The Market of Babel

But Achilles,

weeping, quickly slipping away from his companions, sat

on the shore of the gray salt sea, and looked out to the wine-dark sea.

– Homer, "The Iliad"

The story of the Tower of Babel in the Book of Genesis, from whence we get the word "babble", has always struck me as one of the most interesting Biblical origin myths. After the Flood, mankind is united and strong, speaking a single language. They build a great city and an even greater tower in the land of Shinar, which attracts God's attention. God comes down from Heaven to see what Man is up to, notes that as a people with one language nothing Man sought would be out of reach, decides that this simply won't do, and "confounds" their speech so that they no longer understand each other.

the Tower of Babel before (Pieter Bruegel the Elder) …

and the Tower of Babel after (Gustave Dore)

Construction on the tower stops, life in the city becomes untenable, the various linguistic groups scatter to the far corners of the globe, and a jealous God is safe once more from those uppity humans.

As described in a prior note ("Through the Looking Glass"), language is the quintessential example of Common Knowledge (usually called Convention in linguistic studies) in human behavior. This is what language IS … the belief that everyone knows that everyone knows a long-eared rodent that jumps around a lot is called a "rabbit" and not a "gavagai", and the behavior that stems from that belief. If your group does not share the Common Knowledge or Conventions of another group when it comes to communicating about how to hunt long-eared rodents that jump around a lot, that's a problem.

But as Jehovah knew all too well (and Quine rediscovered in 1948), the problem with people having different languages is not just the inconvenience of having to translate from one word that describes a long-eared rodent that jumps around a lot to another word that describes the same thing. If that were the only issue, then construction on the Tower could have proceeded, just at a slower pace and under the friction of translation. **No, the lack of a shared language places a much more formidable obstacle in the path of human communication – the problem of meaning.** Humans possessed of one set of Conventions, such as language, interpret and act on the world differently from humans possessed of another set of Conventions. The observed "facts" of the world will mean something different – sometimes slightly different and sometimes very different – to people possessed of different Conventions, and that difference in meaning is often entirely unbridgeable.

For example, consider another great classical text, the *Iliad* of Homer. One of the most famous phrases in that epic is "the wine-dark sea" that brooding Achilles contemplates after Agamemnon takes Briseis away from him, a strangely evocative image of the ocean that Homer uses several more times in his tale. But here's the thing … **throughout the *Iliad* and the *Odyssey*, Homer never describes the sea as blue.** He never describes the sky as blue. He never describes anything as blue. His only use of the Greek word that would later come to mean what we think of as "blue" – *kuάneos* – is used for a description of the dark sheen of Hector's hair and Zeus's eyebrows. How can the greatest epic poet in human history fail to see the ocean or the sky as blue?

Caroline Alexander has a wonderful essay ("A Winelike Sea") in the most recent issue of Lapham's Quarterly (Vol. VI, Num. 3, Summer 2013) that examines this mystery. As she notes, the answer to this conundrum for both Goethe in "Theory of Colors" and William Gladstone (yes, the four-time British Prime Minister was also an acclaimed classicist) was simple: Homer and all the ancient Greeks were color-blind.

No, really. The greatest minds of the 19th-century (well, Goethe qualifies at least) concluded that most Greeks must have been color-blind until the fifth or sixth century BC when a poet named Simonides used the word *kuάneos* in a way that might mean "dark blue". Other analysts came to the conclusion that, well … if Homer wasn't color-blind, then that must mean that ancient Greek wine wasn't red or purple, but was often blue! Right.

As Alexander points out, Homer may not have had the same words as we do today for color, but he had many more than we do today for light and the way it interacts with the world – so that the color white is never simply white, but is "glancing white" or "flashing white" or "gleaming white" or "shimmering white" depending on how the light strikes it. And when you start to read Homer's phrasing through the lens of light and not the lens of color, it makes a big difference in how you understand the text. Unfortunately, no matter how skilled the translator (and this is not Alexander's conclusion, as she is, after all, a very skilled translator), this means that it is ultimately impossible for us to read the *Iliad* as Homer intended us to read the *Iliad*. **Homer saw the world very differently than you or I do – not because he was visually impaired or because the water was so alkaline that he had to drink blue wine – but because he and his contemporaries shared a different set of Conventions regarding how to interpret the world.** And no matter how much we would like to see the ocean and sky as Homer did, as a quality of the light, we can't stop seeing the ocean and the sky as blue. I defy anyone in the modern world to look at the picture of Santorini below and NOT use the concept of "blue" in any description of the scene.

Homer could. We can't. The difference in our perception of the world and Homer's perception is incommensurable and ultimately unbridgeable. Such is the power of language and Convention. Such is the power of Common Knowledge.

Okay, Ben, that's very interesting and all … but how does this help us become better investors?

First, we have to realize that the two great languages of investing – Value (along with its grammar, Reversion-to-the-Mean) and Growth (along with its grammar, Extrapolation) – are just that … languages. Neither of these sets of Conventions is timeless nor universal, and each conditions its speakers to interpret the observed facts of the world differently from the other. Not more truthfully. Just differently. Like any language, the primary usefulness of a shared set of Conventions is not found in inter-tribe communications, where both the friction of translation and the problem of meaning raise their ugly heads, but in intra-tribe communications. And like any language, the larger the tribe that shares the particular set of Conventions, the greater the utility for each individual member of the tribe. Calling a long-eared rodent that jumps around a lot a "rabbit" is much more useful to me if everyone I come into contact with shares the same vocabulary, grammar, and meaning for the word than if a sizable group speaks another language. In the latter case we will inevitably, to some degree, talk past each other whenever we try to communicate about long-eared rodents that jump around a lot, and that creates, by definition, a less efficient behavioral outcome for all of us.

