

Paul also worries that if he were to move to Wisconsin, he would be far from Emma, who has earned his deep trust and respect. He realizes one of the most important duties of a physician is not to delay death or to return patients to their old lives, but to make sure a patient (or their family) can work to forge a new life, as Emma has done for him.

A few weeks later, during Lent, Paul, Lucy, and his mother and father attend church together. Paul interprets the reading that day as a mocking of literalist readings of Scripture. This and other passages like it, Paul says, had brought him back to Christianity after he had become an "ironclad" atheist following college. Paul's primary argument against Christianity had been its lack of proof.

Paul had come to hope for a scientific framework to explain life, but Paul reasons that exclusively scientific structures do not allow for clear accounts of love, hate, or meaning. Paul believes these concepts are undeniably woven into the world as humans know it but are relatively inexplicable by science. Paul also explains that science is ultimately a human construct, and therefore cannot reach some permanent truth, nor can it account for the fullness of human experience.

This is the first time in which Paul directly expresses anger and frustration with getting cancer. But as Lucy says in the epilogue, even though Paul wasn't able to make more of a contribution to neurosurgery and neuroscience, this book became a different way for him to help others. Additionally here, Paul acknowledges the paradox of time—that though the most meaningful moments occur in the present, one must always have faith in a future.



Paul reiterates his concern for Lucy in the event of a relapse of his illness and his death: he wants his family to be able to have a future, even if it will be without him. Even when his treatment is working, Paul's mortality and lack of time loom on the horizon.



Paul also reveals his concern about being away from Emma, who has at this point earned his admiration. Like he does with his own patients, Emma provided him both physical and emotional comfort, allowing him to identify his values and (literally) open a new chapter of his life.



Even though Paul at times had felt removed from Christianity, his family's deep faith had initiated his relationship with God and religion and given him those values. Now, in his final months of life, he finds those values and the various interpretations of the readings comforting.



Paul does not necessarily posit religion against science; instead, he sees these two ideas as means of understanding different aspects of the world. Certain concepts can be explained by textbook scientific principles, but human emotions and networks are largely understood only through experiencing them.



Paul had thus returned to what he believes are the central values of Christianity (sacrifice, redemption, forgiveness) because he found them compelling. The Old Testament argues for justice; the New Testament argues for mercy. Paul believes Jesus's message is that mercy wins out over justice, and that the meaning of original sin is that humans know how to be good, but they can't always live up to that standard.

Paul's musings ultimately come to these conclusions: no one person can say anything definitive about God, and no one person can find Truth. Human knowledge grows from the relationships humans create with one another and the world, and even then, it is still never complete.

Seven months after Paul returns to surgery, he takes another CT scan—his last before finishing residency and becoming a father. The CT tech once again offers Paul a look at his scan, but he declines, as he has a lot of work to do at the hospital. Two hours later Paul sits down in the neurosurgery office and looks at patients' scans for the next day. Finally, he types his own name into the database. His scans show a new tumor growing in his lungs.

Paul returns home to tell Lucy about the cancer growth. It is Thursday night, and he wouldn't have another appointment with Emma until Monday, so the two of them map out the next steps of his treatment. It is likely he will have to undergo chemotherapy.

Paul sets his worry aside for one more day—his last day as a neurosurgeon. He arrives at the hospital and makes his usual rounds. He spends a few minutes with a patient, Mr. R, who has a rare syndrome called Gerstmann's that alters his ability to write, to do arithmetic, and to tell left from right. Mr. R is getting better, Paul says, and will likely make a full recovery.

Paul prepares for his last surgery case, in which he will remove bony overgrowths from a patient's spine. He wants the case to be perfect. At first everything goes smoothly, but the attending doctor accidentally tears a hole in the patient's dura, which contains spinal fluid. The fluid fills the wound and the surgery takes another hour to complete. Paul sews up the wound, frustrated, but he finds some solace in the fact that the stitches come together so well at the end. A nurse with whom Paul has not worked before asks him if he has any more cases that day. He says no, and she comments that it's a happy ending.

