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978-1-107-02430-4 - Why Quark Rhymes with Pork: And Other Scientific Diversions

N. David Mermin

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## WHY QUARK RHYMES WITH PORK



## And Other Scientific Diversions

A collection of offbeat and entertaining primarily nontechnical essays on physics and those who practice it, from eminent theoretical physicist N. David Mermin. Bringing together for the first time all thirty of his columns published in *Physics Today's Reference Frame* series from 1988 to 2009, with updating commentary, this humorous and unusual volume includes thirteen other essays, many of them previously unpublished.

Mermin's lively and penetrating writing illuminates a broad range of topics, from the implications of bad spelling in a major science journal, to the crises of science libraries and scientific periodicals, the folly of scientific prizes and honors, the agony of getting funding, and how to pronounce "quark." His witty observations and insightful anecdotes gleaned from a lifetime in science will entertain physicists at all levels as well as anyone else interested in science or scientists at the turn of the 21st century.



**N. David Mermin** is Horace White Professor of Physics Emeritus at Cornell University. He is known throughout the scientific world as co-author of *Solid State Physics* ("Ashcroft and Mermin") and for his columns in *Physics Today*. He was awarded the first Julius Edgar Lilienfeld Prize of the American Physical Society "for outstanding contributions to physics" in 1989, and is a member of the American Philosophical Society, the U.S. National Academy of Sciences, and the American Academy of Arts and Sciences.

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*Cornell University*



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## PREFACE



Sometime in the mid-1980s Gloria Lubkin, the editor of *Physics Today*, invited me to contribute to a new column of opinion called *Reference Frame*. Earlier that decade I had published two articles in *Physics Today*.<sup>1,2</sup> The first described my successful effort to make the ridiculous word “boojum” an internationally accepted scientific term. The second gave a very elementary way of thinking about Bell’s Theorem and its implications for our understanding of quantum mechanics. These apparently suggested to Gloria that I’d make a good columnist.

I wasn’t so sure. Having to produce something clever and entertaining at regular intervals was not my style. On the occasions when I’d managed to do it, it seemed like a small miracle, unlikely ever to happen again. So while I didn’t say no, I kept stalling. A couple of years went by.

Then one day I discovered that *Physical Review Letters*, the world’s most important physics journal, was doing something quite ridiculous that seemed to have escaped the attention of all the physicists I told about it. The absurd policy and the fact that nobody seemed to have noticed it made a good story. Another miracle. I sent the story (Chapter 1) to Gloria and became a columnist, joining a group of *Reference Frame* writers that included

1 “E Pluribus Boojum: The Physicist as Neologist,” *Physics Today*, April 1981, 46–53.

2 “Is the Moon There When Nobody Looks? Reality and the Quantum Theory,” *Physics Today*, April 1985, 38–47.

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Phil Anderson, David Gross, Leo Kadanoff, Dan Kleppner, Jim Langer, and Frank Wilczek.

After that Gloria would phone every few months requesting more miracles. Somehow she managed to induce them. I came to regard her as my Muse. For 21 years she extracted essays I didn't know were in me. She criticized first drafts and negotiated final versions. As some of these essays reveal, my relations with editors have often been tense, but working with Gloria was always a pleasure. She knew exactly how to do her job, and she knew how to get me to do mine.

In 2009 Gloria Lubkin retired from *Physics Today* and the *Reference Frame* columns came to an end. I found to my surprise that I had produced thirty of them—one every eight issues. Not all were miracles, but surprisingly many were. As I traveled around the world of physics after 1988, giving talks at universities and conferences, I discovered that I was becoming better known for my columns than for my technical scientific papers or textbooks. People wanted to talk to me about the columns. And they remembered some from years earlier.

In 2011 I decided to put them all into a book, and Simon Capelin at Cambridge University Press agreed to publish it. My plan was to write a foreword and an afterword for each of the thirty, setting the stage, clarifying the historical context, providing pedagogical background for the occasional technical ones, and describing the letters they elicited to *Physics Today* and to me. This project started off well and then bogged down. Producing thirty such overviews was less fun and was taking longer than I had anticipated. In 2012 everything ground to a halt. I had found an interpretation of quantum mechanics—the QBism of Chris Fuchs and Rüdiger Schack—that finally made sense of the subject. I set the book aside to write about my epiphany.

In 2014 I ran into an old friend, Leonid Levitov, who had been a postdoc at Cornell as my career as a columnist was getting underway, and is now a professor at MIT. He lamented the disappearance

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of *Reference Frame* and asked whether I had thought of collecting my columns into a book. I explained that indeed I had, but I found it harder than I expected to write forewords and afterwords for each column. He shook his head. “David,” he reprimanded me, “poems do not have forewords and afterwords.” Just like that the shackles that had tied me down for three years crumbled into dust. I told Fuchs and Schack that I was taking a sabbatical from quantum foundations, turned down all invitations to write and lecture about QBism, and finished my book.

My paralyzing, unpoetic forewords and afterwords have all condensed into brief postscripts. I have added to the columns in Chapters 1–30 thirteen closely related chapters. Chapters 31–33 describe my book-delaying QBist epiphany. It was foreshadowed by my final *Reference Frame* column, Chapter 30, which would be incomplete without them. Chapters 34 and 35 contain two more major literary efforts of my alter ego, Professor Mozart, which *Physics Today* either declined to publish (Chapter 34) or published outside the *Reference Frame* format (Chapter 35). Chapters 36–38 are hitherto unpublished expanded versions of the *Nobel Diary* (Chapter 19), *Elegance* (Chapter 22), and *Questions for 2100* (Chapter 24). Chapters 39–42 are in the manner of and complement “My life with Einstein” (Chapter 27), with the difference that I really did spend significant periods of my life with Michael Fisher, Walter Kohn, Ken Wilson, and Rudolf Peierls. Chapter 43 and much of Chapter 42 celebrate the importance of writing. Together they serve as my benediction to this whole collection.

I thank Simon Capelin for his understanding patience, and Leonid Levitov for getting me unstuck. Thanks also to Joan Feynman and Geoffrey Pullum for letting me reproduce their delightful letters.

Above all, I’m profoundly grateful to Gloria Lubkin for over two decades of wonderful collaboration.