Stanford eCorner

The True Nature of Fragile Systems

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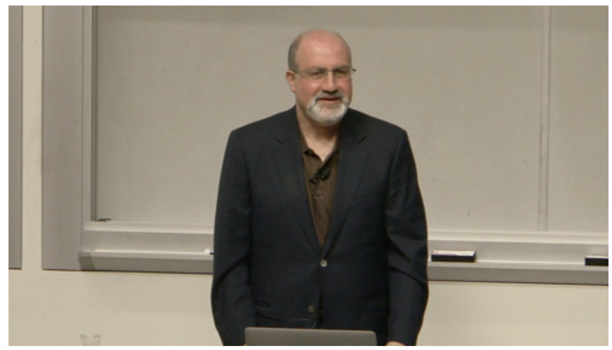
Using the example of a teacup in an earthquake, researcher Nassim Taleb explains the definition and desired state of fragile systems. Taleb articulates why the opposite of fragile is not sturdy or robust, but, in fact, is a concept he refers to as antifragile.



Transcript

There is something interesting that I discovered that took me about 21 years to figure out, 21 years I was an option trader for 21 years and then realized something I knew unconsciously but only became conscious of it one day as I was looking at this patently ugly tea cup, all right. We have a definition for fragility very simply connected to what we saw about options and let me propose the following. Is fragile what doesn't like volatility. If this tea cup is on the table and there is an earthquake, will it benefit from it? No. Very simple. It is fragile because it wants calm and predictability. It's harmed by disorder. You guys have earthquakes in California, it doesn't want an earthquake, it doesn't want to be in California, it'd rather be in New York, you see, very simply. And now from this concept of fragility we're going to get into innovation and optionality, so this is the way I see it is short optionality and let's look at what short optionality is, this is a pay-off of a financial structure that is very vulnerable to phone calls at night, I mean in the middle of the night the chairman of the company gets a phone call saying, oh, there is an event. So this pay-off, this package you make or lose some money, but typically the losses all right are very large and the profits are very small, exactly like the coffee cup, except the coffee cup has no variation except for the loss.

The coffee cup will never improve. Let's see if you can connect this. This package is robust and this package has an opposite pay-off where all the gains are large. The kind of thing that only people in California seem to understand, people in New York they don't get it because people in New York have this pay-off and let me explain. The banks are in the business of hiding risks. So they make, make, make, make, make small. They have no volatility most of the time and once every 10 or so years guess what, they lose everything they make and then they come to taxpayer for support, they have the set-up for people to give them the monitory policy to help them and all that stuff and meanwhile they keep their bonuses, because it's an very efficient strategy where you make, make, make, everybody think you're smart and then when you lose, guess what, it was a bad environment, okay. It was only a quarter when you lost but visibly you've lost more than you ever made. Banks loss in 2008 more than history of banking, all right. And of course they paid themselves a lot of money, they are going to return it to us.

So this is a pay-off that's very similar to a short-term option, you sell an option, you have very little return, you earned some money, but then something happens, you have unlimited losses or very large losses, that pay-off resemble the fragile. The opposite of that pay-off would be something that's long volatility, so when I went to try to explain this, people weren't understanding that the opposite of fragile isn't robust. It's not solid, it is not the opposite of fragile, the opposite of this is not the straight line. It's not a pay-off where you end up unharmed, do you agree? If I am sending a package to say Mongolia interior, alright, and the package is fragile, what do I write on it? Fragile, alright, okay. If the packages robust, what do you write on it? Nothing. So if the package wants volatility, wants to be harmed, wants something, wants disorder, wants earthquake, alright, it's not the same as robust. It would be something in we should write please mishandle I am anti-fragile, it's the opposite of fragile. So the opposite of fragile is not something that is robust or something solid. It's something that wants disorder and guess what, there is something called a cluster and if you like one, you like them all: uncertainty, variability, imperfect and incomplete knowledge, chance scales. These, if you benefit from all of these, you are classified as anti-fragile and it's very similar to someone who owns an option.