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/r/WallStreetBets is trying something unprecedented in history — and the media’s not reporting on it at all.

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(No, this isn’t a clickbait title. The unprecedented part is technically interesting and legit can’t be compressed into a headline.)

First, some background. If you’ve been following mainstream media coverage of /r/WallStreetBets and the wildly swinging Gamestop stock, you may not be aware that /r/WallStreetBets has a Plan at all beyond “Let’s all buy the stock to pump it up, making all of us rich.”

But /r/WallStreetBets has a Plan — a Plan which *doesn’t* rely on there being a greater fool to buy at a higher price. I was quite surprised, when I first looked into the affair yesterday — surprised enough that I ended up writing this article despite having no specialist expertise or credentials. No, I’m not buying or selling Gamestop, and I won’t be recommending that you do so. I’m writing this because a certain feature of the affair is one I find *interesting*. On my home planet it would be front-page news, but the media here has other priorities; it hasn’t reported at all the *interesting* part, anywhere that I’ve read.

So what’s this Plan about? Roughly, it’s to engineer a short squeeze on Gamestop, but with a historically unprecedented twist. No, I *can’t* just tell you the twist right this minute and stop wasting your time. It legitimately takes some background to explain, unless you’re starting out understanding more than I did. In principle, one could deduce it *just* from having heard “/r/WallStreetBets has a plan to engineer a short squeeze on Gamestop”; but I had to be walked through several steps myself before I realized.

First, the basics of how a “short squeeze” happens. Yeah, I also thought, going in, that I already understood that; but there were some key details I was missing.

Sometimes, when you think you’re holding a stock in your account — say, GlomCo stock, for the sake of concreteness — your broker isn’t *really* holding all the shares of that stock. What your broker did instead, was charge somebody else to borrow some of the GlomCo shares it’s theoretically holding on behalf of end-consumers like you; then the borrower sells the GlomCo stock with intent to buy it back later and repay the loan. Key detail: whoever buys this stock may then have *their* broker quietly loan it out again in turn, behind the scenes.

Or more concretely, Alice buys 100 shares of GlomCo and holds them at Charles Schwab. Charles Schwab quietly loans those 100 shares to Bob, who short-sells them to Carol, who holds her shares at Fidelity, which quietly loans out 100 shares to Dennis, who sells them to Eileen. If you imagine that GlomCo only had 100 shares in the first place, then at the end of this operation there is “200% short interest outstanding” in GlomCo: Bob and Dennis have collectively borrowed-and-sold (and now owe back) 200 shares of GlomCo, or 2X as much as actually exists. That’s *without* “naked shorting” or selling synthetic copies of a stock.

(Incidentally, I’ve read a paper claiming that an investor can get 5% higher returns than the broader market shows on paper, simply by indexing broader stocks *except* for stocks that cost a lot to short. This doesn’t violate the (weak form of the) efficient markets hypothesis — because what’s actually going on, is that big holders of stocks are collecting interest from loaning out the stocks themselves, instead of their brokers doing it behind the scenes; and this payment factors into the efficient stock price. Think that brokers quietly taking these earnings from small retail investors should be illegal? You might have a case there, but that’s not what this article is about.)

The last I heard, Gamestop had 130% short interest outstanding. That is, short-sellers have collectively borrowed, and now collectively owe, 130% as much Gamestop stock as exists anywhere.

This happens, from time to time, in stock markets. When it does, it creates an opportunity for hedge funds to make a daring play. If a hedge fund can buy up enough of the company stock themselves, they can hold enough that the short-sellers *have* to go to the hedge fund to buy back the stock. In principle of purely theoretical examples, the hedge fund could charge infinity dollars for the stock, assuming the short-sellers had infinity dollars to pay them.

Cases surprisingly close to that have actually happened. In one of the legendary cases, Volkswagen was very heavily shorted, and Porsche announced it had bought up over 74% of Volkswagen... while around 55% of Volkswagen shares were held by index funds, effectively unavailable for trading at any price. That these two numbers sum to over 100% is not an error. Prices of Volkswagen shares spiked to where Volkswagen was briefly the most expensive company in the world. Or for another example, Martin Shkreli once engineered a 10,000% price rise via short squeeze on a small company called KalaBios. It’s not just a weird hypothetical theory; it has actually worked and people have collected huge profits on it.