This interpretation rings true for Paul as well as his father in different ways: his father knew how to be a good father, but sometimes sacrificed his time to his patients instead of his family. Before Paul's diagnosis, he did the same thing. Paul also knew how to be an emotionally invested doctor, but initially separated himself from patient's lives to avoid their sadness and suffering before realizing how important it was to connect with them personally.



Here Paul offers his own argument as to why experience is often more valuable than textbook knowledge: it arises from humans' relationships with each other and the world, rather than simply constituting dry facts.



Paul's relapse comes at a particularly unexpected time—just as he is about to graduate and has returned to his full neurosurgery load at the hospital. Presenting the narrative in this way allows Paul to craft an argument that as soon as he feels comfortable in his future, it is taken away from him yet again.



Once again, Lucy becomes just as important in providing Paul with support, whether through research about his next steps or simply through comfort as he faces his mortality for a second time.



Paul's last day as a neurosurgeon is full of reminders of what drew him to the practice in the first place. Mr. R represents a case of intersection between biology, language, and identity, as he has specific deficits from a brain irregularity.



Paul finishes his time as a neurosurgeon in the operating room. In the first part of the memoir, Paul mentions that being in the operating room makes the clock feel irrelevant, and during this surgery Paul knows that he must take advantage of the experience, as he may never operate again. Even though the surgery doesn't go smoothly, it allows Paul one final chance to treat a patient—something he had worked nearly his entire life to do.



Paul gathers his things from the hospital but leaves his textbooks behind. He gets into his car and begins to cry. He drives home, and later that night he calls Victoria to tell her that he wouldn't be coming in to the hospital on Monday, or possibly ever again.

Paul and Lucy go to Emma's office on Monday. She says that they will look for more mutations in the tumor, otherwise Paul will have to go to chemotherapy. Paul tells her he is taking leave from neurosurgery. She accepts this decision but assures him that this tumor is only a bump in the road.

No targetable mutations are found, and so chemotherapy becomes Paul's only option. Paul asks Emma about the different chemotherapy agents and their side effects, asking to include a particular agent called Avastin. Emma agrees with his request, but she also tells him that while she's happy to make his medical plan together, he can also just let her be the doctor and release himself from the responsibility of his own medical care.

Paul, Lucy, and Paul's mother go to the infusion center together for Paul's chemotherapy, to which he would return every three weeks. The next day, he feels its effects. He becomes extremely tired, and all food begins to taste like pure salt. Over the next few weeks, he goes in and out of the hospital due to minor complications, which are just enough to prevent him from returning to work.

This cycle continues until the day of Paul's graduation. As he is dressing, he is struck by a wave of nausea, and he begins vomiting green bile uncontrollably. He is rushed to the hospital.

Paul and the resident, Brad, discuss his medical history and medications. That evening, the nurse reviews his medication list, and he is confused to discover that Tarceva, which he had continued to take, is not on it. Brad returns later that night, saying that he is taking Paul off of Tarceva. After arguing about why he needs Tarceva, Paul realizes that Brad doesn't want to give him the medication because it would involve revealing his error to Emma. Paul demands that he order the medication. When morning arrives, Paul discovers that the medication had not been ordered. Emma stops by his room and apologizes for the mix-up, and tells Paul that she will be heading out of town for a week.

Paul's textbooks here represent two things: that his experience has surpassed his need for those textbooks, but also that he has a desire to leave something behind to improve the lives of others.



Once again, Paul begins to lose hope in his future, while Emma maintains that this is not the end for Paul. She will continue to support him through either immunotherapy or chemotherapy treatments.



There is still one element of Paul's treatment that he has not completely left to Emma: Paul still does immense amounts of research to try to become an expert in his own care, demonstrating the mental burden that he is placing on himself. Emma recognizes this burden and tells him that he can simply let her be the doctor.



