"When Does the Story Break?"

Until an hour before the Devil fell, God thought him beautiful in Heaven.

- Arthur Miller, "The Crucible"

It's always about timing. If it's too soon, no one understands. If it's too late, everyone's forgotten.

- Anna Wintour

Saint Laurent has excellent taste. The more he copies me, the better taste he displays.

- Coco Chanel

Beauty, to me, is about being comfortable in your own skin. That, or a kick-ass red lipstick.

- Gwyneth Paltrow



For, dear me, why abandon a belief Merely because it ceases to be true? Cling to it long enough, and not a doubt It will turn true again, for so it goes. Most of the change we think we see in life Is due to truths being in and out of favor.

- Robert Frost, "The Black Cottage"

Lord I am so tired How long can this go on?

- Devo, "Working in a Coal Mine"

He can't think without his hat.

- Samuel Beckett, "Waiting for Godot"

Perhaps the most irrational fashion act of all was the male habit for 150 years of wearing wigs. Samuel Pepys, as with so many things, was in the vanguard, noting with some apprehension the purchase of a wig in 1663 when wigs were not yet common. It was such a novelty that he feared people would laugh at him in church; he was greatly relieved, and a little proud, to find that they did not. He also worried, not unreasonably, that the hair of wigs might come from plague victims. Perhaps nothing says more about the power of fashion than that Pepys continued wearing wigs even while wondering if they might kill him.

Bill Bryson, "At Home: A Short History of Private Life"



The most common question I get from Epsilon Theory readers is *when*. When does the market break? When will the Narrative of Central Bank Omnipotence fail? To quote the immortal words of Devo, how long can this go on? Implicit (and sometimes explicit) in these questions is the belief that this – whatever this is – simply can't go on much longer, that there is some natural law being violated in today's markets that in the not-so-distant future will visit some terrible retribution on those who continue to flout it. There has never been a more unloved bull market or a more mistrusted stock market high.

It's a lack of love and a lack of trust that I share. I believe that public markets today are essentially hollow, as what passes for volume and liquidity is primarily machines talking to other machines for portfolio "positioning" or ephemeral arbitrage rather than the human expression of a desire to own a fractional ownership share of a real-world company. I believe that today's public market price levels primarily reflect the greatest monetary policy accommodation in human history rather than the real-world prospects of real-world companies. I believe that the *political* risks to both capital market structure and international trade (which are the twin engines of global growth, period, end of story) have not been this great since the 1930's. Simply put, I believe we are being played like fiddles.

That does NOT mean, however, that I think anything has to change next week ... or next month ... or next year ... or next decade. The human animal is a social animal in the biological sense, and as such we are cognitively evolved to maintain our beliefs and behaviors far beyond what is "true" in an objective sense. This is, in fact, the core argument of Epsilon Theory, that there is no such thing as Truth with a capital T when it comes to the institutions and the social organizations that we create. There's nothing more "natural" about our market behaviors than there is around, say, our fashion behaviors ... the way we wear our clothes or the way we cut our hair. For 150 years everyone knew that everyone knew that gentlemen wore wigs. This was the dominant common knowledge of its day in the fashion world, absolutely no different in any way, shape or form than the dominant common knowledge of today in the investing world ... everyone knows that everyone knows that it's central bank policy that determines market outcomes. And this market common knowledge could last for 150 years, too.

I'm not saying that a precipitous change in market beliefs and behaviors is impossible. I'm saying that it's not inevitable. I'm saying that it's NOT just a matter of when. I'm saying that understanding the timing of change in market behaviors is very similar to understanding the timing of change in fashion behaviors, because both are social constructions based on the Common Knowledge Game. It's no accident that the most popular way to relate that game is the story of the Emperor's New *Clothes*.



Here's a photograph Margaret Bourke-White took of the Garment District in 1930. Every single person on the street is wearing a hat. How did THAT behavior change over time? How did the common knowledge that All Men Wear Hats, or wigs or whatever, change? Does it happen all at once? Smoothly over time? In fits and starts? Who or what sparks this sort of change and how do we know? To use a five dollar phrase, what is the *dynamic process* that underpins the timing of change in socially-constructed behaviors, whether that behavior is in the investing world or the fashion world?

Fortunately for us, game theory provides exactly the right tool kit to unpack socially driven dynamic processes. To start this exploration, we need to return to the classic thought experiment of the Common Knowledge Game – The Island of the Green-Eyed Tribe.



