In January of this year I got a call from Doug to come and speak to the Society . . . I did my best to turn him down.

And Doug did his best to tempt me. What got my attention was all of the wonderful Frank Lloyd Wright architecture in Buffalo. Which gave me a “brilliant” idea - if he could find a way to host the event at one of these homes, I would make the trip.

The very next day, I get another call from Doug with the “good” news. He had confirmed the Martin House! I said, “Sh*t. Guess I’m going to Buffalo.”
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I started my career with JPM in NY in the late 90s. Times were good. I earned my CFA charter after undergrad and worked my way up JPMorgan’s investment management business until 2005 when I moved to North Carolina to join the Broyhill Family Office. Ten plus years later, I’m enjoying life in NC and loving work as the Chief Investment Officer of Broyhill’s Family Office. I think we have the best job in the world. I feel incredibly fortunate to come to work everyday with a passion for what we do.

But let me ask you a question. Think back to your childhood for a moment. On the playground as a kid, how many of you dreamed of being an investment manager growing up?

I can tell you I certainly did not. I dreamed of becoming an architect. I had a drafting table by middle school and took drafting classes through high school. I was one of 30 or so students selected for Penn State’s architecture program and later interned for a firm based out of a Frank Lloyd Wright home in New Jersey.

So today is a special day for me. I get to talk about my two greatest passions.
As a freshman architecture major, I was a little obsessed with FLW. I visited Fallingwater at least half a dozen times while studying in PA. But the 90s tech bubble was in full force and my left brain ultimately overpowered the right (more on that in a moment). So I made the switch from architecture to finance. And just in time for the tech bubble to burst. It was a difficult period to be managing money. But it also burned an important lesson into my young brain – preservation of capital is key to survival in this business.

As it turns out, the history of Wright’s Martin House has its own connection with Wall Street. The home was built between 1903-1905 for Darwin D. Martin, a Chicago business man. Apparently, times were good for the Martin’s as their home was one of the largest built by FLW.

But as we have all learned by now in this business, markets are cyclical. Good times are inevitably followed by bad times. The early 1900s were no exception. The Martin’s lost their fortune in the 1929 crash and couldn’t find a buyer for such a large home so the house was left empty and abandoned for years. Thankfully, it has since been restored, giving us an opportunity to explore the parallels between architectural design and the investment process.
I think what appealed to me about architecture was the combination of creativity and problem solving it required.

Frank Lloyd Wright’s Fallingwater is a magnificent example of this combination. The creativity in design combined with the engineering knowledge required to bring a design to life.

Luckily for me, this combination of skills has applications outside of architecture as well. Successful investing requires creativity in problem solving and independent thinking. It requires a child-like curiosity. And it requires the humility to know when you are wrong. Or as Wright once said, “Early in life I had to choose between honest arrogance and hypocritical humility. I chose the former and have seen no reason to change.”
My home office today is littered with Lego Architecture sets. A yet-to-be-assembled Cut & Assemble model of Wright’s Robie House rests on the table in my office.

But the majority of my time is now spent constructing different types of models.
On the surface, it’s probably not entirely clear what these models have in common.

When most folks imagine what we do as investment managers, they probably envision a bunch of math nerds sitting around building elaborate financial models in Excel.

For the first several years of our marriage, my wife just told people I “did math” for a living whenever she was asked. I’m not sure she has a different answer today.
Investing certainly requires that we “do math” . . . but it’s not rocket science.

At Broyhill, what we do requires little more than basic math skills. Truth be told, I spend most of my time doing this.
Yet investing is more than reading letters on a page and crunching numbers in Excel.

Successful investing requires an ability to see the big picture. To think differently. To think independently.

Like the blind men and the elephant, if the lens through which we view the world becomes too narrow, the result can be elephant-sized errors in judgement.
Successful investing requires creativity to see how the pieces of the puzzle come together.

Much has been said about Charlie Munger’s approach to *Worldly Wisdom*. Leveraging different models from different disciplines can improve the decision-making process.

A broad array of experiences allows us to think more broadly. And thinking more broadly allows us to become better investors.

“CREATIVITY IS INTELLIGENCE HAVING FUN”

Albert Einstein
Today, I’d like to provide some examples of what I mean by thinking more broadly and demonstrate how different schools of thought can help inform the investment process.

Much of this presentation, based on our original paper, *Investing by Design*, was inspired by the work of Matthew Frederick’s *101 Things I Learned in Architecture School*. 
Betty Edwards’ *Drawing on the Right Side of the Brain* was also very influential.

The book is very helpful in learning to draw.