This is what /r/WallStreetBets is trying to do with Gamestop — buy up enough of Gamestop themselves that there’s not enough other Gamestop shares left, on the broader market, to pay back the 130% outstanding shorts. If it works, it forces the short sellers to buy back some shares at whatever price /r/WallStreetBets decides to charge. The stock price is swinging as I revise this; when I wrote the first draft, as of Wednesday’s close the stock price was at \$347, for a market cap of \$24 billion. Gamestop was under \$5 one year ago.

But so far as I know, this scheme has never before been successfully carried out *by a large group of retail investors* instead of a hedge fund. And there’s a fundamental reason for that! A group of retail investors face a technically interesting *coordination problem* in trying to engineer a short squeeze, a problem that one monolithic hedge fund does *not* face. So I will be *really* interested if /r/WallStreetBets pulls it off successfully, or even mostly successfully.

That’s the part that would be front-page news on my home planet: “Group of unprecedented size daringly challenges a never-before-solved difficult coordination problem, with billions of dollars at stake! They’ve made huge progress, but their critical difficulty is still to come!”

Again, some background.

What most mainstream coverage I’ve seen, tries to insinuate is going on, is that /r/WallStreetBets is just a horde of suckers on the Internet, trying to buy up enough of some random company that the stock price skyrockets, hoping they’ll all get rich. From reading mainstream coverage, I didn’t realize there *was* a Plan beyond this; until I mentioned the issue on Twitter, and some more knowledgeable people graciously corrected me. But indeed, if that were all that was happening, it would be a classic “pump” scheme; which can’t generate net profits for all of the buyers, because the buyers are playing a zero-sum game among themselves.

You probably consider that obvious? I’m still going to walk through the impossibility in concrete detail, because it will be helpful in constructing a more complicated scenario later on.

Suppose that Mr. Siner — which stands for Straw Naive Redditor, a person who may or may not be playing any significant part in this in real life — comes to you and says:

“Well, hey, stock prices are all made up anyways, they’re just worth whatever other people will pay for them. So what’s wrong with the cunning scheme of a bunch of us getting together and buying up TrashCo stock, currently at \$5, until it reaches \$500 and we’re all rich?”

“It might seem to work for a time,” you reply to Siner, “but the trouble comes when you *try* to cash out of the TrashCo stock and realize your apparent gains. *Other* traders aren’t going to buy in at your high price, once TrashCo’s price-to-earnings ratio reaches 1500 instead of 15.”

“We’ll just buy it from each other,” says Siner, “when one of us wants to cash out, so the stock price doesn’t drop. We’ll all be rich and able to afford it.”

You shake your head. “Sorry, no. You’d need to have \$500 already in your pocket, to buy back one share of the inflated TrashCo stock from one of your co-conspirators. So you’re just moving around dollars you already had between each other. And what actually happens in cases like that, in real life, is that the sponsors of the scheme quietly get out first and drain \$500 per share from each of you, leaving the rest of you holding the bag. Your scheme is isomorphic to setting up a collective kitty containing all of your life savings, say \$1 million total, and then issuing 10,000,000 shares to yourselves, each share supposedly redeemable for \$1 from the kitty. Do you all now have assets worth \$10,000,000? In your own minds, maybe, for a time; but what happens in real life is that the first people in the group to redeem \$1,000,000 worth of shares get all your life savings, and the rest of you are left holding the empty bag.”

“How is that different from fractional reserve banking, huh?” says Siner. “How is that different from Bitcoin? Doesn’t the whole stock market just work like that, a bunch of people trading ultimately worthless pieces of paper around in hopes somebody else will pay more for the paper? How is that different from *the concept of money in the first place?*”

“Yeah, see, you’re going to need a more complicated and controversial set of explanations than I really want to go into right now,” you reply. “Like about how Bitcoin *supposedly* has a price-insensitive use as a medium of exchange, which allegedly supports its use as a store of value, and tender laws for government currency... I really don’t want to go into it. Look, the critical point is that, *in real life*, pump-and-dump always leaves a buncha chumps in the slumps. There are some people who say the same must inevitably happen to people who hold US dollars, yes. But this is at the very least *more controversial*, even among people who Know Things; and the US dollar going to zero will take *longer*, if it happens at all. In real life, the people promoting the scheme for you to club up and buy TrashCo are going to *quickly* take your money and run, on a timescale of days, not decades. The theoretical difference between that and US dollars, if any, is not the point. This isn’t about justice or fairness; it’s not about how it feels asymmetrical and wrong that *you’re* somehow not allowed to pump up TrashCo and profit from that, when you believe the US dollar is just as worthless in principle. It’s about what happens *quickly* in real life when somebody announces a scheme to buy up TrashCo and collectively inflate the stock price. It’s isomorphic to setting up a kitty that contains a million dollars, so you can issue yourselves 10,000,000 shares each redeemable for \$1 from the kitty. The first people to redeem 1,000,000 shares get a 10X return on investment, and the holders of the remaining 9,000,000 shares are left with nothing, in a zero-sum game among yourselves that doesn’t pull in wealth from anywhere else.”

