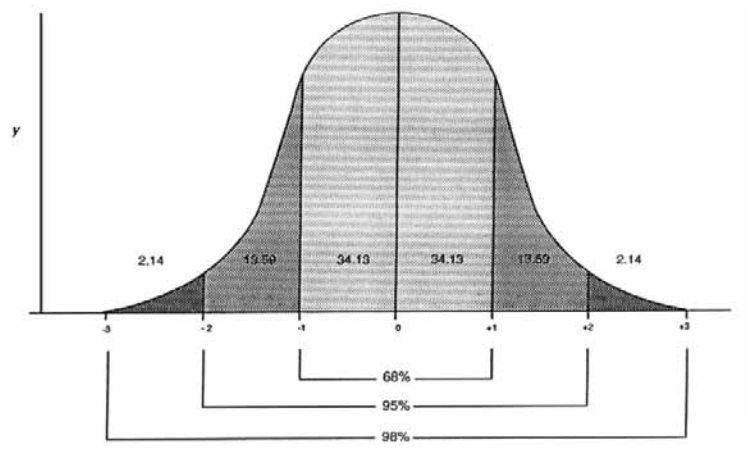
This is a standard normal distribution chart. Stocks are assumed to be lognormal since the value cannot go below zero. Lognormal distributions are skewed above zero. We have a sixty-eight percent chance the price of the stock will be between five and fifteen; a ninety-five percent chance that the price will be between zero and twenty. Of course, practically speaking, the stock price cannot go below zero, but just in the case that it can, we have a two percent chance that that will ever happen.



The normal distribution is easier for descriptive purposes, and both distributions have the same problem: underestimation of tail risk (extreme possibilities). Additionally, we must remember that past performance is not indicative of future performance. The the risk profile or standard deviation of the stock can change at any time in the future.

Another fault of this model is that Gaussian mathematics does not fit with what is actually observed. As you can see from the example above, not only is it easy to exclude extreme events from the range of possibility, but the math underestimates less extreme events—events that only deviate 3σ from the average. In purely mathematical models, the assumed Gaussian nature of data will skew the results to the average.

In Berlin, citing the work of Donald MacKenzie, Jon McKenzie stated that the possibility our future is performative, exemplified by the models we have developed and rely on. That is, originally designed to predict the future, our models can have the power to construct the future. The price of a European call is such because the BSM Model says it is—forget supply and demand and self-fulfilling prophecy. As Donald MacKenzie sees our current world, the BSM Model has "lost" its performative powers because the volatility of the underlying asset is no longer flat. According to MacKenzie, assets lost their flat volatility around Black Monday in 1987.[5] He does not speculate that we had an imperfect understanding of the assets in the first place, but that our markets waded into a less performative state.

5. On Monday 19, 1987, worldwide markets crashed by a huge margin, losses ranged from twenty-two percent to forty-five percent.

Overleaf: Elín Hansdóttir, Trace*, archival inkjet prints, 2010*

A WALK IN THE PARK WITH MODELS THE ANXIOUS POP HILARY BROWN

Blaming the underlying data is a common theme when constructing and using models, i.e. the statement, "Our housing forecast models are not working because they did not take into account the shadow inventory just unexpectedly released into the market." As this type of math can be applied to most disciplines, it seems all too easy to blame our lack of modernity and fix the data to fit our regression patterns and Gaussian bell curves.

Friedrich Hayek, a libertarian and anti-socialist economist, warned about applying rigid mathematics to economics. When a government tries to increase employment by stimulating demand, it can do more harm than good. There only seems to be a correlation between (aggregate) demand and employment because they are the most easily measurable metrics, but the correlation is impossible to prove.[6] On the opposite side of the political spectrum, Alain Badiou declares economic models and their graphical representation to be a tool of the bourgeois for economic enslavement. In a government's efforts to show "balanced expansion," it wards off social instability through its visual representation instead of scie ntific justification. This balanced expansion is merely governmental interventions in the economy designed at placating the lower classes while simultaneously allowing the bourgeois to retain power and property.[7]

Reliance on models can be more costly than imploding hedge funds as they have the power to shape societies, individuals, and determine how government interacts with both. Richard Sennett bemoans models of suburban development, advocating for densely populated areas and cities that are flexible to a dynamic evolving population. Hakim Bey rails against our social mores, the serfdom of children, and supports poetic terrorism aimed at injecting a little chaos in our lives.

The question is not simply binary, as in, "should we use models because they work properly or should we banish them because they fraudulently deceive." The recognition of a world not rationalized by math or another metatheory is unpalatable to most. Indeed, most proponents of this type of thinking often leave their readers unsure of precisely what is being proposed. These open ended (anti-)systems are complex, chaotic, unpredictable, anarchist, Marxist, laissez-faire and who knows what else.

When models are presented in any field, we can use them as tools, or theoretical constructs with their own limits. I propose not to be fooled into complacency about a world that can be simplified by rigid structures. In doing so we unwittingly submit to the very blindspots that these neatly crafted promises fail to articulate or simply ignore, which is exactly what puts our societies, our livelihoods at risk.

6. Friedrich August von Hayek, "The Pretence of Knowledge" (Lecture to the Memory of Alfred Nobel, December 11, 1974, http://nobelprize.org/nobel_prizes/economics/laureates/1974/hayek-lecture.html).
7. Alain Badiou, *The Concept of the Model, An Introduction to the Materialist Epistemology of Mathematics*, trans. by Zachary Luke Fraser and Tzuchien Tho (Melbourne: re:press, 2007), 12.