

“A suppuration of blood” From The Emperor of All Maladies: A Biography of Cancer (Excerpt)

By Siddhartha Mukherjee

Physicians of the Utmost Fame
Were called at once; but when they came
They answered, as they took their Fees,
“There is no Cure for this Disease.”
—Hilaire Belloc

Its palliation is a daily task, its cure
a fervent hope.
—William Castle,
describing leukemia in 1950

In a damp fourteen-by-twenty-foot laboratory in Boston on a December morning in 1947, a man named Sidney Farber waited impatiently for the arrival of a parcel from New York. The “laboratory” was little more than a chemist’s closet, a poorly ventilated room buried in a half-basement of the Children’s Hospital, almost thrust into its back alley. A few hundred feet away, the hospital’s medical wards were slowly thrumming to work. Children in white smocks moved restlessly on small wrought-iron cots. Doctors and nurses shuttled busily between the rooms, checking charts, writing orders, and dispensing medicines. But Farber’s lab was listless and empty, a bare warren of chemicals and glass jars connected to the main hospital through a series of corridors.

The sharp stench of embalming formalin wafted through the air. There were no patients in the rooms here, just the bodies and tissues of patients brought down through the tunnels for autopsies and examinations.

Farber was a pathologist. His job involved dissecting specimens, performing autopsies, identifying cells, and diagnosing diseases, but

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never treating patients. Farber's specialty was pediatric pathology, the study of children's diseases. He had spent nearly twenty years in these subterranean rooms staring obsessively down his microscope and climbing through the academic ranks to become chief of pathology at Children's. But for Farber, pathology was becoming a disjunctive form of medicine, a discipline more preoccupied with the dead than the living. Farber now felt impatient watching illness from its sidelines, never touching or treating a live patient. He was tired of tissues and cells. He felt trapped, embalmed in his own glassy cabinet.

And so, Farber had decided to make a drastic professional switch. Instead of squinting at inert specimens under his lens, he would try to leap into the life of the clinics upstairs—from the microscopic world that he knew so well into the magnified real world of patients and illnesses. He would try to use the knowledge he had gathered from his pathological specimens to devise new therapeutic interventions.

The parcel from New York contained a few vials of a yellow crystalline chemical named aminopterin. It had been shipped to his laboratory in Boston on the slim hope that it might halt the growth of leukemia in children. Had Farber asked any of the pediatricians circulating in the wards above him about the likelihood of developing an antileukemic drug, they would have advised him not to bother trying. Childhood leukemia had fascinated, confused, and frustrated doctors for more than a century. The disease had been analyzed, classified, subclassified, and subdivided meticulously; in the musty, leatherbound books on the library shelves at Children's—Anderson's *Pathology* or Boyd's *Pathology of Internal Diseases*—page upon page was plastered with images of leukemia cells and appended with elaborate taxonomies to describe the cells.

Yet all this knowledge only amplified the sense of medical helplessness.

The disease had turned into an object of empty fascination—a wax museum doll—studied and

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photographed in exquisite detail but without any therapeutic or practical advances. “It gave physicians plenty to wrangle over at medical meetings,” an oncologist recalled, “but it did not help their patients at all.”

A patient with acute leukemia was brought to the hospital in a flurry of excitement, discussed on medical rounds with professional grandiosity, and then, as a medical magazine drily noted, “diagnosed, transfused—and sent home to die.”

Source: Mukherjee, S. (2010). *The emperor of all maladies: A biography of cancer*. New York, NY: Scribner.

**[FOR TEACHER
REFERENCE ONLY]**

SAMPLE THINK-ALOUD

Lesson 2. Noticing the Conversation:
Thinking Aloud

If you choose to do this think-aloud, we recommend that you follow the same steps that we suggest in Chapter 2, Lesson 2 (page 22). We demonstrate one way to do so in the think-aloud model for the “Blood, Toil, Tears and Sweat” speech by Winston Churchill, also available on the companion website.