Which is what practically all of the mainstream media coverage seemed to insinuate was going on with Gamestop. As is in fact wrong, since the outstanding 130% short interest does change the nature of the game, along with some key dates in expiring options and other technical details. It’s still a zero-sum game between all of the traders *including* both the short-sellers and */r/WallStreetBets*. But */r/WallStreetBets* can potentially extract very large amounts of money from the short-sellers, who end up obligated to buy back the borrowed stock even at a very high price...

...*if* */r/WallStreetBets* can remain internally coordinated in the face of a certain challenge, which is the surprisingly interesting part.

Here is another thing that had to be pointed out to *me*, which made me think it was worth writing up in case anybody else had missed it: If there are 130% outstanding short positions, that means there are *230%* outstanding *long* positions. So when you are engineering a short squeeze, not *all* of the stock the squeezers hold, can be sold back to short-sellers at the ultra-high price.

Let’s go back to Alice through Eileen again. Alice buys 100 shares of GlomCo to hold, her broker quietly loans the actual shares to Bob, who sells them to Carol, whose broker quietly loans the shares to Dennis, who sells them to Eileen. At the end of this operation, 200 shares of GlomCo, or 200% of the whole company, are collectively owed by Bob and Dennis; but Alice, Carol, and Eileen collectively think they own 300% of GlomCo.

Even though Eileen thinks that she owns 100% of the total GlomCo stock in actual existence, and even though Bob and Dennis have borrowed 200% of GlomCo, there’s no guarantee that Eileen could sell any of *her* stock to Bob and Dennis during a short squeeze. If Eileen demands a high price, Bob and Dennis can just buy Alice’s and Carol’s collective 200 shares of GlomCo instead.

What if Eileen successfully buys another 25 shares of GlomCo from Alice, and 25 from Carol, so that Eileen now owns 150% of GlomCo? Well, *now* Eileen is theoretically in a position to demand any ransom she pleases from Bob and Dennis. Bob and Dennis can try to play Alice and Carol off against each other, get Alice and Carol to try to underbid each other, but they *have* to deal with Eileen. So far as idealized examples go, absent any other laws, Eileen could demand infinity dollars. She could demand a leph-one dollars, if Bob and Dennis had that much money available to pay.

But even then, Bob and Dennis don’t need to buy *all* of Eileen’s stock. If Bob and Dennis can buy all of Alice’s stock, they only have $200 - 75 = 125$ shares of remaining obligations; they only need 125 shares of Eileen’s 150. If Bob and Dennis buy up all the stock held by Alice and Carol, they only need $200 - 150 = 50$ of Eileen’s 150 shares, that is to say, $1/3$ of the stock Eileen holds. But they do still *need* those 50 shares; and in the pure principle of simplified examples, Eileen could demand higher cardinal infinity amounts of money that would require mathematicians for accountants, assuming as always that Bob and Dennis can afford it. But let’s just suppose for now that Eileen demands a cool *one billion dollars*. It’s a good deal for Eileen if she originally bought the shares for \$5 apiece at Costco.

But what if Eileen isn’t one person? What if Eileen is secretly *two* people, Ei and Leen, inside a large coat; two people who are each individually holding 75 shares of GlomCo stock, but with a shared cunning Plan and pact to together extort one billion dollars from Bob and Dennis?

If Ei and Leen can trust each other and coordinate with each other, they can both do quite well for themselves. Even if Bob and Dennis can buy up the 150 shares of GlomCo held by Alice and Carol, they need another 50 shares from somewhere. Ei and Leen could agree to each only sell 25 of their shares, for half a billion dollars each, to Bob and Dennis. After that the remaining 100 shares of GlomCo, of which Ei and Leen still hold 50 each, aren’t worth nearly as much; there’s no-short sellers forced to buy them. But Ei and Leen’s pact says they’ll just hold onto those shares forever, or for another year or two; that’s fine by them, they’ve got their \$500,000,000 each.