But there’s another lesson - perception. The book’s underlying purpose is to teach us how to see in new ways. How to transfer perceptual skills to thinking and problem solving.

“Perceptual skills, learned through drawing, can be used for thinking more broadly in many fields. *If we learn to appreciate perceptual skills, we can “see things in context,” “see the whole picture,” and “see things in proportion and in perspective.”*”
Let’s see what she means. Here’s your first quiz of the day:

Raise your hand when/if you recognize this image. If you recognize it, please don’t say anything. Just raise your hand. I don’t want to spoil the surprise later in the presentation.

For now, I just want to make the point that upside-down faces are difficult for most people to identify. We are used to processing them as a whole and the right way up.
One of the first exercises in Edwards’ book is drawing upside down.

It works because the left hemisphere of the brain – the analytical side which most of us are accustomed to using - finds identifying and naming things upside-down too hard. As a result, the right hemisphere of the brain – the side more suited to visual perception, pattern recognition and spatial relationships – can take over.

Drawing depends on one’s ability to “see” differently. Learning to see in a different way requires that you use your brain differently. Drawing upside down is analogous to the lesson Charlie Munger borrowed from famous 19th century mathematician, Carl Jacobi. One of Jacobi’s lessons was “Invert, always invert.” The solution to many hard problems can often be uncovered by re-expressing them in inverse form.
Let me give you an example. In early 2013, we published an article on Apple for CFA Institute, summarizing our investment thesis.

Apple had a magnificent run up to 2012. We rarely saw a more one-sided trade. At its peak, Apple was worth more than the entire retail sector. We even found a website dedicated to *Things Apple Is Worth More Than*.

Here’s a look at Apple’s spectacular run up until 2012. A run we completely missed. Because for much of this period, there were simply too many questions we didn’t have good answers for.

The stock appeared cheap on a forward earnings basis but what if those forward earnings didn’t materialize? What if Apple’s margins reverted towards those of its competitors? And with more than 50 analysts covering the stock, what value could we possibly add? Would our model have looked any different than the 50 plus analysts covering the stock? If not, what was the point in attempting to justify owning the largest stock in the market when every portfolio manager and analyst on the street was head over heels for Apple?

At its peak, there were simply too many questions one needed to get right. And we weren’t confident we had the right answers to any of them.
So what changed? In a word – price. The only thing that should matter to any investor.

Apple’s stock was cut in half as sentiment quickly shifted after the death of its visionary founder. Investors doubted that the company could ever repeat the success of its past without Steve Jobs. Android quickly gained share and the Apple cheerleaders followed suit pushing GOOG to new all time-highs.

The bears were out in full force and comparisons to Blackberry, Palm, and Nokia became commonplace.
We didn’t suddenly have all the answers we were previously lacking. We just didn’t need them. We turned the problem upside down by asking one question: How bad would things need to get to justify the stock’s then current price?

We determined that the market was valuing Apple at a price that assumed zero revenue growth and margins of 25%. In other words, there was a good chance that the market had already discounted the margin erosion that investors feared. With that risk largely priced in, and a herd of analysts focused on the competitive threat to Apple’s market dominance, we were much more comfortable taking a position in the stock.

Over the next two years, margins did fall. But shares more than doubled, as Apple left for dead, generated a 36% rise in profits.
In our original paper, we highlighted five of Frederick’s 101 Lessons. Here’s the first:

The most effective, most creative problem solvers engage in a process of meta-thinking, or thinking about the thinking. Meta-thinking means that you are aware of how you are thinking as you are doing the thinking. **Meta-thinkers engage in continual internal dialogue of testing, stretching, criticizing, and redirecting their thought processes.**

Successful investing requires a similar focus.
Fredrick describes three levels of knowing – simplicity, complexity, and informed simplicity.

Or as Wright proposed, “Less is only more where more is no good.”

I keep a few questions on my whiteboard at all times:

1. What do I really know?
2. What don’t I know?
3. How do I learn that?
Lesson Two:

When drawing in any medium, never work at a "100% level of detail" from one end of the sheet toward the other, blank end of the sheet. Instead, start with the most general elements of the composition and work gradually toward the more specific aspects of it.

When researching potential investments, start with the basics. It is all too easy to get lost in the details. Stay focused on the big picture.
When an investment problem is so overwhelming, don’t wait for 100% clarity before beginning your analysis. Start with the most general elements and work gradually toward the specifics.