- Provide each student with a print copy of the text provided above. It's most effective if you provide a two-column worksheet, with the text on the left so that students can write in the right-hand column what they notice and think.
- Begin by modeling the think-aloud. Please note that the modeling phase of the think-aloud should be done only until students are ready to be mentored into the think-aloud process by participating in the think-aloud and by articulating and making meaning with the rules.
- As you read and think out loud, have students underline the text details that you notice and record why you notice each feature, naming what rule of notice is in play. Please note our think-aloud is provided as a generative model to guide you in creating your own think-aloud on this or other texts.
- Have one student update an anchor chart of the specific examples of each rule of notice that comes up.
- Invite students to participate in the think-aloud, stopping often to ask questions or pausing to see how students will participate.

“A suppuration of blood” From *The Emperor of All Maladies: A Biography of Cancer* (Excerpt)

By Siddhartha Mukherjee

*OK, I know I need to notice titles. That's a call to attention. And the title to this first chapter of the book *The Emperor of All Maladies: A Biography of Cancer* is a weird one. First, not all the words are capitalized, and second, it's in quotes. Quotes are a call to attention. Whenever I see unexpected things, I know I'm supposed to pay attention. That's a rupture. The quotes say that the phrase isn't the author's words. And what the heck is a suppuration? Sounds like an old-fashioned word. Is it a technical one, like for medical doctors? I know that important conceptual words need to be noticed as they are*

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SAMPLE THINK-ALOUD

(CONT.)

a call to attention. I wonder whether this is a conversation between medical people, or between the old and the new.

Physicians of the Utmost Fame
Were called at once; but when they came
They answered, as they took their Fees,
“There is no Cure for this Disease.”

—Hilaire Belloc

Its palliation is a daily task, its cure a fervent hope.

—William Castle, describing leukemia in 1950

Quotes like these at the beginning of a text from other sources are called epigraphs. They are also a call to attention because we have to notice the introductions of texts. Epigraphs are a great way to get an idea of what the whole chapter or book is about. These two have the same unexpected occurrence, which I think of as a rupture. We also have the call to attention of the repetition since both quotes make a comment on the same issue—about cancer or about leukemia as a kind of cancer. We expect doctors to cure people, but these quotes say that they can't. I'm thinking about another conversation then. The author might be putting what he's going to say about cancer into conversation with what we typically think of as what doctors do. Treating cancer must be really different.

In a damp fourteen-by-twenty-foot laboratory in Boston on a December morning in 1947, a man named Sidney Farber waited impatiently for the arrival of a parcel from New York. The “laboratory”

More quotation marks to notice. It's a call to attention, and I think the quotes must mean that this is not really a laboratory. I'm thinking again that the conversation of this chapter is between what's true of cancer and what we usually think is true of medical treatment and scientific research.

was little more than a chemist's closet, a poorly ventilated room buried in a half-basement of the Children's Hospital, almost thrust into its back alley. A few hundred feet away, the hospital's medical wards were slowly thrumming to work. Children in white smocks moved restlessly on small wrought-iron cots. Doctors and nurses shuttled busily between the rooms, checking charts, writing orders, and dispensing medicines. But Farber's lab was listless and empty, a bare warren of chemicals and glass jars connected to the main hospital through a series of corridors.

Rupture here: the busy-ness of the ward versus the quiet.

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SAMPLE THINK-ALOUD (CONT.)

The sharp stench of embalming formalin wafted through the air. There were no patients in the rooms here, just the bodies and tissues of patients brought down through the tunnels for autopsies and examinations.

I think this is calling for an emotional reaction. That's the rule of the reader's response.

Farber was a pathologist.

The short sentence is a rupture among the longer sentences. This is going to be important—I'm betting the topic of this text is about the quest to create some kind of cure.

His job involved dissecting specimens, performing autopsies, identifying cells, and diagnosing diseases, but never treating patients.

I wonder why he's spending so much time with these descriptions. When authors spend more time on something than what you'd expect, it's a call to attention. Let's see what that could be telling me about what the conversation is about. There's lots of people mentioned. Maybe something like this book will tell the story of cancer through people. I don't always expect science books to focus so much on people as this one is doing. Another rupture is that this guy's a pathologist. That's somebody who studies diseases. He doesn't treat patients. Hmm. Wonder why the author is starting with him.

