

### Souvenir M: Quicksand Takeaway

The howlers and chestnuts of Section 3.4 call attention to: the need for an adequate test statistic, the difference between an  $i$ -assumption and an actual assumption, and that tail areas serve to raise, and not lower, the bar for rejecting a null hypothesis. The stop in Section 3.5 pulls back the curtain on one front of typical depictions of the N-P vs. Fisher battle, and Section 3.6 disinters equivocal terms in a popular peace treaty between the N-P, Fisher, and Jeffreys tribes. Of these three stops, I admit that the last may still be murky. One strategy we used to clarify are subscripts to distinguish slippery terms. Probabilities of Type I and Type II errors, as well as  $P$ -values, are defined exclusively in terms of the sampling distribution of  $d(\mathbf{X})$ , under a statistical hypothesis of interest. That's error probability<sub>1</sub>. Error probability<sub>2</sub>, in addition to requiring priors, involves conditioning on the particular outcome, with the hypothesis varying. There's no consideration of the sampling distribution of  $d(\mathbf{X})$ , if you've conditioned on the actual

outcome. A second strategy is to consider the selling points of the new “compromise” construal, to gauge what it’s asking you to buy.

Here’s from our guidebook:

You’re going to need to be patient. Depending on how much quicksand is around you, it could take several minutes or even hours to slowly, methodically get yourself out . . .

*Relax.* Quicksand usually isn’t more than a couple feet deep . . . If you panic you can sink further, but if you relax, your body’s buoyancy will cause you to float.

Breathe deeply . . . It is impossible to “go under” if your lungs are full of air (WikiHow 2017).

In later excursions, I promise, you’ll get close enough to the edge of the quicksand to roll easily to hard ground. More specifically, all of the terms and arguments of Section 3.6 will be excavated.