Understanding the power of randomness is a central pursuit of theoretical computer science. This seems to be a formidable challenge in the context of general algorithms. In this talk, we look at this question for two rudimentary models of computation, namely, decision trees and 2-party communication protocols. Such algorithms (protocols) have been studied for years, with lots of impressive results. Yet, we observe that our current understanding of the power of randomness in this restricted models is not satisfactory.

We will discuss natural open problems in this area and some recent progress on them.