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Adding random bias plays a key role for suppressing the effect of bias itself

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Jeremy Berg Wrote an article entitled "Measuring and managing bias" in Science Editorial (1). The GPS technology has been used for many years where a GPS receiver is embedded in our smartphone. Typical received signal power from a GPS satellite is -127.5 dBm (0.178 fW), while thermal noise floor is -111 dBm (2). In other words, the GPS received signal strength is very much smaller than noise. Why can we use the GPS positioning? The GPS technology uses the noise magic for denoising the effect of noise itself by adding random noise with zero mean. Bias is a kind of noise. The effect of individual bias can be suppressed by adding random bias in the same scheme. Adding random bias plays a key role for suppressing the effect of bias itself.

References:

1. Jeremy Berg, Measuring and managing bias, Science Sept. 1 2017, 357 (6354), 849
2. Y. Takefuji, Future mobile phones, Iwanami 2003

Competing Interests: None declared.