

Feynman's Paint Story
(from "Surely You're Joking, Mr. Feynman!")

The reason why I say I'm "uncultured" or "anti-intellectual" probably goes all the way back to the time when I was in high school. I was always worried about being a sissy; I didn't want to be too delicate. To me, no real man ever paid any attention to poetry and such things. How poetry ever got written--that never struck me! So I developed a negative attitude toward the guy who studies French literature, or studies too much music or poetry--all those "fancy" things. I admired better the steel-worker, the welder, or the machine shop man. I always thought the guy who worked in the machine shop and could make things, now he was a real guy! That was my attitude. To be a practical man was, to me, always somehow a positive virtue, and to be "cultured" or "intellectual" was not. The first was right, of course, but the second was crazy.

I still had this feeling when I was doing my graduate study at Princeton, as you'll see. I used to eat often in a nice little restaurant called Papa's Place. One day while I was eating there, a painter in his painting clothes came down from an upstairs room he'd been painting, and sat near me. Somehow we struck up a conversation and he started talking about how you've got to learn a lot to be in the painting business. "For example," he said, "in this restaurant, what colors would you use to paint the walls, if you had the job to do?"

I said I didn't know, and he said, "You have a dark band up to such-and-such a height, because, you see, people who sit at the tables rub their elbows against the walls, so you don't want a nice, white wall there. It gets dirty too easily. But above that, you do want it white to give a feeling of cleanliness to the restaurant."

The guy seemed to know what he was doing, and I was sitting there, hanging on his words, when he said, "And you also have to know about colors--how to get different colors when you mix the paint. For example, what colors would you mix to get yellow?"

I didn't know how to get yellow by mixing paints. If it's light, you mix green and red, but I knew he was talking paints. So I said, "I don't know how you get yellow without using yellow."

"Well," he said, "if you mix red and white, you'll get yellow."

"Are you sure you don't mean pink?"

"No," he said, "you'll get yellow"--and I believed that he got yellow, because he was a professional painter, and I always admired guys like that. But I still wondered how he did it.

I got an idea. "It must be some kind of chemical change. Were you using some special kind of pigments that make a chemical change?"

"No," he said, "any old pigments will work. You go down to the five-and-ten and get some paint--just a regular can of red paint and a regular can of white paint--and I'll mix 'em, and I'll show how you get yellow."

At this juncture I was thinking, "Something is crazy. I know enough about paints to know you won't get yellow, but he must know that you do get yellow, and therefore something interesting happens. I've got to see what it is!"

So I said, "OK, I'll get the paints."

The painter went back upstairs to finish his painting job, and the restaurant owner came over and said to me, "What's the idea of arguing with that man? The man is a painter; he's been a painter all his life, and he says he gets yellow. So why argue with him?"

I felt embarrassed. I didn't know what to say. Finally I said, "All my life, I've been studying light. And I think that with red and white you can't get yellow--you can only get pink."

So I went to the five-and-ten and got the paint, and brought it back to the restaurant. The painter came down from upstairs, and the restaurant owner was there too. I put the cans of paint on an old chair, and the painter began to mix the paint. He put a little more red, he put a little more white--it still looked pink to me--and he mixed some more. Then he mumbled something like, "I used to have a little tube of yellow here to sharpen it up a bit--then this'll be yellow."

"Oh!" I said. "Of course! You add yellow, and you can get yellow, but you couldn't do it without the yellow."

The painter went back upstairs to paint.

The restaurant owner said, "That guy has his nerve, arguing with a guy who's studied light all his life!"

But that shows you how much I trusted these "real guys." The painter had told me so much stuff that was reasonable that I was ready to give a certain chance that there was an odd phenomenon I didn't know. I was expecting pink, but my set of thoughts were, "The only way to get yellow will be something new and interesting, and I've got to see this."

I've very often made mistakes in my physics by thinking the theory isn't as good as it really is, thinking that there are lots of complications that are going to spoil it--an attitude that anything can happen, in spite of what you're pretty sure should happen.