But oh no, what if Ei evilly sells *50* of her 75 GlomCo shares to Bob and Dennis, for \$750,000,000? That’s a better deal for Bob and Dennis, who only need to pay \$750M instead of \$1,000M; and it’s a better deal *individually* for Ei, who gets \$750M instead of \$500M. Leaves poor Leen out in the cold, though! Leen is left with 75 GlomCo shares that aren’t worth much, with no Bob or Dennis forced to buy them at any price.

And if Ei and Leen start bidding against each other, trying to undercut each other to be first to sell 50 shares to Bob and Dennis? Then that’s the end of their pact and cunning Plan.

(Oh, and why is it important that Ei and Leen hold onto their remaining GlomCo shares for a while, instead of selling them off as soon as the Plan ends? Well, imagine that instead of being two people, Bob and Dennis are actually a diverse horde of individual traders and institutions who’ve all shorted GlomCo for a collective 200 shares, and they’ve already bought up the 150 shares that Alice and Carol were willing to sell. Ei and Leen say, “We’re selling 50 total of our shares this week, and that’s all, so cover your bets right now.” Let’s suppose that most of the Bobdennis horde go along with that. But one wise trader of the Bobdennisions holds out for another week, gritting their teeth and paying the very high short interest and margin charges... and then Ei and Leen dump the rest of their stock and the price crashes, and that wise trader exhales and covers their short at a much cheaper price. Well, if everybody expects *that* to happen, *everyone* will grit their teeth and hold on another week! So Ei and Leen can’t be visibly planning to dump their remaining stock one day after their Plan concludes, if they want the Plan to actually conclude.)

But now suppose that Ei and Leen are themselves a vast horde constituted of some substantial fraction of the 4.8M subscribers on */r/WallStreetBets*, of whom 1.2M are supposedly online. I don’t know how large a fraction. Let’s say it’s 100,000 people. Or 10,000, wouldn’t make much of a difference.

Now we have what is, so far as I know, a *literally historically unprecedented attempt at group coordination among human beings*.

It’s *not* analogous to a group all putting their life savings into a big kitty, and issuing excess shares in the kitty to themselves, and trying to “coordinate” to not withdraw too much. There *is* a big prize to be won for themselves at the expense of the short-sellers, a huge pot of money they can draw in from outside themselves ...

... *if* they can coordinate to not sell back *too many* of their shares to the short-sellers. Which means they can’t *all* sell back *all* of their shares when prices get high enough to satisfy them.

If too many of them try to sell all their shares back, when the price goes astronomical— then the very very earliest sellers may make a vast profit. But the share price will start dropping fast, and *only* the earliest sellers will get Lambos.

When I imagine how I’d plan the strategy among well-coordinated agents, I imagine a policy where on day 1 of the stock price going above \$1000, everybody sells out enough stock to earn back their initial investment, stopping selling whenever the price goes under \$1000; on day 2, everyone is supposed to sell 10% of their remaining stock, again only selling when the price is over \$1000; and so on until the price doesn’t rise above \$1000 again. 1 year later, you sell whatever’s left.

Of course, anybody can defect against the strategy, jump the line and sell off 100% of their shares, and *cash out* entirely that same day. Cooperating with the strategy doesn’t just *delay* your payoff; the cooperators ultimately get paid less total, because they can’t sell all their stock at the top prices.

If too many people defect and sell 100% right away, the scheme collapses. The stock price may drop precipitously if it looks like that might be *starting* to happen; and then the scheme is only repairable if that causes enough */r/WallStreetBets* to lock up, hunker down, and wait for the price to go back up again. If instead it panics a large-enough fraction of squeezers into selling 100%, the whole scheme is over.

This is why short squeezes are usually engineered by a monolithic hedge fund — it doesn't face the same coordination problems internally.

