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Warfare

In "What are the chances of war?" (page 44, April 2016) Pasquale Cirillo and Nassim Taleb attempt to educate us on fat-tailed distributions, but they need not have bothered. The book they attack (but show no signs of having read), Pinker's *The Better Angels of Our Nature*, devotes many pages to the power-law (fat-tailed) distribution of war magnitudes, and many more to the Poisson (temporally random) nature of inter-war intervals. These facts have been known at least since the publication of Lewis Fry Richardson's *Statistics of Deadly Quarrels* in 1960, and have informed quantitative discussions of war ever since.

Contrary to Cirillo and Taleb, we are perfectly aware that a stretch of time without a big war does not imply that a big war cannot happen. The issue is whether the parameters of the processes generating new wars and determining their magnitudes have changed since 1945. This is the era that historians have called "the Long Peace", in which wars between great powers and wars between developed states, common throughout recorded history, essentially disappeared. In the familiar analogy of drawing balls from urns, the idea is not – contrary to Cirillo and Taleb – whether drawing a series of balls with low numbers is taken to suggest that the urn contains no balls with very high numbers; it is whether there is reason to suspect that the urn has been tampered with so as to change the number of balls with numbers of various sizes.

It is true that any test of sample numbers alone is assumption-dependent and may be challenged. That is why all such tests must be interpreted in the light of historical evidence (the equivalent of actually monitoring whether someone has tampered with the urns). In the case of the post-war period, this evidence includes precocious observations by historians of qualitative changes in the international system made decades before the decline in war frequency was apparent, sharp reductions in independent predictors of war such as conscription, length of military service, and military expenditures as a proportion of GDP, and radical changes in the norms and institutions governing the conduct of states.

For Cirillo and Taleb, no historical evidence can be relevant to the question of whether the risks of war have changed. They fitted a simple model to data on wars spanning two thousand years, failed to spot a trend over these two millennia (as if anyone had claimed there was one), and noted that in their model the probability of a large war in the next century is non-negligible (as if anyone had claimed otherwise). But Cirillo and Taleb failed to perform the critical comparison between the post-World War II period and a comparable one preceding it. More generally, any modelling effort that squeezes two millennia of wildly heterogeneous history into a single distribution, and then affirms the null hypothesis of no overall trend, is ill equipped to shed light on what has happened in the past 70 years.

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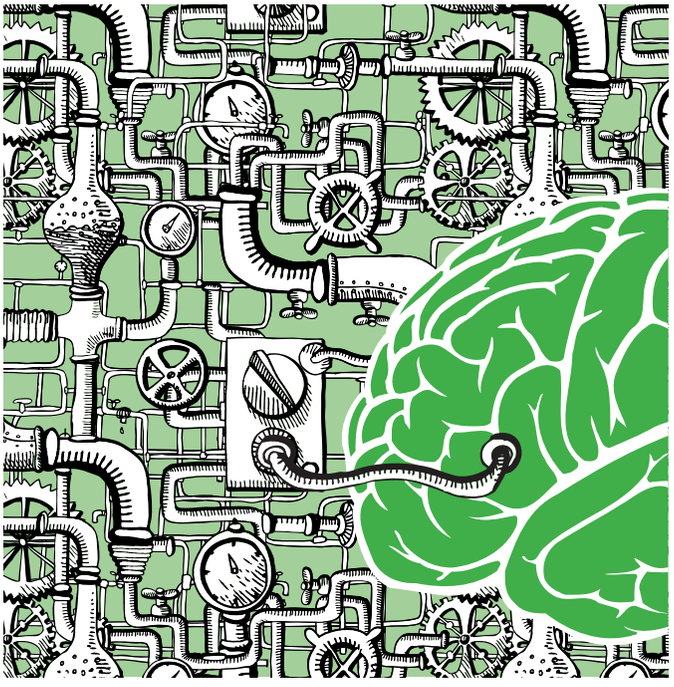
Prediction versus time series forecasting

On page 19 of the April 2016 issue, there is a note: "Prediction versus forecasting". The research at bit.ly/1SJxTQz shows an example of the importance of this concept.

A time series forecast can be made for any data item collected on a regular basis. But if you do not have such a time series for every member of a finite population, then a forecast for the estimated total, for such a data item for such a finite population, cannot be made. If you do not want a forecast at all, but an estimate of a total from a current finite population, based on a current sample or a current attempted census with non-response, then one option may



Kevin Reed/CPL