

URL: <https://stvp.stanford.edu/clips/anchor-ideas-facts>

Zymergen's Joshua Hoffman talks about the importance of learning how to reason from first principles, and not basing your actions simply on what has worked before. By going "up a layer of abstraction" and thinking theoretically, you can rise above a problem and see your way out of it. He says this approach should be supplemented by diving deep into your data.



Transcript

- I think it's really important to learn how to reason from first principles.. When I say that do folks know what I mean when I talk about from first principles? I see some nod, some not, so let me describe the thing that is, one of the things that's been most challenging at Zymergen, is we work with lots of large-scale chemical and ag and pharmaceutical companies.. We want to make sure that we, you know, as we grow, people that have some experience working with those companies but the single biggest failure mode that we've seen from more experienced individuals is people have come in and said I knew how to do A, and B, and C before, and so I'm just gonna do A and B and C.. They were not able to understand the context and to adjust from first principles, oh, I did A because of one, right? Well, that is a bit abstract, but one's not exactly like that, so I can't do A.. I have to adjust A accordingly, and again, the act, I think, of building something big and lasting as an entrepreneur involves being able to find those places where you can replicate a set of patterns that have come versus where you have to invent from whole cloth.. One of the things that somebody said in a different context, one of the things that How many people here know about the PayPal mafia? Okay, good, lots of hands went up, phew.. So, I'm lucky enough that one of those guys, Max Levchin, is an investor in Zymergen, and one of things that somebody said about Max and a bunch of his co-founders, or the senior peoples, they were unusual in that they were a team that had a distinctive ability to break down a problem and think about it from a first principle standpoint.. They were doing little pattern spotting, and I think that that ability is incredibly powerful to be able to figure out what you want to do, how to solve problems you haven't seen before.. I think there are a couple of tricks that I would encourage folks to have, to help you learn from first principles..

One, learn to think, and these are gonna be kind of opposite ends, again, a bit of a theme, right? Learn to think about how to always go up a layer of abstraction, right? Maybe this is kind of a software engineering mindset, but parameterizing something is an interesting way to get out of a box, right? You say, oh, if I just parameterize that, if I go up a level of abstraction, then I can kind of create a slider bar on something.. I'm trying to think of a good example, and I can start to see the problem, and I can find a way out of it, right? But the flip side of that is also make sure you're really diving deep into the data, right? One mistake that I see lots of people make, and I think it's super important if you're trying to build a business, especially a business that hasn't existed before, is to really figure out what's going on as opposed to just what people tell you, right? I think it's super easy to lose faith in what you're doing and the way to keep, you know, it's hard to build a business, right? And so if you know, if you have confidence in the reality that you're trying to hew to, then I think it's easy enough to keep faith, whereas if you're constantly trying to chase the shiny object, right, oh, I should do this because TechCrunch said I should, you're gonna drive yourself crazy.. So I think it's important to learn to reason from first principles, both to solve problems and also to keep faith..