For a hundred thousand people to do the same would be unprecedented! I don't just mean that the particular scheme of short-squeezing is unprecedented; I mean that I've never heard of *human beings* successfully solving a coordination problem built out of thousands of strangers, with big financial payouts for early defection and zero ability to enforce against defection. Contrary to some widespread academic misconceptions, this is readily solvable in principle [for rational agents who all have common knowledge of each others' algorithms](#) (that being what I actually do have expertise in, by the way; [formal paper here](#) and [citable published paper here](#)). But when it comes to actual human beings, I've never heard before of that being *tried*, at that scale. That they got Gamestop's market cap up to \$24 billion, as of Wednesday's close, is already further than I'd have expected them to get! If, like me, you consider most of civilization's important problems to be ultimately coordination problems, you can see why I say that this would make the front page of every newspaper on my own home planet.

So that was the exciting news! Here's a more worrying caveat: As near as I can make it out from a quick check on [/r/WallStreetBets](#), there doesn't seem to actually be a widespread coordinated plan? Which might actually be illegal (or so some strangers on Twitter allege) if you're a group of retail investors trying to cooperate with each other on a strategy, instead of being one big hedge fund carrying out exactly the same strategy? But there also doesn't seem to be a widespread appreciation on [/r/WallStreetBets](#) of the point that not everyone can sell back all of their stock at the moon price? Unless I'm just missing that part, among all the humorous Reddit comments saying "BUY NOW SELL NEVER" posted by users who might or might not actually have any money in the game at all.

Also important for real life: Some strangers on Twitter claim that a lot of the action may be hedge funds jumping in on buying Gamestop, maybe more than all of [/r/WallStreetBets](#) put together. *If* true, that sounds to me like a gloomy prospect for [/r/WallStreetBets](#).

At press time on the Internet, Gamestop is at \$225, down from a daily peak of \$483, down from Wednesday's close of \$346, up from a daily low of \$112, and up \$4 in the last five minutes. Tomorrow, Friday, is a date when a lot of options close out. We'll see how it goes.

Though on a note I find a little sad, today's drop in Gamestop seems to have been triggered by Robinhood and Interactive Brokers restricting Gamestop trading to closing out existing positions. With [/r/WallStreetBets](#) challenging a daring coordination problem like this, I would have liked to see them succeed or fail based on how well they cooperated; not by institutions deciding that retail investors aren't allowed to exploit the same opportunities as hedge funds.

I sincerely and unironically wish [/r/WallStreetBets](#) the best of luck. But I won't be buying Gamestop.

PS: If you're a WallStreetBettor and you win this, please consider donating some of your earnings to [effective charities](#), many of which accept donations of appreciated stock for added tax efficiency. The best charities in a cause area can be orders of magnitude more effective per dollar than average charities, and that's not even taking into account differences between cause areas.

Thank you to Twitter users [@sdand](#), [@arjunx Kapoor](#), [@ecree429](#), [@simoj_](#), and [@ESRogs](#) among others for helping me to understand this affair; assuming that I actually do understand it now, which may well turn out not to be the case. To read through the embarrassing Twitter thread of my initially misunderstanding this and being (partially?) corrected, start [here](#).

