In the early 1980s, Leonard Mlodinow came to the California Institute of Technology to begin a postdoctoral fellowship. Afraid he was not smart enough to be there in spite of his groundbreaking Ph.D. thesis, he took his insecurities to Richard Feynman, Caltech’s intimidating resident genius and iconoclast. And so began a pivotal year of awakening in a young man’s life...

In a fascinating and unusual memoir, Mlodinow recounts his interactions with Murray Gell-Mann and a host of others, but especially Feynman, who shared his way of thinking not only about physics and building a career, but about building a life.

When I first set eyes upon him, the image did not match the legend. Feynman was sixty-three—about ten years older than Murray—but he looked gaunt and aged. His long gray hair was thinning; his step lacking in energy. With my state of mind at the time I might have looked like him, but Feynman’s malaise was unlike my own. It was common knowledge by then that Feynman was terminally ill. In his recent surgery he had had a widespread tumor entangling his intestines removed in a marathon fourteen-hour procedure. It had been his second cancer surgery.

I stepped over to his office, knocked, and introduced myself. He was polite, and welcomed me. I had no direct experience with death. It was hard for me not to feel pity, as I might for a deformed person I saw on the street. The thought of actually talking to a dying person made me uncomfortable. Strangely, I would find that being one did not seem to have the same effect on him. I could see
right away that there was still an energy about him, a
gleam in his eye. He may have had terminal cancer, but
his spirit still zig-zagged around the universe.

Though my heart was pounding, I was surprised at
the impression he made. He didn’t have that distancing
sheen of brilliance that Murray had; in fact, there was
nothing about him that indicated greatness. If I had run
into him on the street, and hadn’t seen pictures, I might
have thought he was a retired cab driver from Brooklyn.
I had the impression that in his younger days he must
have possessed a certain earthy sexuality. After we had
exchanged a few words, he mumbled a “see-you-around”
and looked back down at his work. I left.

A few days later I bumped into Feynman outside the
Lauritsen Lab.

“Mlodinow, right?” I was flattered that he remem-
bered, and happy he didn’t pronounce my name in some
weird Russian way. I asked where he was going.

“To the cafeteria.”

“The cafeteria or the Athenaeum?” I asked. Unlike
the elegant Athenaeum, a place favored by Murray—and
most faculty—where the men often wore suits and the
servers were students, the cafeteria back then was an un-
remarkable joint with food I imagined you might find in
an army mess hall. It was usually referred to by its more
descriptive nickname, “the Greasy.” Feynman gave me
a look. Apparently, the Athenaeum wasn’t his style. He
invited me to join him at the Greasy.

The Caltech cafeteria in those days had a novel way
of cooking their hamburgers. They would partially cook
dozens of them around ten in the morning and leave them
stacked at the back of the grill. When you ordered a
burger, they would flip it off one of the stacks and more or less finish cooking it. As it turned out, this culinary technique meant that the kitchen had much in common with the microbiology lab, except that their hamburger was probably cheaper than the sterile agar used in the labs. We came in around two, near closing, by which time the burgers had been kept half-cooked and tepid for several hours. Still naïve in ways of Caltech, I ordered two burgers, one with fries, the other with onion rings. For me, it was breakfast.

We sat down. Feynman usually drew a crowd at the Greasy, but this late there wasn’t anyone else around. We sat in silence for a moment. I tried to think of something intelligent to say to break the ice. My mind was a blank. The feeling was a lot like the one I’d have again many years later, accepting a computer game award in Cannes. Then, I was onstage, in a spotlight in front of thousands. I had uttered a few lines that I had prepared, and then made ready to walk offstage. But the beautiful French TV celebrity who acted as host surprised me with a question. I couldn’t think of anything to say to her, not even my name. It was as if the spotlight had saturated my neural circuits, making intelligent thought impossible. I wished I were pretty enough to charm everyone with my smile, then wave and walk off like a star. Instead, I just stood there embarrassed as she finally answered her own question.