In his classic, *Zen and the Art of Motorcycle Maintenance*, Robert Pirsig recalls how one of his students struggled to write a 500-word essay on the United States. He tells her to start with the upper left-hand brick of the opera house. She goes away, sits in a coffee shop, starts writing about the brick, and couldn’t stop writing.

Within every large problem are many smaller problems struggling to get out. Use Pirsig’s brick to break down big problems into smaller chunks.
Let’s take a look at an example.

In chemistry, a steady state is a situation in which all variables are constant in spite of ongoing processes that strive to change them.

This is what I’d call a complex problem.
Let’s break it down.

A simple example of a steady state system is a bathtub with the tap running but with the drain unplugged.

O.K. Maybe not the best example. Let’s try another we can all relate to.
In investing, we can break down the value of a firm into two components:

1. Its “steady state value”
2. Plus any “future value creation”

Future value creation is the hard part as it requires making explicit forecasts far into the future. It’s easy to get lost in the detail here. But sometimes it’s not necessary.
Why not start with steady state value, which is far simpler to estimate.

We can calculate the “steady-state value” of a firm using the perpetuity method.

We simply assume that the firm’s current net operating profit after tax is sustainable indefinitely.
Let’s consider another example.

For many value investors the tech sector gets put in the too hard pile. And for good reason. This cartoon is a great example of how I imagine most of us feel when analyzing the sector. Change is occurring far more rapidly than ever before. As a result forecasts are far more difficult to make a few years into the future, let alone into perpetuity. Today’s dominant firms can be supplanted overnight.

It is very easy to get lost in the details. But we can use “good old regular data” to break the problem down.
Let’s go back to Apple for a moment. We didn’t suddenly find all the answers. Mr. Market just made our job easier. Because at a low enough price, the analysis becomes much simpler.

We can break it down into smaller chunks. Instead of obsessing about “future value creation” we can focus on a firm’s “steady state value” . . . and if we can buy a business at or below steady state value, we don’t need much to go right to earn good returns.

Okay. Here’s another pop quiz. Name the three most popular retail websites in the US. I’ll give you the first. Recognize this face?
How many of you would have guessed that eBay remains so dominant in e-commerce?

Sure, it’s a distant number two. And AMZN is a massive force in the industry. But eBay still has tremendous scale. Sure, its domestic business is slowing, but it still benefits from a massive tailwind as more and more retail sales shift online.

Ecommerce is still growing at roughly 20% per annum. Is eBay growing that fast? Not even close. Is it losing share? Yes. Almost everyone is losing share to Amazon. But can it still grow while losing share if the industry is growing at a 20% clip? We are not sure, but we think we have a pretty good margin for error at today’s price.
Bottom line: We don’t have to be sure. Today’s price is pretty close to the firm’s steady state value. So we are paying nothing for future growth.

We consider growth rates ranging from -5% to +5% in our model. We think we have little downside anywhere in this range and plenty of upside in the top half. And by the way, 60% of the company’s sales are outside of the US, where sales are still growing high single digits.

This is what we mean by breaking a problem into smaller chunks.
Lesson Three: Good investors, above all else, demonstrate good process.

A good process will inevitably produce bad results from time to time. Just as one may occasionally see terrific results derived from a poor process. But this is not reason to celebrate. In the absence of process, these one-time-wonders are unlikely to be repeated.

The management of return is impossible – outcomes are extremely unpredictable in investing and timing is uncertain at best. Consequently, it is better to focus on what one can control – process.
Lesson Four: this is one of my favorites . . . for the ADHD in all of us. “Properly gaining control of the process tends to feel like one is losing control of the process.”

Process should be structured and methodical, but not mechanical. Engage the process with patience. Don’t try to solve a complex problem in one sitting or one week. Accept uncertainty.
If we rush towards the problem too quickly, we risk never getting to the answer at all.

I’m a big Sherlock Holmes fan. There are so many great lessons to be learned from Conan Doyle’s Sherlock Holmes.

My favorite is the “three-pipe solution” - rather than jumping right in, Holmes often sits with his pipe and gives his mind time to reflect and strengthen neural connections in a resting state.
Nine months after their initial meeting, Edward Kaufmann called Frank Lloyd Wright at home to check on the progress of Fallingwater. Kaufmann surprised him with the news that he planned on visiting Wright that day to see the plans.

There was only one minor problem. While Wright had told Kaufmann he had been working on the plans, he had not actually drawn anything! After breakfast that morning, amid a group of very nervous apprentices, Wright calmly drew the plans in the two hours in which it took Kaufmann to drive to the studio.