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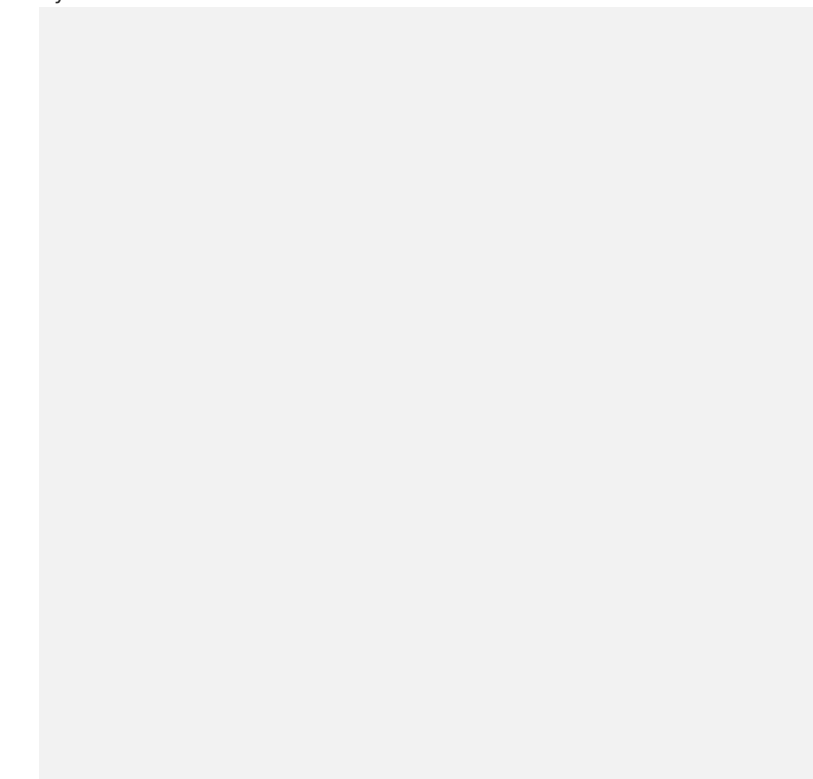
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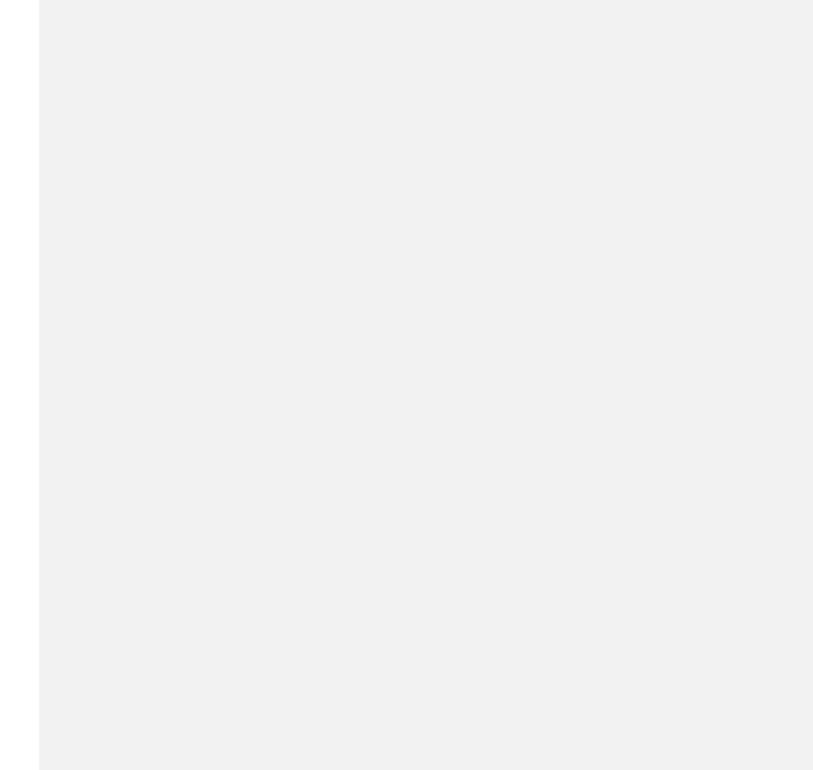
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