



Reality Must Take Precedence

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I don't pretend to know much about physics beyond whatever basics I learned in high school. For some reason a few years ago I became interested in Richard Feynman, a Nobel Prize-winning physicist who worked on the atomic bomb at Los Alamos and who was a colorful character. Among other things he played the bongo drums and was an avid painter. [In reviewing two new books about Feynman](#), *The New York Times Review of Books* suggests he might deserve the status of scientific superstars like Einstein and Hawking.

What impressed me about Feynman, was the extent to which he was brutally honest about the facts, whether or not they supported existing and popular theories. It didn't always make him popular and he didn't care. Feynman adhered to this value to the very end of his life. He was dying of cancer when he served on the NASA commission investigating the disaster of the *Challenger* space shuttle in 1986. At a commission hearing, Feynman demonstrated how one of the critical rubber O-rings had lost its resilience after being placed in ice water (below), which suggested it was a possible cause of the explosion because the launch had occurred in unusually cold weather. He later showed how the NASA managers had ignored statistical evidence that



identified the O-rings as creating a much higher risk of an accident, even though the engineers had developed a relatively realistic view of the probabilities.

Feynman “wrote an account of the cultural situation as he saw it, with the fatal division of the NASA administration into two noncommunicating cultures, engineers and managers.” The managers adopted completely unrealistic interpretations of the data because they were focused on upholding a public narrative that the space shuttle was safe and reliable. The engineers could not communicate effectively with the managers. Feynman wrote an appendix to the report about the *Challenger* accident that he ended by saying, “For a successful technology, reality must take precedence over public relations, for nature cannot be fooled.”

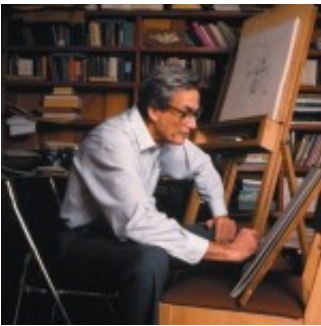
An uncompromising focus on facts is absolutely essential for good science, of course, but it also is essential as the School navigates these difficult times. If state funding is going to provide dramatically less support for us in the future, how should we respond? We will not continue to advance our mission simply by hoping that the future looks like the past. It will not. We must always focus on the facts, even if they force us to make inconvenient changes in what we do and how we do it.

Reality must take precedence if we are going to continue meeting the needs of North Carolina public officials. I hope that our communication training with Peg Carlson will continue to build a culture of sharing the truth with each other. One way to prevent people from ignoring reality is for others to point it out to them. The engineers failed to do that effectively at NASA. Peg is improving our skills to communicate directly and effectively about what we are seeing. If you believe that I am ignoring the facts, speak up and let me know. If you see a different reality than the one we appear to be pursuing, communicate that information too.

If you are interested, a good book about Richard Feynman is [Genius: The Life and Times of Richard Feynman](#) by James Gleick. Feynman was a genuine character, which may have caused some people to take his physics less seriously. One of my favorite stories was about his painting titled *Madame Curie Observing the Radiations of Radium*. The painting was of a nude woman who had been a model in Feynman's art class. When the painting was exhibited at Caltech, an art lover approached Feynman and asked how he had persuaded Madame Curie to pose for him.



Richard Feynman Demonstrating O-Ring in Ice Water at Hearing



Richard Feynman



Richard Feynman at Caltech



Madame Curie in Her Laboratory