



# Can Falsificationists Build Good Bridges?

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## Popper's Quest

In *Conjectures and Refutations* (1965), Karl Popper proposed falsificationism as a solution to the problem of demarcation in science. Despite their tremendous influence on the way scientific inquiry is conducted, Popper's ideas have been heavily criticized. While some of these criticisms are justified, many of them are not as devastating as they appear.

## Building Bridges

One of the objections raised against Popper that is considered deeply problematic invites us to consider why, according to Popper, engineers should be using "tried and true" theories when constructing bridges, rather than any other unfalsified theory. The problem is outlined in Peter Godfrey-Smith's *Theory and Reality: An Introduction to the Philosophy of Science* (2003). Godfrey-Smith asks us to imagine that we are trying to build a bridge, and we must rely on physical theories to determine which design will work best. Popper can tell us why we should prefer an unfalsified theory over a falsified one. But Popper would have difficulty if our choice was between (1) a theory that has been tested many times and passed every test, and (2) a new theory that has never been tested. Neither theory has been falsified (Godfrey-Smith 67).

## The Rationality of Corroboration

	Corroborated Bridge Theory		Uncorroborated Bridge Theory	
Outcome 1	Theory never fails Goal 1 ✓	Goal 2 ✓	Theory passes initial test Goal 1 ✓	Goal 2
Outcome 2	Theory eventually fails Goal 1	Goal 2 ✓	Theory fails initial test Goal 1	Goal 2 ✓

Goal 1: Build a bridge that gets us across safely.  
Goal 2: Make significant progress toward arriving at a perfect bridge theory.

It seems clear that the rational choice is the theory that has passed tests. But doesn't Popper have to claim that it would be equally rational to choose either theory? Of course Popper will not say a theory that has passed tests is better. But what Popper can say is that even though a bridge built using a "tried and true" theory is no more likely to hold, it is still better to use a "tried and true" theory if scientific progress is one of our goals. Popper can make this claim because testing corroborated theories is the only way to achieve both our primary goal of building a good bridge, and our secondary goal of contributing to scientific progress, using the same theory. If we always use untested theories, we can never achieve both goals with the same theory. A corroborated theory is no more likely to be true, but using corroborated theories is still more rational than using untested theories.

## A Solution For Popper

When we build a bridge using a "tried and true" theory there are two possible outcomes: 1) the bridge will never fail, or 2) the bridge will eventually fail. Outcome one is desirable because we will always get across safely and we will be contributing to science by conducting more tests. Outcome two is not desirable because when bridges fail there are usually dire consequences. However, the failure of the bridge would contribute to scientific progress. We would have an instance of falsification and we could set aside that particular bridge theory and move on to a new theory in pursuit of the best theory possible. If we use an untested theory to build a new bridge instead of a corroborated theory, there are two possible outcomes: 1) the bridge will pass the initial test, or 2) the bridge will fail the initial test. While outcome one is desirable for our immediate purposes, we would not gain very much in the long run because using this methodology, we would immediately set the theory aside in favor of yet another untested theory. Outcome two would give us knowledge, but using this methodology, we would have to hope our bridge fails the first time in order to make scientific progress. It becomes obvious that the more rational option is to use the bridge theory that has passed tests until it fails. This is exactly what falsificationism would have us do.