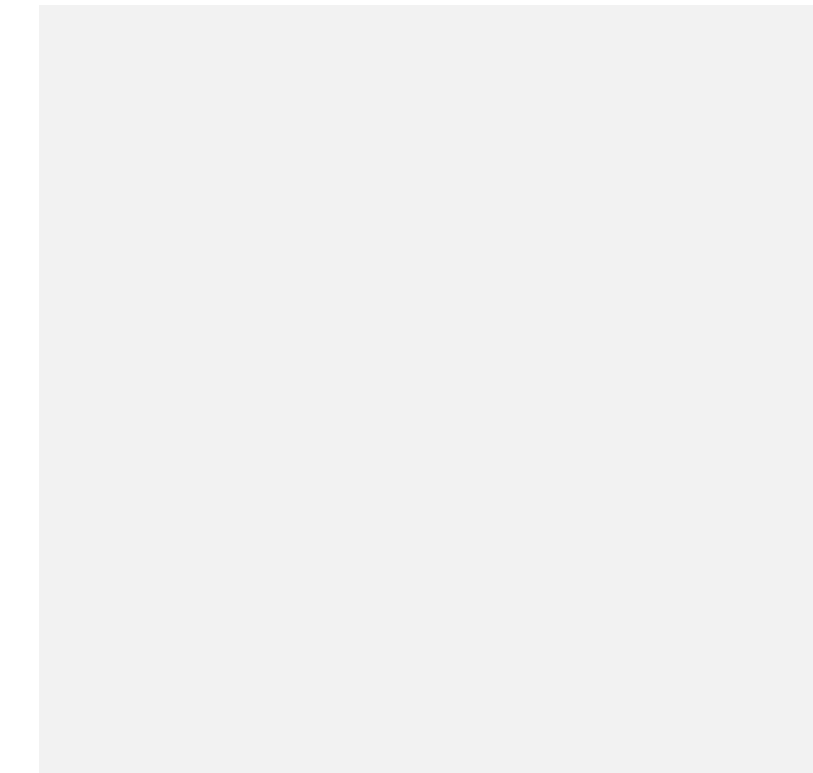
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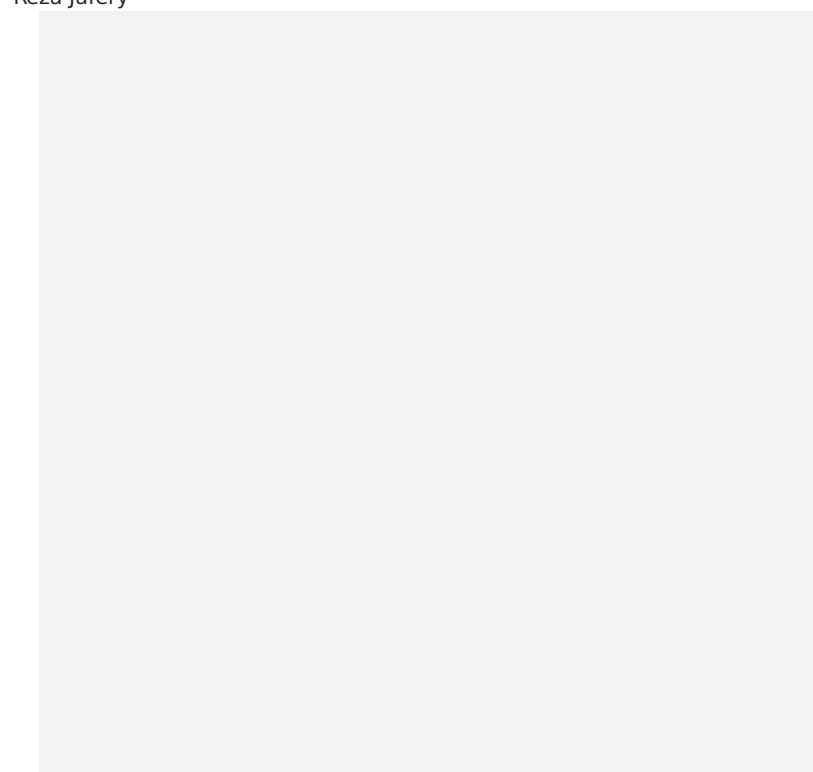
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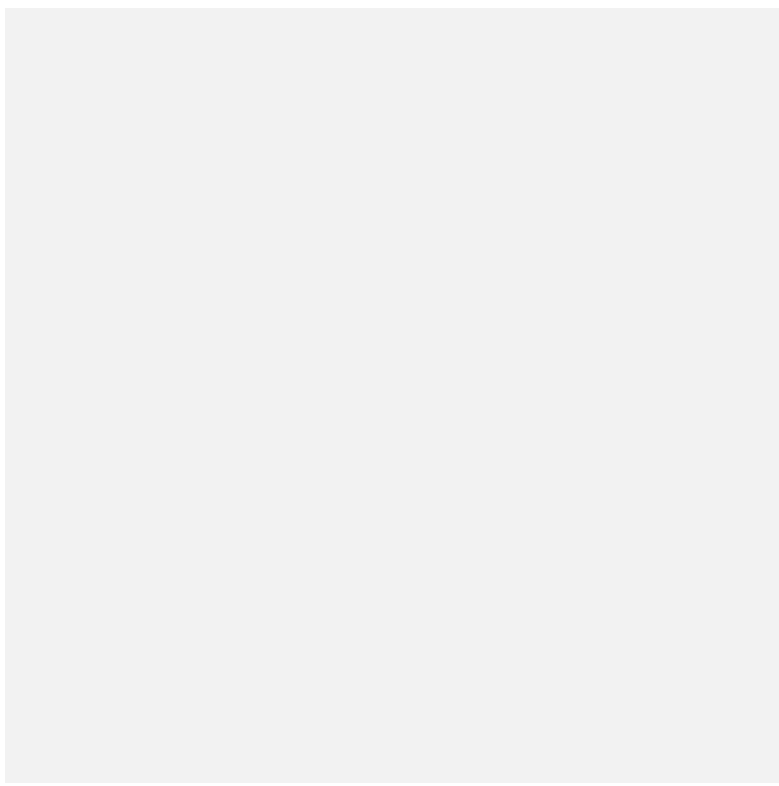
