

Imagine that we are living on an intricately patterned carpet. It may or may not extend to infinity in all directions. Some parts of the pattern appear to be random, like an abstract expressionist painting; other parts are rigidly geometrical. A portion of the carpet may seem totally irregular, but when the same portion is viewed in a larger context, it becomes part of a subtle symmetry.

The task of describing the pattern is made difficult by the fact that the carpet is protected by a thick plastic sheet with a translucence that varies from place to place. In certain places we can see through the sheet and perceive the pattern; in others the sheet is opaque. The plastic sheet also varies in hardness. Here and there we can scrape it down so that the pattern is more clearly visible. In other places the sheet resists all efforts to make it less opaque. Light passing through the sheet is often refracted in bizarre ways, so that as more of the sheet is removed the pattern is radically transformed. Everywhere there is a mysterious mixing of order and disorder. Faint lattices with beautiful symmetries appear to cover the entire rug, but how far they extend is anyone's guess. No one knows how thick the plastic sheet is. At no place has anyone scraped deep enough to reach the carpet's surface, if there is one.

Already the metaphor has been pushed too far. For one thing, the patterns of the real world, as distinct from this imaginary one, are constantly changing, like a carpet that is rolling up at one end while it is unrolling at the other end. Nevertheless, in a crude way the carpet can introduce some of the difficulties philosophers of science encounter in trying to understand why science works.

Induction is the procedure by which carpetologists, after examining parts of the carpet, try to guess what the unexamined parts look like. Suppose the carpet is covered with billions of tiny triangles. Whenever a blue triangle is found, it has a small red dot in one corner. After finding thousands of blue triangles, all with red dots, the carpetologists conjecture that all blue triangles have red dots. Each new blue triangle with a red dot is a confirming instance of the law. Provided that no counterexample is found, the more confirming instances there are, the stronger is the carpetologists' belief that the law is true.

The leap from "some" blue triangles to "all" is, of course, a logical fallacy. There is no way to be absolutely certain, as one can be in working inside a deductive system, what any unexamined portion of the carpet looks like.