Paul's family works to care for him through his second round of treatments. Lucy and his mother demonstrate how family becomes not only one of the most important values for Paul but also his support system. Chemotherapy is also another example of science necessitating cures that have both costs and benefits to health.



Paul's cancer robs him not only of time in the future, but also experiences in the present for which he has worked years to achieve.



This experience with the resident echoes one of Paul's earlier experiences in his second year of residency with a fellow resident who is unable to admit his mistakes. Whereas before Paul had seen how the person would not have a long career as a resident, as a patient Paul feels the effects firsthand of a doctor who cares less about the patient's condition than he does about his own reputation. This is in contrast with Emma, who works diligently to make sure that Paul receives the medication that he needs.



Over the course of the day, Paul's condition rapidly deteriorates. He becomes severely dehydrated and is transferred to the intensive care unit. Part of his soft palate and pharynx dies and peels out of his mouth. He is in severe pain and comes in and out of consciousness. Lucy, thirty-eight weeks pregnant, moves into his old call room to be close to him at night. Many different types of doctors are involved in Paul's care, but they often disagree on what should be done to treat him. He tries to advise them as best he can, but he begins losing track of events and time.

Emma returns and informs Paul that he's been in the intensive care unit for over a week, but that he's getting better. Paul expresses that it might be a good idea for him to just be the patient, and for her to be the doctor, as she had offered before he started chemotherapy. He finds comfort in relinquishing this responsibility and quotes a passage from *The Waste Land* that describes a boat being controlled by an expert hand.

Paul is discharged from the hospital, and two days later, Lucy has her first contractions. She stays home while Paul's mother drives him to a follow-up appointment with Emma. Emma comments that his disease looks stable, and says that Paul can't restart any treatment until he regained some strength. Paul worries about his future treatments because Tarceva and chemotherapy had both failed him. Emma tells him he has five good years left.

On the way home from the hospital, Lucy's mom calls to say that Lucy has gone into labor. Paul and his mother turn back. Paul lies down on a cot in the delivery room as their daughter, Cady, is born. Paul holds her, and in this newborn he sees the possibility of new life, which he describes as "a blank page on which I would go on."

Over the next few days and weeks, Cady experiences a series of firsts: a first grasp, smile, and laugh. Paul, on the other hand, has less and less energy, and he feels the days are very short because he moves so slowly through them.

Paul struggles with how to think about the future, because he had always been so future-oriented. Now, he says, he doesn't even know what verb tense to use when describing himself.

Particularly after Brad refuses to admit his mistakes, Paul feels the need to make sure that he gets the proper care in Emma's absence. This puts a huge burden on himself and on Lucy as they try to sort out the best way forward. Paul does not make it clear whether the lack of Tarceva causes this rapid deterioration, but if that were the case, the lack of empathy from this particular resident had near-fatal consequences.



*When Emma returns, Paul agrees that he shouldn't try to be responsible for his own care. In taking charge, Emma relieves him of a huge mental weight. Additionally, Paul's quotation of *The Waste Land* reinforces his ties to literature as a means of making sense of his disease and his situation.*



Emma finally gives him a more definitive answer on how much time Paul has left (though Paul's actual remaining time is about one year, not five). This conclusive statement prompts Paul to really focus on the things that matter in the final months of his life: his family, his daughter (who is about to be born), and his book.



Though Paul never talks about his legacy explicitly, the reference to "a blank page" shows the value he places on having something that will carry him into the future in some way. Here he is referring to his daughter, but the reader can also see a metaphorical reference to his book as well.



Underscored by the knowledge that Paul doesn't have very much time left with his daughter, the days begin to feel very short as Paul loses more and more energy because of his disease.



Paul's uncertainty about language in this moment echoes his uncertainty about his life, because he is even unable to know what verb tense most accurately describes himself.



Paul's final words in the memoir express hope that Cady will have some memory of him. She is all future, he says, while his life essentially belongs to the past. He relays one final message for her: when she must evaluate her own meaning to the world, she should not discount the fact that she has given him the greatest joy of his life.

