An Equity Note

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What's Inside:

Companies Mentioned:

- 1stDibs (DIBS)
- TrustPilot (TRST)
- Centrus Energy (LEU)
- Nintendo (NTDOY)
- Ammo Inc (POWW)
- Corteva (CTVA)
- St. Joe's (JOE)
- FIGS Inc (FIGS)
- GameStop (GME)
- Bitcoin (BTCUSD)
- ARK Invest (ARKK)

MO Equity Note: It's Meerkats All The Way Down (& Portfolio Updates)

Happy Saturday! This weekend we're diving into the beautiful world of meerkats and how they relate to a core tenant of our equity investment philosophy. Don't worry. It will all make sense in the end.

Then, we'll touch on a few portfolio updates we made during the week and how we're thinking about positioning a few names in the coming weeks.

We're slightly deviating from our usual Equity Note style and venturing into the messier world of biology and networks.

Please let me know what you think and if you'd like to hear more connections between ecology and business. After all, what are businesses but a collection of complex ecological systems?

Let's get after it.

It's Meerkats All The Way Down

Earlier this month, I started reading Andrew Chen's "The Cold Start Problem." The book tries to answer a few big questions regarding **network effects**:

- What are network effects?
- How do you kickstart them?
- How do you scale them?

Network effects are one of the most potent moats in business.

We *love* network effect businesses at Macro Ops HQ -- and they're my favorite businesses to study. However, the model's success breeds phonies and scams. Here's what I mean.

Scammers craft fake Rolexes and Gucci bags, not Walmart-brand sweatpants. A network effect is a *luxury* business model. One that

-- when successful -- enjoys higher multiples and more robust cashflows than its non-network effect comparable.

In other words, many businesses *claim* to possess network effects, only to leave investors holding a fake Gucci bag.

Historically, investors used Metcalfe's Law as a model to understand the intricacies of network effects. However, Chen argues that Metcalfe's Law is actually a *poor* mental model when it comes to network effects (emphasis mine):

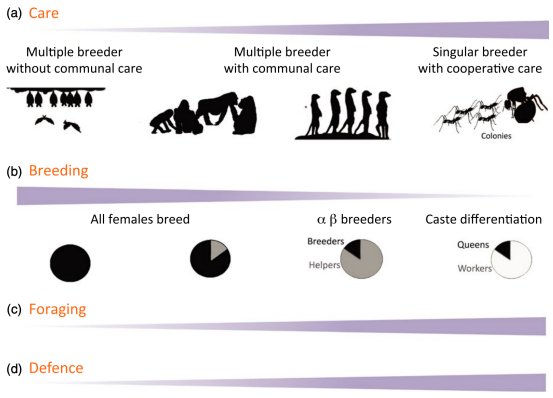
> *"Anyone who's ever actually built a networked product from scratch will tell you that unfortunately,* ***Metcalfe's Law is painfully irrelevant.*** *Although clever for its time, it has not aged well. Metcalfe's Law leaves out important phases of building a network, like what you do right at the beginning when no one is using your product. Nor does it consider the quality of the user engagement, and the multi-sidedness of many networks -- buyers and sellers, for example."*

Clearly, there are holes in Metcalfe's Law. But is there a better model? One that allows us to better understand the nuances and powers of network effects? Enter meerkats.

Meerkats: A Better Mental Model For Network Effects

Meerkats are complex creatures. There's nothing innovative about meerkats besides their role in The Lion King in isolation.

However, put Meerkats in a group (also called gangs) and watch the magic of network effects unfold. Meerkats benefit from **Allee Effects**. Discovered by Warder Clyde Allee, we can think of Allee Effects as the building block upon which *all other* network effects exist.



The Journal of Animal Ecology defines Allee Effects as "*A positive relationship between mean individual fitness and population size or density, generally occurring in small populations."* In layman's terms, individuals get stronger as the group gets larger. The Ecology journal confirms our layman interpretation, explaining (emphasis mine):

> *"Allee effects occur when there are **beneficial interactions among individuals** that **cause the per capita population growth rate to increase with the number of individuals."***

The paper notes four everyday beneficial interactions among animal species:

- Communal Care
- Breeding
- Foraging
- Defense

Notice the meerkat in the image above. Meerkat gangs are textbook examples of the power of Allee Effects.

The Southern African meerkat typically lives in groups of up to 40 individuals. A single meerkat wouldn't stand a chance on the African badlands.

