

## Pebbles of Truth

Science has gotten such a good reputation for answering questions that just about everybody claims the adjective “scientific” for what they say. An impeccable scientific approach is, however, useless for most of life’s important questions like “Wherein lies the Good?” “Why me?” “Hold ‘em or fold ‘em?” “Shall we send troops?” Scientists are no better than anybody else at making most personal and political decisions and can be a real pain when it comes to providing clear answers to simple questions—especially if their defensive scientific cloaking device is turned on. The way we scientists deal with questions and answers often frustrates the people who consult us and support us.

There are two reasons for this. First, we frequently don’t accept the question. Many of the biggest, most urgent, or most important questions are concerned with what *should* be, and science addresses only what *is*. As Richard Feynman explained, “The question: ‘Should I do this?’—whether you want something to happen or not—must lie outside of science.” Second, our tendency, even when the questions posed are scientific, is to refuse to answer until we’re good and ready. Unlike policy makers or executives or police officers or editors, we need not (and often refuse to) come to a fast conclusion. We claim the privilege of uncertainty long after others have made up their minds. According to Feynman, a scientist is never certain. When a statement is made, the question is not whether it is true or false but rather how likely it is to be true or false. There is no certainty; even our best answers are at least a little provisional. This chronic hedging of ours is a remarkable trait and a precious privilege—rare across history and geography—the freedom to doubt and to declare “I don’t know” publicly.

Ever doubtful, wary of conclusions, even wary of facts, we parse the truth of statements ever so fine:

How true is it? Is it the whole truth? Is it entirely true or just partially true? Is it strictly true, necessarily true, generally true, often true, true under certain circumstances? Is it conditionally true, likely true, possibly true? We thereby bypass some of the deeper, more intractable, issues of truth and causality and compensate with the benefits of open-mindedness, disinterest (not fooling ourselves), and small hard truths.

The ability to declare a question presently unanswerable, no matter how important, and to accept interim and partial truths without commitment, is perhaps the greatest strength of science and a hallmark of its different worldview. We have had the privilege, so far, of choosing our questions. Although everyone wants answers to big questions, we usually prefer to settle for results that clearly answer a small question over results that merely bear on a big question. What a peculiar way of getting answers normal science has: nibbling at a problem, not trying to swallow it whole. Yet, by an invisible hand, it seems to end up giving us a better grasp of truth and causality after all.

Isaac Newton said, “I do not know what I may appear to the world; but to myself I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me.” This pretty scene embodies several of the ideals of science: modesty, curiosity, and wonder. We have found treasures on the beach: shiny shells and pebbles—what stars and people and firefly flashes are made of. The shells and pebbles add up and tell us about the sea. Each of us gets to place some on the pile.

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