The last passage Paul writes highlights what Paul has found most meaningful in his final days: the joy given to him by his newborn daughter, and knowing that she will continue on into the future long after he is gone.



EPILOGUE

Lucy takes over the narration, opening with the circumstances of Paul's death: surrounded by family, in a bed a short distance away from the labor and delivery ward where Cady had been born eight months earlier.

Taking over the narration, Lucy reveals what readers knew all along: that Paul's death was imminent. But she emphasizes that in the end, time with family became one of Paul's most important values.



Lucy jumps back in time to describe Paul's deterioration. Around Cady's first Christmas, when she is five months old, Paul's third treatment option stops working. His strength begins to wane, and Lucy describes the joyful moments they experience even under the circumstances: they host cozy dinner parties, hold each other, and enjoy watching Cady grow. Lucy writes that Paul becomes singularly focused on finishing his book.

Lucy's description of Paul's final months reveals how Paul takes advantage of his present and searches for a purpose after he can no longer perform surgery. He becomes focused on the two things that preserve his legacy: caring for his daughter and watching her grow, and ensuring that he will become a writer, as he had always hoped.



By the spring, Paul needs supplemental oxygen to make his **breathing** comfortable. The cancer infiltrates Paul's brain. The prospect of neurological decline hits him hard, as he fears losing agency and meaning. Lucy and Paul strategize with Emma about how to preserve his mental acuity as long as possible. Looking back, Lucy comments that she had envisioned his funeral in a few weeks, not knowing that he actually had days to live.

Paul faces more and more limited time and he continues to focus on present experiences. At the same time, he becomes more and more ready to die, particularly in the event that he loses mental acuity and his time no longer becomes meaningful. He relies on Lucy and Emma to support him but also to show their judgment in the event that death is preferable to an existence tied to life support.



Lucy describes Paul's final Saturday. The family sits in their living room, holding Cady on his lap, Paul's mother and father sitting nearby. Paul asks not to see nonfamily visitors, and isn't able to work on the book, knowing that he would be unlikely to finish the manuscript.

In his final days, Paul even relinquishes his efforts to work on his book because he knows that it is likely someone else will have to carry on that task anyway. Instead, he makes the most of the present with his family and his daughter.



To prepare for his clinical trial, Lucy must videotape Paul doing the same task every day to track any decline in his speech. Paul opts to read *The Waste Land*. His family laughs when Paul puts the book on his lap and recites the poem from memory.

*Even just before death, Paul still clings to reading literature as a cherished pastime, choosing to read from *The Waste Land* as the task by which he will track his illness.*



The next day, Paul has a severe 104-degree fever. Paul, Lucy, Paul's father, and Paul's brother Suman return from the emergency room within a few hours. Lucy watches him sleep and begins to cry, knowing that she does not have much time with him left.

That evening, Paul's condition worsens abruptly, and he struggles to **breathe**. Lucy calls an ambulance, and Paul tells her that this may be how his life ends. They place a mask on his nose to help his breathing with a BiPAP machine. Paul's blood carbon dioxide level is critically high, indicating that the work of breathing is overwhelming his lungs, which have been weakened by the cancer.

That evening, Paul consults with physicians about the steps forward. The critical-care attending doctor tells Paul that BiPAP is only a temporary solution; the only remaining intervention is for Paul to be put on a ventilator. Paul is concerned that he would remain too sick to ever come off of the ventilator, and that he would be lost to delirium, then organ failure.

Paul thinks about the alternative: choosing "comfort care," even though death would be more certain and would come more quickly. His mother asks him not to make any decisions until everyone has had a night to sleep on it. In the morning Paul reiterates that comfort care may be the best option. He expresses a desire to go home, but Lucy worries that he might die while being driven home. Paul then asks for Cady to be brought to his room.