On the Island of the Green-Eyed Tribe, blue eyes are taboo. If you have blue eyes you must get in your canoe and leave the island the next morning.

But there are no mirrors or reflective surfaces on the island, so you don't know the color of your own eyes. It is also taboo to talk or otherwise communicate with each other about blue eyes, so when you see a fellow tribesman with blue eyes, you say nothing. As a result, even though everyone knows there are blue-eyed tribesmen, no one has ever left the island for this taboo.

A Missionary comes to the island and announces to everyone, "At least one of you has blue eyes."

What happens?

Let's take the trivial case of only one tribesman having blue eyes. He has seen everyone else's eyes, and he knows that everyone else has green eyes. Immediately after the Missionary's statement this poor fellow realizes, "Oh, no! I must be the one with blue eyes." So the next morning he gets in his canoe and leaves the island.

But now let's take the case of two tribesmen having blue eyes. The two blue-eyed tribesmen have seen each other, so each thinks, "Whew! That guy has blue eyes, so he must be the one that the Missionary is talking about." But because neither blue-eyed tribesman believes that he has blue eyes himself, neither gets in his canoe the next morning and leaves the island. The next day, then, each is very surprised to see the other fellow still on the island, at which point each thinks, "Wait a second ... if he didn't leave the island, it must mean that he saw someone else with blue eyes. And since I know that everyone else has green eyes, that means ... oh, no! I must have blue eyes, too." So on the morning of the second day, both blue-eyed tribesmen get in their canoes and leave the island.

The generalized answer to the question of "what happens?" is that for any **n** tribesmen with blue eyes, they all leave simultaneously on the **n**th morning after the Missionary's statement. Note that no one forces the blue-eyed tribesmen to leave the island. They leave voluntarily once public knowledge is inserted into the informational structure of the tribal taboo system, which is the hallmark of an equilibrium shift in any game. Given the tribal taboo system (the rules of the game) and its pre-Missionary informational structure, new information from the Missionary causes the players to update their assessments of where they stand within the informational structure and *choose* to move to a new equilibrium outcome.

Before the Missionary arrives, the Island is a pristine example of perfect private information. Everyone knows the eye color of everyone else, but that knowledge is locked up inside each tribesman's own head, never to be made public. The Missionary does NOT turn private information into public information. He does not say, for example, that Tribesman Jones and Tribesman Smith have blue eyes. But he nonetheless transforms everyone's private information into common knowledge. Common knowledge is not the same thing as public information. **Common knowledge is simply information, public or private, that everyone believes is shared by everyone else.** It's the crowd of tribesmen looking around and seeing that the entire crowd heard the Missionary that unlocks the private information in their heads and turns it into common knowledge. This is the power of the crowd watching the crowd, and for my money it's the most potent behavioral force in human society.

Prior Epsilon Theory notes have focused on the role of the Missionary, and I'll return to that aspect of the game in a moment. But today my primary focus is on the role of time in this game, and here's the key: no one thinks he's on the wrong side of common knowledge at the outset of the game. It takes time for individual tribesmen to observe other tribesmen and process the fact that the other tribesmen have not changed their behavior. I know this sounds really weird, that it's the LACK of behavioral change in other tribesmen who you believe should be changing their behavior that eventually gets you to realize that they are wondering the same thing about you and your lack of behavioral change, which ultimately gets ALL of you blue-eyed tribesmen to change your behavior in a sudden flurry of activity. But that's exactly the dynamic here. Even though there is zero behavioral change by any individual tribesman for perhaps a long period of time, such that an external observer might think that the Missionary's statement had no impact at all, the truth is that an enormous amount of mental calculations and changes are taking place within each and every tribesman's head as soon as the common knowledge is created.

I've written at length about the portfolio construction corollary to phenotype, or the physical expression of a genetic code, and genotype, or the genetic code itself. The former gets all of the attention because it's visible, even though the latter is where all the action really is, and that's a problem. In modern society it means that we place an enormous emphasis on skin color as a signifier of otherness or differentiation, when really it deserves almost no attention at all. In portfolio management it means that we place an enormous emphasis on style boxes and asset classes as a signifier of diversification, when really there are far more telling manifestations. The dynamic of the Common Knowledge Game is another variation on this theme. For almost the entire duration of the game, the activity is internal and invisible, not external and visible, but it's there all the same, bubbling beneath the behavioral surface until it finally erupts. The more tribesmen with blue eyes, the longer the game simmers. And the longer the game simmers the more everyone – blue-eyed or not – questions whether or not he has blue eyes. It's a horribly draining game to play from a mental or emotional perspective, even if nothing much is happening externally and regardless of which side of the common knowledge you are "truly" on.