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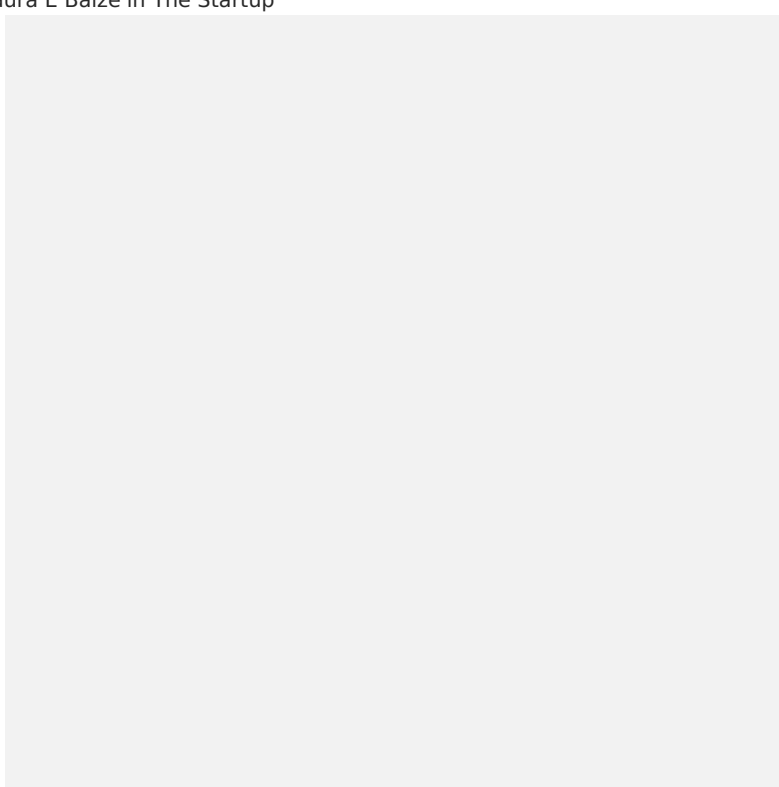
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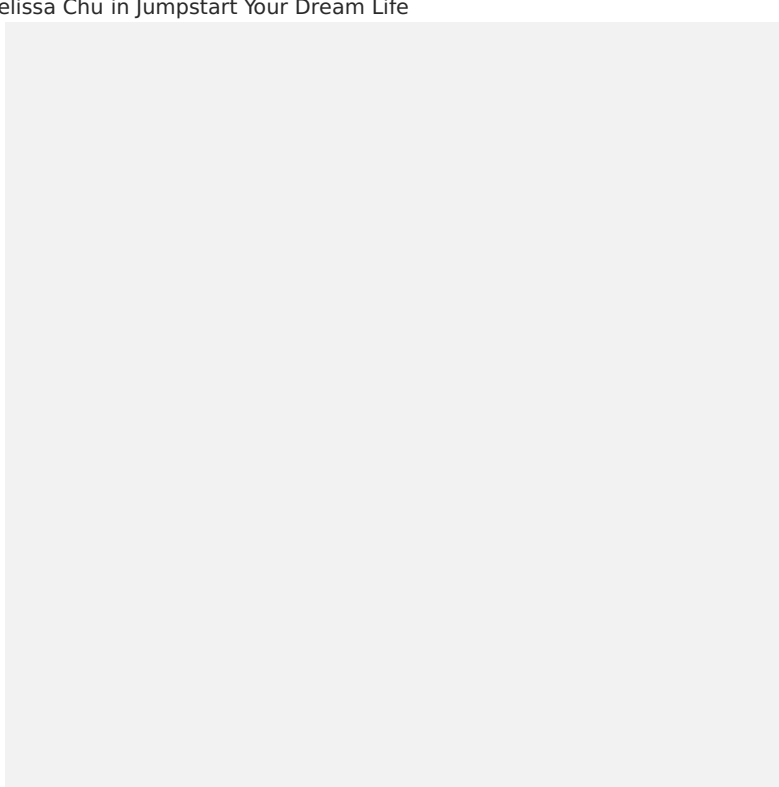
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