Cady arrives and is nestled next to Paul. Paul's medical team discusses his respiratory failure with Lucy outside. Paul's condition is declining, and he must be intubated quickly in order to prevent death. Lucy tells them that if he doesn't have a chance of meaningful time, he wants to take the BiPAP mask off and hold his daughter.

Lucy returns to Paul's bedside. He tells her "I'm ready,"—to take the mask off, to start morphine, and to die, she explains. The family gathers to express their love and respect. Paul conveys his gratitude to his mother and father. He asks that his manuscript be published in some form. He tells Lucy he loves her for a final time. The attending physician affirms Paul's bravery. Lucy climbs into Paul's hospital bed and thinks of other beds they had shared.

Over the two years of Paul's diagnosis, Lucy also comes to realize that she must take advantage of the present with Paul, and she works hard to keep his spirits up during the time she has with him.



Paul continues to try and fight for his life, but knows that his time is limited and starts to see that machines are doing much of the work of breathing for him. He knows that he has received a lot of support in the past, and begins to come to a place of acceptance with his death.



Just as Paul had made judgment calls with his own patients throughout his neurosurgery career, he begins to come to a judgment call about the remainder of his life, believing that a life confined to a ventilator before slowly dying is not one worth living.



Before Paul makes the final decision to die, Paul chooses to spend one more day with family in the comfort of his own home, which Lucy tries to recreate by bringing Cady to him. As Paul had written in his section of the memoir, the joy that his daughter brings him is enough to make his time feel meaningful.



Lucy also understands Paul's priorities, and knows that if he loses consciousness, she will have to make a judgment call for Paul as well, understanding his priorities and knowing that if there is no hope of "meaningful time," he would rather die.



Paul's final hours are spent with the things he most values: his family, his wife, and his daughter. He reaffirms his desire for his words to carry on his legacy by asking Lucy to make sure his book is published. And finally, the attending doctor provides one more instance of emotional support, in telling Paul that in his death lies bravery, and that his family will be able to go on.



An hour later, Paul's BiPAP machine and monitors are turned off, and morphine drips steadily through his IV. His breath is shallow, and he slips into unconsciousness. For nine hours, Paul's family—his mother, father, Suman, Jeevan, Cady, and Lucy—sit vigil as Paul's breathing becomes increasingly effortful. More family arrives, and then their pastor.

Lucy and Paul's family continue to support him, even in the final hours of his life. Their pastor's arrival also confirms that Paul's family had been crucial in giving him his Christian values, but that spending time with his family had also become one of his most important values.



As the day comes to a close, a family friend arrives to take Cady home for the night. Lucy holds Cady against Paul, knowing that Cady doesn't understand that this moment is a farewell. As the room darkens, Paul's breathing becomes faltering and irregular. Just before nine o'clock, he inhales and exhales "one last, deep, final **breath**."

As Lucy says later, Paul's death is tragic, but he was not a tragedy: his life was spent helping patients as they faced life-altering and life-shattering diseases, building a family, and giving others comfort in his words as he faced death with grace.



Lucy tells the reader that *When Breath Becomes Air* is in a sense, unfinished, because Paul was not able to complete the manuscript. But she also recounts how tirelessly Paul wrote in the final months of his life, starting from when he was still a neurosurgery chief. She describes how when Paul's fingertips developed painful fissures, he acquired gloves that allowed him to continue, and how retaining mental focus was Paul's top priority. Lucy says that Paul's main motivation in writing the book was to help people understand death and face their mortality.

Lucy's explanation of the book makes it clear that there is a lot about Paul's life and experiences that went unwritten because he ran out of time, but that Paul spent so much of his remaining time working on it because he wanted to make sure not only that he relayed his life story but also gave advice to those who might be going through a similar experience. Thus he would still comfort many patients even after his death.



Lucy confesses that many of their friends and family will have been unaware of her and Paul's marital trouble before reading the book. She is glad he included it, however, because it shows the strength they had in overcoming this strain and in facing Paul's cancer together.