If you haven't observed exactly this sort of dynamic taking place in markets over the past five years, with nothing, nothing, nothing despite what seems like lots of relevant news, and then – boom! – a big move up or down as if out of nowhere – I just don't know what to say. And I don't know a single market participant, no matter how successful, who's not bone-tired from all the mental anguish

involved with trying to navigate these unfamiliar waters. These punctuated moves don't come out of nowhere. They are part and parcel of the Common Knowledge Game, no more and no less, and understandable as such.

What starts the clock ticking on the "simmering stage" of the Common Knowledge Game? The Missionary's public statement that everyone hears, creating the new common knowledge that everyone believes that everyone believes. How long does the simmering stage last? That depends on a couple of factors. First, as described above, the more game players who are on the wrong side of the new common knowledge, the longer the game simmers. Second, the dynamic depends critically on the fame or public acclaim of the Missionary, as well as the power of his or her microphone. A system with a few dominant Missionaries and only a few big microphones will create a clearer common knowledge more quickly, reducing the simmering time. Whether it's Anna Wintour and *Vogue* or Janet Yellen and the *Wall Street Journal*, the scope and pace of game-playing depends directly on **who** is creating the common knowledge and **how** that message is amplified by mass media. Fashion changes much more quickly today than in, say, the 1930's, because the "arbiters of taste" – what I'm calling Missionaries – are fewer, more famous, and have stronger media microphones at their disposal. Ditto with the investment world.

But has the clock started ticking on new common knowledge to change the dominant investment game? Has there been a perception-changing public statement from a powerful Missionary to make us question Central Bank Omnipotence, to make us question the color of our eyes? No, there hasn't. There are clearly new CK games being played in subsidiary common knowledge structures – what I call Narratives – but not in this core Narrative of the Fed's control over market outcomes. So for example, the market can go down, and more than a little, as the common knowledge around the subsidiary Narrative of The Fed Has Got Your Back comes undone with a second derivative shift from easing to tightening. The Fed itself is the Missionary on this new common knowledge. But the market can't break so long as the common knowledge of Central Bank Omnipotence remains intact. So long as everyone knows that everyone knows that market outcomes ultimately depend on Fed policy, then the Yellen put is firmly in place. If things get really bad, then the Fed can save us. We might argue about timing and reaction functions and the like, but everyone believes that everyone believes that the Fed has this ability. And because it's such strong common knowledge, this ability will never be tested and the market will never break. A nice trick if you can pull it off, and until a Missionary with the clout of the Fed comes out and challenges this core common

knowledge it's a fait accompli within the structure of the game. Who has this sort of clout? Only two people – Mario Draghi and Angela Merkel. That's who I watch and who I listen to for any signs of a crack in the Omnipotence Narrative, and so far ... nothing. On the contrary, Draghi and Merkel have been totally on board with the program. We're all going to be wearing hats for a long time so long as all the investment arbiters of taste stick with their story.

There is, of course, a fly in this glorious ointment, and it's the single most important difference between the dynamic of fashion markets and financial markets: political shocks and political dislocations can trump common knowledge and precipitate an economic and market dislocation. Wars and coups and revolutions certainly influence fashion, but obviously in a far less immediate and pervasive manner than they influence financial markets. The fashion world is an almost purely selfcontained Common Knowledge Game, and the investment world is not. Where am I looking for a political shock that would be big enough to challenge the common knowledge that Central Banks are large and in charge, capable of bailing us out no matter what? It's not the Ukraine. On the contrary, events there are public enough to give Draghi an excuse to move forward with negative deposit rates or however he intends to implement greater monetary policy accommodation, but peripheral enough to any real economic impact so that the ECB's competence to manufacture an outcome is not questioned. It's China. If you don't think that the territorial tussles with Vietnam and Japan matter, if you don't think that the mutual accusations and arrests of American and Chinese citizens matter, if you don't think that the HUGE natural gas deal between Russia and China matters, if you don't think that the sea change in Chinese monetary policy matters ... well, you're just not paying attention. A political shock here is absolutely large enough to challenge the dominant market game, and that's what I'll be exploring in the next few **Epsilon Theory notes**.

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