It's only when meerkats live together that each individual flexes its powerful fitness. Think about the above four interactions. A small group of 3-4 meerkats can't satisfy each of those interactions. Sure they could breed.

But who will forage for food? And how will they look for enemies if everyone's foraging?

Scientists confirmed the issues of smaller meerkat groups and their effect on mortality. The article explains (emphasis mine):

> *"In meerkats, **lower probability of litter survival and higher juvenile mortality** have been **observed in small groups**, owing to the **higher costs of foraging** or **babysitting** when too few adults are present."*

Too many jobs, too few bodies. That's why that 40 number is so significant. Hit the minimum, achieve "full employment," and kickstart the most potent network effect possible. Auckland Ecology explains what happens when meerkats hit that minimum threshold (emphasis mine):

> *"**Responsibilities** such as baby-sitting and raising the young, foraging, burrow maintenance and standing guard **are shared.** They also huddle together for warmth, and band together against rivals and predators."*

A fully-equipped meerkat gang can accomplish every task simultaneously. A handful of meerkats baby-sit while another group forages for food. Similarly, a third cohort stands watch and alerts the bunch of potential predators.

That's the power of Allee Effects in motion. The power of network effects.

To use a video game reference, hitting the gang minimum causes each meerkat to "level up" in their individual fitness. Leading meerkats to have an exponentially higher chance of survival -- moving from individual to maximized group fitness.

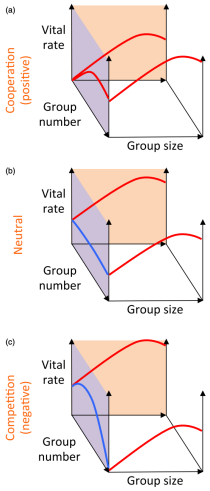
Animal groups that display Allee Effects are more substantial, more robust organizations. Journal article author, Angulo, explains this concept, saying, *"Populations with high group size heterogeneity and in which the individual social groups cooperate have been found to buffer most of the Allee effects, and may thus provide an explanation for why* ***extinctions due to Allee effects are rare in social species.****"*

Allee effects buffer extinction. Chen brings the above concept back to meerkats (emphasis mine):

> *"More meerkats then beget more, and even if predators occasionally pick one or two individuals off,* ***as long as the overall population stays high, it will keep growing.****"*

But is there such thing as too many meerkats? Too much of a good thing? Yes.

The Dangers of Crossing The Threshold



There is a point of maximum fitness. A ceiling in the Allee Threshold where more meerkats make the group *more susceptible* to extinction -- the carrying capacity. Here's how the journal article describes carrying capacity (emphasis mine):

"Increasing the group number may be detrimental, especially for the smallest groups, which suffer most from intraspecific competition ... In this case, with negative interactions among groups (groups compete), a component or demographic ***Allee effect at the group level may be exacerbated as group number increases*** *(i.e., the effect of increasing group size increases the probability of group extinction.)."*

Said differently, too many meerkats fight for too few resources. Crossing the Allee Threshold catalyzes all the powerful aspects of network effects but reverse. Soon, the group collapses on itself and fades into extinction.

The most successful networks are the ones that solve the Allee Threshold optimization problem. Not too few and not too many. Just right.

So why does any of this matter? Why should we, as investors, take the time to understand the complex meerkat ecological system?

Because meerkat ecology and Allee Effects are the best mental model for network effect businesses. Let's dissect a few examples from our portfolio and watchlist companies.

Two Examples of Meerkat Businesses

Remember, the most critical lessons from meerkat ecology are:

- **You need a minimum number of individuals to kickstart Allee Effects**
- **Allee Effects, once reached, are one of the strongest defenders against extinction**
- **Crossing above the Allee Threshold catabolizes the entire network, resulting in total extinction**

One example of a Meerkat Business is **1stDibs, Inc. (DIBS).** The DIBS network involves two groups of individuals: **buyers and sellers**. Buyers visit DIBS to find and purchase luxury design pieces. On the other hand, Sellers use DIBS to market and sell their portfolio of art and designs.

DIBS and meerkats face similar issues reaching the Allee Threshold. Too few sellers on the platform mean buyers have no incentive to join. And if there aren't buyers on the platform, what's the motivation for sellers to list their products?

Reaching the minimum threshold of sellers kickstarts the Allee Effect, making it easier for the entire marketplace to get Allee Threshold. More sellers beget more listings on the platform. More listings then spawn more buyers as DIBS has the most substantial assortment of products.

