



The Manufactured Alternative: How Explanation Can Mistake a Fiction for a Fact

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Abstract

This paper examines a recurring pattern in explanation: an outcome that is fully determined by its actual, present causes is instead explained by constructing a set of alternative possibilities it is said to have been "chosen over" or to have "prevailed against." Once the constructed alternatives are treated as though they were genuinely available, the explanation quietly shifts from describing what happened to elaborating a fiction layered on top of it. This pattern is examined first in a physical case — the principle of least action, a long-standing and mathematically successful description of motion that has, since its introduction, repeatedly invited exactly this confusion among serious physicists and philosophers of science. It is then considered as a general feature of human reasoning, documented independently in psychology and behavioral science under related names. The paper does not dispute the validity or usefulness of the methods discussed; it argues only that the fictional alternatives such methods invoke should not be mistaken for real, physically or historically available possibilities.

1. The Pattern, Stated Plainly

An outcome can be fully and uniquely determined by the actual conditions and causes present at the time it occurs. Despite this, a common form of explanation describes the outcome as though it had been selected from among a set of genuine alternatives — other paths, other decisions, other outcomes — that were, in fact, never actually available given those same conditions and causes. When the constructed alternatives are then treated as real rather than illustrative, the explanation ceases to describe the world and begins to describe a story about the world, without this shift being announced or noticed.

This is not a claim that comparison to alternatives is without value. Such comparisons are often genuinely useful — as a method of calculation, as a narrative device, or as a way of building intuition. The concern is narrower and more precise: usefulness of a method does not establish the reality of the alternatives it invokes.

2. A Physical Case: The Principle of Least Action

The principle of least action, in its classical form developed by Maupertuis, Euler, Lagrange, and Hamilton over the eighteenth and nineteenth centuries, describes the motion of a physical system by comparing its actual path to a mathematically defined space of alternative paths, and identifying the actual path as the one for which a quantity called "action" is minimized (or, more precisely, stationary) relative to all such alternatives.

The principle is not in dispute here. It is exact, well-tested, and foundational to large portions of theoretical physics, including the reformulations used in this author's own prior work on relativistic time dilation. What is worth examining carefully is a specific interpretive question that the principle has provoked since its introduction: the same physical trajectory is fully determined, at every instant, by the forces acting on the system at that instant (Newton's laws, applied locally). No genuine alternative trajectory was ever available to the system, given those forces. Yet the principle's standard formulation describes the trajectory as though it had been selected by comparison against a field of real alternatives — language that has repeatedly been noted, by physicists and philosophers alike, to risk implying that the system somehow "knows" its destination in advance, or that final outcomes participate in bringing about the process that leads to them.

This concern is not a fringe or recent one. Henri Poincaré, writing about the least action principle, described the difficulty directly:

"This molecule seems to know the point to which we want to take it, to foresee the time it will take to reach it by such a path, and then to know how to choose the most convenient path... It is clear that it would be better to replace it by a less objectionable enunciation, one in which, as philosophers would say, final effects do not seem to be substituted for acting causes."

Max Planck, in his own writing on the principle, went further, arguing that the least-action formulation genuinely introduces something beyond ordinary efficient causation — what philosophers term a final cause, in which a future goal appears to serve as a premise for the process leading to it — and suggested that resistance to this reading owed as much to prevailing scientific bias as to the physics itself.

Contemporary philosophy of physics has continued to examine this tension directly. Terekhovich (2017) frames the central question as whether the "other possible paths" invoked by the principle should be understood as having any genuine modal reality, or whether they are better treated as calculational fictions with no ontological status — concluding that this issue remains unresolved and philosophically significant, not merely a matter of habit or notation. Stöltzner (2003) traces how the instrumentalist reading — that the principle is a powerful calculational device whose alternative paths carry no independent reality — became the dominant position among logical empiricist philosophers of science specifically to avoid the teleological reading Planck had defended, without ever fully resolving the underlying puzzle of why the two formulations (local, instant-by-instant causation, and global, whole-path minimization) always agree.

The position taken in this paper is the instrumentalist one, stated without ambiguity: the actual trajectory of a physical system is completely fixed by the forces present at each instant. No other trajectory was ever a live physical possibility. The comparison to alternative paths is a genuine and mathematically indispensable method for calculating and describing that one determined trajectory — not a description of a selection process that actually took place.

3. The Same Pattern in Human Reasoning

An structurally similar pattern is well documented, independently, in cognitive psychology and behavioral science, under two related names.

Hindsight bias, studied extensively since the 1970s, describes the tendency to perceive a past event as having been more predictable, and its actual outcome as more inevitable, than it genuinely was at the time it occurred — accompanied by the false impression that alternative outcomes, though retrospectively imaginable, were never seriously in play.

The narrative fallacy, a term introduced by Nassim Nicholas Taleb in *The Black Swan* (2007) and developed against the background of Daniel Kahneman and Amos Tversky's research on heuristics and biases, describes the related tendency to weave a coherent, causal story out of events that were substantially driven by randomness or by factors poorly understood at the time — and then to treat that story's constructed alternatives (what the market, the

company, or the decision-maker could have done differently) as though they had been real, considered options, rather than a narrative scaffold built after the outcome was already known.

In both cases, the underlying pattern matches the one described in Section 1: a determined, often substantially random or locally-caused outcome is explained by constructing a set of alternatives the outcome is said to have prevailed over, after which the constructed alternatives are mistaken for things that were genuinely available at the time.

4. The Core Distinction

Two claims must be kept separate, and the failure to keep them separate is the entire subject of this paper:

- (a) A method of explanation that compares an actual outcome to a set of constructed alternatives can be rigorous, useful, and in the case of the principle of least action, mathematically exact.
- (b) The alternatives such a method constructs are not, by virtue of the method's usefulness, established as things that were ever really available to occur instead.

Accepting (a) does not require accepting (b). Conflating the two is the specific error this paper identifies — not in any one field, but as a recurring, cross-domain habit of explanation.

5. Why This Matters

Recognizing this pattern does not require abandoning the methods built on it. The principle of least action remains exact and indispensable; narrative explanation remains a genuine and often necessary way for people to make sense of complex events. What is at stake is narrower and more practical: whenever an explanation takes the form "this happened because it prevailed over these alternatives," it is worth asking directly whether those alternatives were ever actually available, given the real causes and conditions present at the time — or whether they are a convenient, retrospective construction, mistaken for fact because the method that produced them is otherwise sound.

This distinction matters wherever people reason about outcomes: in physics, in history, in personal decision-making, and in the evaluation of claims presented with mathematical or narrative confidence. A method's usefulness is not evidence of its fictions' reality.

6. Closing Question

Before accepting an explanation of the form examined here, it may be worth asking plainly: was there ever a real alternative available, given the actual causes present at the time — or only one determined outcome, described afterward as though it had competed with others?

References

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