Farber's specialty was pediatric pathology, the study of children's diseases. He had spent nearly twenty years in these subterranean rooms staring obsessively

An emotionally charged word. I need to pay attention to those. That's the rule of the reader's response.

down his microscope and climbing through the academic ranks to become chief of pathology at Children's. But for Farber, pathology was becoming a disjunctive

That means "out of the ordinary," so it's another rupture—and these ruptures are becoming a throughline, that is, an idea that holds the text together—that extraordinary new ways of thinking and doing things had to be tried to help all the people suffering from cancer.

form of medicine, a discipline more preoccupied with the dead than the living. Farber now felt impatient watching illness from its sidelines, never touching or treating a live patient. He was tired of tissues and cells. He felt trapped, embalmed in his own glassy cabinet.

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SAMPLE THINK-ALLOUD

(CONT.)

He feels “trapped” and “embalmed.” Those are emotionally charged words. Rule of the reader’s response again. OK, I’m getting the sense that he wants to put different fields of study into conversation: pathology and clinical practice, which means treating patients, I guess. There’s something about time here. He’s impatient. But researchers are supposed to be patient and careful, right?

And so, Farber had decided to make a drastic professional switch.

I have to pay attention to changes.

Instead of squinting at inert specimens under his lens, he would try to leap into the life of the clinics upstairs—from the microscopic world that he knew so well into the magnified real world of patients and illnesses.

OK, I think I’m honing in on it. The chapter does seem to be creating a conversation between what Farber does and what we think of as what doctors do. He’s crossing boundaries, trying something new to solve a problem.

He would try to use the knowledge he had gathered from his pathological specimens to devise new therapeutic interventions.

That means treatments that help people.

The parcel from New York contained a few vials of a yellow crystalline chemical named aminopterin. It had been shipped to his laboratory in Boston on the slim hope that it might halt the growth of leukemia in children.

Kind of weird that something so important would have been sent to such a little lab. Another example of how the author is creating a conversation between what we expect and what is, or was, anyway, seventy or so years ago.

Had Farber asked any of the pediatricians circulating in the wards above him about the likelihood of developing an antileukemic drug, they would have advised him not to bother trying. Childhood leukemia had fascinated, confused, and frustrated doctors for more than a century. The disease had been analyzed, classified, subclassified, and subdivided meticulously; in the musty, leatherbound books on the library shelves at Children’s—Anderson’s *Pathology* or Boyd’s *Pathology of Internal Diseases*—page upon page was plastered with images of leukemia cells and appended with elaborate taxonomies

Taxonomies are categories.

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SAMPLE THINK-ALLOUD
(CONT.)

to describe the cells.

Rupture here of the difference between knowing stuff and being able to do something with it. This is the throughline—bridging that difference to try to get a cure for leukemia. I see that the topic involves finding a cure for leukemia specifically, not cancer in general.

Yet all this knowledge only amplified

That means increased.

the sense of medical helplessness.

Emotional charge—sense of desperation. This is the rule of the reader’s response.

The disease had turned into an object of empty fascination—a wax museum doll—studied and photographed in exquisite detail but without any therapeutic or practical advances. “It gave physicians plenty to wrangle over at medical meetings,” an oncologist

Technical vocabulary is a call to attention. An oncologist is a cancer doctor.

recalled, “but it did not help their patients at all.”

Yes, here is that throughline again about moving from theoretical knowledge to applying it.

A patient with acute

That means severe.

leukemia was brought to the hospital in a flurry of excitement, discussed on medical rounds with professional grandiosity,

That means they were acting like big shots.

and then, as a medical magazine drily noted, “diagnosed, transfused—and sent home to die.”

This is another indication of a conversation about treatment of cancer and other diseases. Doctors aren’t supposed to send their patients home to die. So it’s a rupture. And the detail helps me understand the throughline on the topic of knowing versus applying the knowledge to achieve something, in this case to find a cure for leukemia that will actually help people.

Source: Mukherjee, S. (2010). *The emperor of all maladies: A biography of cancer*. New York, NY: Scribner.