The languages of Value and Growth are always useful to some degree in markets because the tribes that speak these languages are a significant enough proportion of pretty much any investment game to allow for meaningful intra-tribe communication. But the relative proportion of these tribes within any given market for any given security is extremely influential in shaping market game-playing, and the transition and inflection points of this relative proportion are predictive of transition and inflection points in security prices. **There are consistent behavioral patterns, as expressed in security prices, associated with the waxing and waning of investment language population proportions.** I have found the tools of linguistic evolution, as found in (among other places) the work of Brian Skyrms, particularly *Signals: Evolution, Learning, and Information* (Oxford University Press: 2010), to be very useful in understanding how the languages of Value/Reversion-to-the-Mean and Growth/Extrapolation wax and wane in their proportion of the overall population of investors for a particular security, and hence their importance in driving market outcomes. These are game theoretic tools, and they are at the core of the Epsilon Theory methodology.

For example, technology stocks tend to be much more driven by a Growth Narrative than by a Value Narrative. This is particularly true in large-cap tech stocks because the impact of Narrative in general is greater in large-cap stocks. Why? Because an informational "edge" is much harder to come by with large-

cap stocks than small-cap or even mid-cap stocks, and as a result game-playing as driven by this Narrative or that is much more prevalent. Unless you are breaking the law, there is no possible way that you will know something about the fundamentals of, say, Apple that no one else knows and that is sufficient to move the stock. You either have a Growth language to speak with other Growth tribe members about Apple, or you have a Value language to speak with other Value tribe members about Apple. There are enough fellow tribe members that you will never be alone or seriously doubt your belief, but the Growth tribe is, historically speaking, a much more "enthusiastic" owner of tech stocks like Apple than the Value tribe.

Put differently, the day the dominant Apple Narrative shifted from "it's expensive, but …" (a Growth tenet) to "it's actually really cheap" (a Value tenet) is the day the stock stopped working, and the stock is unlikely to work again – regardless of how big a dividend Apple pays or whether it issues preferred stock (all Value tenets) – until Growth tenets reclaim control of the Apple Narrative. Evaluating how market opinion leaders talk about Apple is more important than what market opinion leaders say about Apple because it reflects the relative proportion and strength of one tribe of Apple owners, with a particular vision of what that ownership signifies and what behavior it entails, versus another tribe of Apple owners with a different vision.

Second, it is critical to recognize that **there is a third language of investing in the world today, the language of Liquidity, and it's not a human language at all.** It is the language of Big Data, of computer-driven statistical inference, and if you try to "speak" the language of Value/Reversion-to-the-Mean or the language of Growth/Extrapolation to a computer on the other side of the trade, you are going to lose. Not a lot, but you are going to pay a tax whenever you take liquidity from a computer program. Why? Because algorithms, like Homer, see the world differently than you and I do.

The Conventions and the "biology" of modern computing systems make them very effective pattern recognizers of highly distributed and disparate data signals on a micro-second time horizon. They can "see" Liquidity signals in a way that is as alien to the human brain as the visual signals perceived by insects with compound eyes. Not only are human patterns of liquidity demand completely transparent to a modern liquidity provision algorithm, but also the typical effort made to hide liquidity demand – which is always some variation of chopping up a large order into smaller pieces and then injecting those pieces into the market according to a schedule determined by a sub-algorithm – only creates another sub-pattern or code that is in turn inevitably cracked by the liquidity provision algorithm. If the processing power

available to crack these codes were limited to the human brain, then any of these chopping-up sub-algorithms would be sufficient to hide the pattern created by a modified VWAP order or one of its time-delineated kin. But with the processing power available to even the more modest liquidity provision algorithms, there is no hope – absolutely no hope – of creating any trading pattern that is somehow invisible or untraceable. As a result, algorithms dominate the liquidity operations of the modern market and have a significant trading advantage anytime a human decision-maker decides to create an exposure and take liquidity without another human simultaneously making a decision to provide liquidity.

In the same way that the relative proportion of Value-speakers to Growth-speakers makes a big difference in the medium to long-term price trends of certain securities, so does the relative proportion of human liquidity takers and providers to non-human liquidity operators make a big difference in the short-term price movements of certain securities. There are tools available to gauge this proportion (Hurst coefficients, for example), and even a cursory awareness of the language of Liquidity can help a portfolio manager anticipate the risk of pernicious reflexive price action (see "The Music of the Spheres"), particularly within an unstable informational framework.

Third, **the implementation of any investment strategy can be improved by considering the common language that underpins the languages of Value, Growth, and Liquidity – the language of Information.** I use the word "implementation" intentionally, because these insights of Epsilon Theory are less useful if you are buying a security, closing your eyes for three years, and then hoping to wake up and sell for a 30% gain. Epsilon Theory is most useful for investors for whom the path matters. If it matters to you whether or not this security goes down 30% before it ultimately ends up 30%, if you allow for the possibility that you might change your mind about the wisdom of holding this security at this point in time versus that point in time, then you should think about your investing in terms of Information. A concern with strategy implementation is a concern with the risk/return efficiency of exposures over time, and this is where an understanding of the common language of Information is so useful. As described in prior notes ("The Music of the Spheres" and "Through the Looking Glass"), understanding a security in terms of its informational surface (akin to a volatility surface) allows Value and Growth and Liquidity signals to be treated in a unified analytical framework. I'm not saying that those who speak the fundamental language of Information will see "nothing withheld from them which they purpose to do". But if the power of a common language was enough to frighten God Almighty, well … that sounds like it should at least be good for a 2.0 Sharpe Ratio. Anyone else care for a bite of this apple?