With Feynman I got off easy. He looked at my tray. Then he looked at me and smiled.

“I used to overeat,” he said. “If I really liked the food I’d eat so much I would feel uncomfortable. That was dumb. I don’t do it anymore.”
“I think I can learn a lot from you,” I said, then realized how stupid it must have sounded.
“Yeah, well I don’t know what’s good for anybody except myself.”
More silence. My mind raced. I knew that before long, others would join us, and my chance to get his advice would be gone. I wanted to ask, “How do I know if I’m smart enough to be here?”
Instead I said, “Read any good books lately?”
He just shrugged.
“I’ve been reading about the process of discovery,” I told him, trying to keep the conversation alive. I was in the midst of Arthur Koestler’s The Act of Creation.
“Learn anything?” he asked. He was interested. That was Feynman, always interested.
“I’m having some trouble getting my research on track, and so I thought it might help.”
“Yes, but did you learn anything?”
He was mildly annoyed now, because I hadn’t answered his question. I felt rebuffed. I wasn’t yet sure what I had learned, so I told him about the passage I had just finished. I tried to make it sound dramatic.
“It took place in Berlin, 1914. Imagine a cold spring morning. Outside church bells chime. In his office at Berlin University, Einstein ponders the still-unfinished theory of relativity. In a lab not far away, in a tall steel cage, a young chimpanzee named Nueva pushes banana skins together in a heap with a stick. In a few years, this episode will be retold in a famous book, The Mentality of Apes. But, as she glances around the room, Nueva doesn’t care about fame. Her world is simple. Eat, drink, sleep . . .”
“Don’t forget sex,” he added with enthusiasm. I found that Feynman often found ways to interject the subject of sex. I was glad my story was holding his interest.

“Yes, and have sex, find companionship. But right now she is hungry, and banana skins won’t do. As Nueva studies her plight, a professor named Koehler studies her. He, like Nueva—and Einstein—has a hunger to satisfy, and his notes are destined to feed many books and papers. Koehler offers bananas to Nueva, only he doesn’t do her the favor of placing the food inside her cage. Instead, he places it on the floor outside, beyond her reach.”

“A cruel fellow,” said Feynman.

“He’s challenging her,” I said. “To eat, Nueva will have to discover how to get the bananas. First, she does the obvious. She steps to the bars and reaches out. She strains her arms and grasps at the fruit, but the bananas are just out of reach. She throws herself to the ground and rolls on her back in despair. Not far away, Einstein is nine years into his work on the theory of relativity, and still two years from his great breakthrough.”

“And probably feeling a lot like Nueva,” said Feynman.

I nodded and smiled. Here we were, Feynman and I, conversing about the frustrations of research. Me and Feynman, peer-to-peer! We were connecting. I was happy.

I continued, “Seven minutes pass. Nueva suddenly stares at the stick. She stops moaning and grabs it. Nueva thrusts it out of the cage, just beyond the fruit, and pulls it to within arm’s reach. She has made a discovery.”

“And what did this incident teach you?” Feynman
asked, not letting me off the hook. I was consciously pleased when I realized that intelligent thoughts were now actually forming in my head in response to his questions.

“Nueva had two skills. One was pushing things around with a stick. The other was reaching out through the bars for things. Here discovery was that she could put the two disparate skills together. It turned her old tool, the stick, into an altogether different kind of tool. Just like Galileo did when he used the telescope, which had been invented as a toy, to look at the sky. A lot of discoveries are like that, new ways of looking at old things, or old concepts. But the raw materials for the discovery had always been there, which is why the discoveries may seem startling at the time, but are simple and obvious to later generations. So I guess I learned something about the psychology of discovery. Something I might hope to apply.”

He looked at me for a moment.

“You’re wasting your time,” he said. “You don’t learn how to discover things by reading books on it. And psychology is a bunch of bullshit.”

I felt as if he had slapped me. But then, after a pause, he looked me in the eye and said gently and with a sly grin, “What I would learn from your story is that if an ape can make a discovery, so can you.”