Just as Paul does not gloss over his faults and mistakes, Lucy refuses to cut out the tense part of their relationship. She knows that in the end, both she and Paul were able to overcome hardships to reaffirm their commitment to each other and their family.



Lucy explains that Paul was committed to ensuring a meaningful future for her, and that she in turn worked to ensure that Paul's remaining time was worthwhile, managing his medical care, listening to his fears, and ensuring he never felt alone. A few weeks before his death, Lucy asked whether Paul could **breathe** okay with her head on his chest, to which he responded that it is the only way he knows how to breathe.

Lucy also demonstrates the ways in which she supported Paul as much as any doctor (especially as a doctor herself). She knew that as much as she could take care of him physically and mentally at home would have just as great a benefit to his overall health.



Lucy writes that Paul's voice in *When Breath Becomes Air* seems somewhat solitary. She feels the book misses the love and warmth around him, and the humor he possessed. But she admits that the Paul she misses the most is the man he was in his last year, writing this book: "frail but never weak."

Lucy's description of Paul and her epilogue express how loved and supported Paul really was. In many ways, his strength in the face of death can be attributed to the many sources of support he received from friends, family, and doctors.



Lucy knows that Paul was and would have been proud of the book, which was a culmination of his love for literature and a way of weaving a powerful story about living with death from his own life.

Paul is buried in a willow casket at the edge of a field in the Santa Cruz Mountains. He had been unattached to the fate of his body after death, and left it to Lucy to make those decisions. Lucy says that she chose his grave site because of its ruggedness and honor, its attachment to nature, and its beauty.

Lucy visits Paul's grave often, pouring wine out on the grass for Paul, and rubbing the grass as if it were his hair. She describes how surprised she has been that she continues to feel the same love and gratitude towards Paul even alongside her sorrow. Her love for him continues in publishing his book and in caring for Cady.

Lucy knows that had Paul lived, he would have made great contributions to the fields of neurosurgery and neuroscience. Instead, she explains, this book is a new way for him to help others, a contribution only he could make.

Two days after Paul's death, Lucy writes a journal entry addressed to Cady. She writes that "When someone dies, people tend to say great things about him." She knows that the things others are saying about Paul are true—that he was that good and that brave. He wondered about death and whether he could face it with integrity. She confirms, as his wife and his witness, that he did face death with integrity.

Lucy affirms once again Paul's love of literature, particularly in the final stage of his life, and his desire to give his own words a longevity he did not have.



Paul's burial site ties back into his experience at the camp he attended his sophomore year of college. The real-life experience of nature reaffirmed his own presence in the world, and Lucy chooses a burial site to give him that experience again.



Lucy describes her efforts to carry on Paul's in shepherding his manuscript and in raising their daughter. Describing the grass as Paul's hair may be another homage to Walt Whitman, who wrote that grass seemed to him to be "the uncut hair of graves."



Lucy describes a final time how in the absence of a legacy Paul could leave in the field of neurosurgery, he instead left a legacy of words through this memoir, to allow others some comfort in facing their own deaths.



After Paul's death, Lucy continues to show her support for him. Without her, Paul's legacy would be virtually nonexistent, as she shepherded his manuscript into fruition and raised his daughter. Even though their story began from a place of strain, it ends with the confirmation of the value of family, and how it allowed Paul to accomplish some of his goals and face death knowing that his life had had meaning.





HOW TO CITE

To cite this LitChart:

MLA

Emanuel, Lizzy. "When Breath Becomes Air." *LitCharts*. LitCharts LLC, 27 Apr 2018. Web. 21 Apr 2020.

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Emanuel, Lizzy. "When Breath Becomes Air." LitCharts LLC, April 27, 2018. Retrieved April 21, 2020. <https://www.litcharts.com/lit/when-breath-becomes-air>.

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MLA

Kalanithi, Paul. *When Breath Becomes Air*. Vintage. 2017.

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Kalanithi, Paul. *When Breath Becomes Air*. New York: Vintage. 2017.