Crossing the Allee Threshold thus insulates DIBS from the external competition (I.e., extinction).

However, DIBS isn't immune to the dangers of overcapacity. Like too many meerkats can destroy its gang, too many sellers can dilute DIBS's marketplace if they can't match it with equivalent demand.

Another example of a Meerkat Business is **TrustPilot (TRST).** TRST is a leading online independent review platform serving the US, UK, and International markets.

Like DIBS, there are two groups of individuals: **Reviewers/Consumers and Businesses.** Online reviews are perfect examples of Allee Effect networks. TRST requires a minimum number of online reviews on its platform to become valuable to both sides of its marketplace.

Too few reviews and consumers don't use TRST to verify products and services. Without users leaving reviews, there's no incentive for businesses to join the platform and respond to consumers' concerns or promote its TRST "Trust Rating."

TRST becomes an increasingly powerful and valuable business after it crosses the Allee Threshold for consumer reviews. The more reviews TRST generates on the platform, the more value businesses place on those reviews/ratings. This leads firms to promote their TrustPilot scores in marketing campaigns, cementing the company's Allee Network Effects.

Additionally, the Allee Threshold prevents competition from entering the marketplace. As TRST becomes the industry standard for consumer trust and reviews, there's no need for another platform (I.e., preventing extinction).

Both of the above businesses have the potential to create immense value for all stakeholders. The longer each company maintains its Allee Threshold, the greater its chances for survival (i.e., significantly less chance of extinction).

Our job as investors is to monitor the health of the Allee Effects on each business. Are they improving? Is the marketplace growing stronger? Or have they overshot the threshold and are now at risk of economies of dis-scale? The answers to these questions decide our bullish or bearish bet.

Bringing It Back To First Principles

Meerkat ecology presents a model of the mechanics of network effect businesses. Meerkats show us that there are only three things that matter for such Allee Effect businesses:

- **You need a minimum number of individuals to kickstart the network**
- **Once reached, Allee Effects are one of the strongest defenders against extinction**
- **Crossing above the Allee Threshold catabolizes the entire network, triggering total extinction**

There are enormous financial rewards for investors that spot Allee Effect businesses before Mr. Market. It's our job to find them, distinguish the genuine from the fake, and hold on for the ride.

Onto the portfolio updates.

MO Portfolio Updates

We made a few changes to the MO portfolio this week. First, we cut entire positions in "broken chart" stocks **Ammo, Inc. (POWW), FIGS Inc. (FIGS),** and **Centrus Energy (LEU).** We also cut **Corteva (CTVA)**, **St. Joe's (JOE),** and **Nintendo (NTDOY) by 50%**. These three positions represented nearly 30% exposure.

We also added to our energy/coal exposure this week. We bought more Vista (VIST) and purchased a stake in coal company, Natural Resource Partners LP (NRP). As of the end of this week, 44% of the MO Portfolio is invested in Energy-specific bets (I can feel Alex gleefully smiling).

Finally, we added a preventative short trade in the Russell 2000 in anticipation of a breakdown from its rectangle consolidation.

Let's discuss the short book.

Our Shorts Are Working Well (So Far)

Currently, we have three shorts in the portfolio:

- GameStop (GME)
- Bitcoin (BTCUSD)
- Ark Innovation (ARKK)

All three of our shorts are in the green writing, and the charts look primed for further downside. Check out ARKK's chart below.

The stock now trades below both the 50MA and 200MA on the weekly time frame. We'll use the further downside to reduce open risk and bank small profits.

Even GME -- which almost knocked us out of our short earlier this week -- is pointing to further pain for longs (see below).

Animal-spirited investors that drove the stock up are likely underwater at the current price. Like our Meerkats from earlier, the reverse Allee Effects in GME's stock could be devastating to the company's market cap. We'll take small profits early next week on continued downside momentum.

Then there's Bitcoin. The cryptocurrency is forming a H&S Top pattern. We'll add to our short on a confirmed breakdown from the neckline and move our stop-loss on the entire position accordingly.

Selling pressure continues in high-growth land, creating opportunities in a few stocks on our watchlist.

We're constantly monitoring our Rolodex of existing ideas while adding new names to the research list. We're excited about the downtrends in our already researched names like CDLX, DIBS, and TRST.

Next week be on the lookout for another interesting idea in the retailer space.