1003-X1-1461 **Kevin Iga*** (`kevin.iga@pepperdine.edu`), Natural Science Division, Pepperdine University, 24255 Pacific Coast Hwy., Malibu, CA 90263. *How a truck driver's question about water glasses leads to Cantor sets and unusual probability distributions.*

A colleague was moving, and someone on the professional moving crew, upon hearing she was a mathematician, asked what happens when you repeatedly transfer water back and forth between two water glasses using a straw.

The question is simple to solve if you alternate which glass you transfer from and to, but if more general patterns are allowed, some surprises arise. Depending on the size of the straw, the set of achievable limit points may be an interval, or a Cantor set.

If the transfer done is chosen randomly, then the probability distributions possible range from a uniform distribution, to a Cantor staircase, to a normal distribution, and a wide range of strange-looking distributions, called *Bernoulli convolutions*, studied by Erdös, Peres, Solomyak, and others. (Received October 05, 2004)