Some might say that Wright was a procrastinator. That might be partially true. But I believe the more important conclusion is akin to Holmes’ three-pipe problem. Wright was likely providing his mind time to reflect and make those connections in a resting state before putting pencil to paper.
I believe investing is similar.

We need to spend more time thinking and less time doing.

We need to spend more time sharpening the axe. To allow our minds to make those connections only made in a “resting” state.

“Give me six hours to chop down a tree and I will spend the first four sharpening the axe.”
Investing is more art than science.

Successful investing requires creativity. Creativity requires novelty - opening your mind to uncertainty.

Being genuinely creative means being comfortable not knowing where you are going, while remaining confident you are on the right path.
Lesson Five. Last one of the day: Our experience of an architectural space is strongly influenced by how we arrive in it.

The most obvious implication for investing is the heuristic called *Anchoring*. *Anchoring* refers to our tendency to rely on one piece of information when assessing another.
Good designers understand that how we experience architectural space can be manipulated by its surroundings. Investors can also be manipulated by their surroundings. But good investors are better able to distinguish between relative bargains and absolute value.

An article in last week’s WSJ served to illustrate this point. The author implied that Home Depot was cheap since the stock’s multiple was 8% lower than its recent high. He got that part right. HD is trading at about 21x forward earnings today. It traded as high as 25x a few months ago. To some, paying 21x earnings for a big box retailer might seem cheap, particularly when the stock was trading for an eye-popping 25x earnings not long ago.

A similar error of judgement is comparing the valuation of one company to another in determining fair value. In this case, one might conclude that Lowe’s was a bargain today.
The problem is that many investors have been manipulated by their surroundings.

We compare current prices to those of peers or to prices available a year or two ago. Yet many of us have forgotten how we’ve arrived here. How much prices have changed over the full cycle.

Here’s a look at HD’s P/E ratio over the past decade. The bar in the middle is the average – about 17x. The stock bottomed at 10x depressed earnings during the recession. One standard deviation below average is about 14x. And one standard deviation above average is about 20x. HD trades for more than 21x earnings today. Not exactly a bargain by our definition.
Here’s another look at the evolution of HD’s multiple over the past decade.

The upper right hand corner of this chart shows that the stock has gotten a bit cheaper in recent months.

But prudent investors should pay more attention to the lower left hand corner, rather than justifying today’s premium multiple on peak earnings.
This same dynamic is playing out across global capital markets. I could have used any number of examples – consumer staples, utilities, REITs. The bottom line is that a seven-year bull market has lulled many of us into complacency. Like walking through a Wright building, our scale has been manipulated.

As Matthew Frederick explained: “A tall, bright space will feel taller and brighter if counterpointed by a low-ceilinged, softly lit space.”

Or as shown here, stocks appear “taller and brighter” when measured against “low-ceilinged, softly lit” alternatives. The bull case for stocks is essentially a relative one. With interest rates pegged at zero, we perceive other assets as more attractive.
But what happens when the scale is reset? Risk assets appear attractive today relative to zero percent interest rates. How will they be viewed if and when interest rates rise?

We can break this complex problem down as well. Think back to all those wonderful formulas burned into our brains during the CFA program. I’ll give you two examples:

1. The cornerstone of Modern Portfolio Theory, The Capital Asset Pricing Model, uses the risk-free rate as the basic building block for the relationship between risk and return. To this we add an equity market premium (multiplied by beta) which itself is a function of the risk-free rate.
2. The foundation of value investing is built on the belief that the value of a firm is equal to the sum of its discounted future cash flows. Gordon’s Dividend Discount Model expresses this as \( D/(K-G) \), where \( D \) represents dividends, \( K \) is an equity investor’s required rate of return and \( G \) is the growth in dividends over time.

When thinking about valuation through this lens, our initial seemingly complex problem becomes much simpler. What happens when the scale is reset? We just have to plug higher rates into either of these formulas, to see for ourselves. The result looks something more like this.
Yes, the dividend yield on most stocks is higher than the yield on treasuries today. And yes, the earnings yield on stocks is far higher than both. But neither of these measures of relative value stand the test of time.

If we step back and examine the historical data we can see just how far the scale has been manipulated.

Good investors must distinguish between relative bargains and absolute value. Because the consequences if we do not, can be detrimental to long term returns.
Wright was a master at using space to control the experience within his buildings.

- Narrow and confining spaces often led to expansive openings.
- Ceilings were often lowered to a more human scale.

But Wright had nothing on the Fed when it comes to controlling our experience. Still, I hope that many of you will stick around for the tour after Q&A to better appreciate how it feels to be manipulated by your surroundings.
Thank you so much for having me.