Efron 1979

The Bootstrap

- Given a dataset of size N
- Draw N samples with replacement to create a new dataset
- Repeat ~1000 times
- You now have ~1000 sample datasets
  - All drawn from the same population
  - You can compute ~1000 sample statistics
  - You can interpret these as repeated experiments, which is exactly what the frequentist perspective calls for
- Very elegant use of computational resources

Bootstrap example

						mean
1	2	3	4	5	6	3.5
4	3	4	2	1	6	3.33
2	3	6	1	3	5	3.33
5	1	1	2	3	6	3.00
2	5	2	6	3	4	3.67
4	4	4	2	1	3	3.00
3	4	5	3	2	1	3.00
1	2	3	6	6	1	3.17
5	2	3	1	4	5	3.33

The Bootstrap

Example:
Generate 1000 samples and 1000 linear regressions

You want a 90% confidence interval for the slope?

Just take the 5th percentile and the 95th percentile!