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Antifragility

Alex Danco

9-11 minutes

Alex Danco's Newsletter

Two Truths and a **Take**, every Sunday

Seems like a good week, with the Coronavirus pandemic and all, to talk about [this](#):



[Upon request](#), I feel like I ought to explain some of these misunderstandings. I already wrote one a few months back on [misunderstanding "skin in the game"](#) (it's not an incentive; it's a filter). This week we'll tackle another one: [antifragility](#).

Antifragility = you need disorder

First, what antifragile isn't: antifragile does NOT mean "not fragile." It is not robustness, durability, or ability to withstand adversity. I hear some people use antifragile to mean "immunity", or "super-resilience", which aren't it. Other people equate antifragility with optionality, which is closer, but still not quite it. (More on that later.)

Antifragile means "negative fragility". This can be tricky to conceptualize, since there isn't really a word for it in English, or in any language as far as Taleb has ever heard of. Nor are there convenient visual or object analogs we can easily imagine, like the opposite of a porcelain vase or some other clearly fragile object. We can picture something fragile, and then picture the absence of that fragility.

But what about the other side of that spectrum - negative fragility? If fragility means "suffering from disorder", what about something that gains from disorder?

Here, we find antifragility: things that *need disorder* in order to thrive, and will actively suffer if left at rest. Most objects in the world don't have this property, but a lot of complex systems and living things do. Markets, democracies, and immune systems are all antifragile: without variance, they stagnate and die. With variance, especially unexpected variance, they grow stronger. Disorder is a key ingredient to how they function.

Fragile	Robust	Antifragile
Please handle with care; I suffer when disturbed	Indifferent	Please mishandle; I suffer when left alone

The opening example in chapter one of [Antifragile](#), which is the most memorable thought experiment in the book, restates the idea well:

You are in the post office about to send a gift, a package full of champagne glasses, to a cousin in Central Siberia. As the package can be damaged during transportation, you would stamp “fragile”, “breakable”, or “handle with care” on it (in red). Now what is the exact opposite of such situation, the exact opposite of “fragile”?

Almost all people answer that the opposite of “fragile” is “robust,” “resilient,” “solid,” or something of the sort. But the resilient, robust (and company) are items that neither break nor improve, so you would not need to write anything on them - have you ever seen a package with “robust” in thick green letters stamped on it?

Logically, the exact opposite of a fragile parcel would be a package on which one has written “please mishandle” or “please handle carelessly.” Its contents would not just be unbreakable, but would benefit from shocks and a wide array of trauma.

In antifragile systems, stressors are information

Most people get this far okay. But you can tell they sort of sputter out when they try to logic the core mechanism for how variance makes an antifragile system stronger over time, and what is different about those systems compared to fragile or robust ones. One shortcut to understanding it is to think about antifragility in terms of [information theory](#).

Think about a system, humming along in its normal state, and then a stressor is suddenly introduced. A wrench gets thrown into a machine; market demand for a product suddenly changes; a new threat reveals itself; customers start complaining to you in a way you hadn’t anticipated. How does this affect you?

Fragile	Robust	Antifragile
Stressors create uncertainty	Indifferent	Stressors <i>resolve</i> uncertainty (stressors are information)

In a fragile system, that stressor creates uncertainty. You had a plan, and you were good to follow that plan so long as you stayed within a certain state. But now you’re thrown into a new state, so your plan no longer works. You’re in trouble. That’s fragile.

In a robust system, that stressor is information-neutral. You had a plan, and there’s enough buffer or slack in your system to absorb the stressor. Your state is resilient to the new challenge; the plan continues.

In an antifragile system, that stressor *resolves uncertainty*. You had no preexisting plan; the stressor tells you what to do. In an antifragile system, stressors are information. Without stressors, an antifragile system is rudderless. It doesn’t know how to grow or what to do. It actively suffers, until a challenge gives it direction.

Antifragility and optionality aren’t the same thing

The rookie mistake is to confuse antifragility and robustness; the more advanced mistake is to confuse antifragility with optionality. They’re related, but they aren’t the same thing. Options are something you have, whereas antifragility is something you *do*.

Optionality is a precondition to antifragility, but just because you have options doesn't mean you're antifragile. A fragile organization, facing an unknown stressor, may have plenty of "options" available to them. But if you don't know what to do with those options, and if you don't know how to grow into the challenge, then those options don't do you any good.

Antifragility is something you do, rather than something you have or something you are. Antifragility is an operating state of growing through continuous reaction. It's like the opposite of predicting the future. You're not making any forward-looking assumptions about anything, but you need disorder: you need a state change to have something to react to. Good antifragile systems react quickly and correctly, like the Hydra growing new heads when you cut one off. Without disorder, the Hydra doesn't grow.

Taleb's favourite go-to example is deadlifting: free weights make you stronger (as opposed to exercise machines) because they expose you to more stressors, and more degrees of freedom in how they stress you. Your muscles and joints are antifragile, because of what they *do*: they are oriented towards those stressors, and they use those stressors as information. Optionality is not enough: having the option to grow is not the same as growing in active response to stress.

Accordingly, antifragile systems and organisms tend towards a common theme: bottoms-up decision-making, rather than top-down decision making. Antifragility requires real options, and real options are low-cost. Antifragility is only successful if you can actually detect, react, and grow in response to deviations from your present state in real time; the only way you can feasibly do this is for disorder detection and response to take place at a small enough resolution, and tight enough turnaround time. Top-down systems have a hard time with antifragility, because for them, all options are costly.

Coronavirus

In context of what's going on with the coronavirus pandemic, you can see this relationship between optionality and antifragility playing out in real time. You can compare different countries' reactions and responses and see how, for example, what's a cheaper option to Singapore might be an expensive option for America (swift state action to clamp down on transmission). The stressor, "There is a virus" is *information* to the Singapore government, whereas it's uncertainty to Washington DC.

Another notably antifragile country that's gotten a lot less attention, but has [responded in exactly the way you'd expect](#), is Switzerland. On February 25th, Switzerland saw their first domestic case; three days later, they'd banned all events of over 1000 people. (Imagine the United States acting with that kind of speed!) Since then they've repeatedly recalibrated their testing policy as conditions change in real time; it's not like they don't have the virus, but you can see they're dealing with it in their stereotypically Swiss way. **Update: since writing this a few days ago, it looks like Switzerland still has it pretty bad. Here's hoping they pull through.*

On the other hand, there are other aspects of the American system that are going to shine in the response and aftermath here. The American system, for better or worse, is good at never letting a crisis go to waste. It's hard to see in real time how today's reactions will build muscle for tomorrow; the process is going to hurt a lot. But America was built for this. The gym is now.

Permalink to this post is here: [Antifragility | alexdanco.com](#)

A few other things to read this week:

DeFi, the next-generation distributed finance platform (and/or perpetual motion machine) built on top of Ethereum, is going through a massive stress test right now as plummeting prices trigger a wave of margin calls, and then second-order consequences. (More will certainly have happened since I wrote this, so check live results if you're interested.)

[MakerDAO gets stress tested as Eth price plummets | Jack Purdy, Messari Crypto](#)

In other news, AWS's home grown CPUs have gone from meh to kicking ass in a (not) shockingly short amount of time:

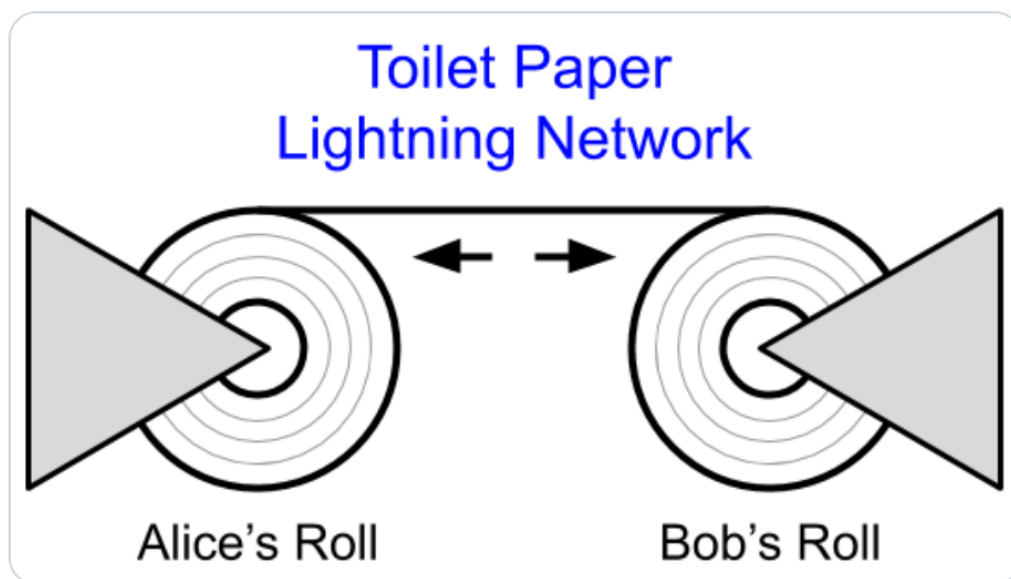
[Amazon's ARM-based Graviton2 against AMD and Intel: comparing cloud compute | Andrei Frumusanu, Anandtech](#)

And finally, [this week's comics section](#):

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I don't mean to shit-talk, but given that Toilet Paper has proven to be a better Store of Value than Bitcoin, I came up with a solution for building Lightning Network on top of Toilet Paper. 🧻🧻



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Stay safe,

Alex