

# Digital Neural-Amplification Over Activating the Paranoid Brain<sup>1</sup>

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“To survive we must have a willingness to accept the inconvenience of what is.”

## Introduction

Deep within an east Indian forest, next to the border with Bangladesh, a herd of Sambar deer are grazing in an open meadow. This is a dangerous place for these herbivores because the unprotected ground makes them more vulnerable to their most powerful predator—the Bengal tiger. Like most Sambar herds, this group is small, consisting of just eleven animals. As we watch them graze on grass and low-hanging leaves from trees, we notice that the adults often stop, raise their heads and swivel their ears in different directions, detecting sounds as well as testing for odors wafting through the air.

Prey animals such as Sambar deer focus their primary attention on finding food, yet at the same time remain highly attuned to any changes in the backgrounds of their perceptual fields. Any alteration alerts the animal to give its full attention to the new movement, sound, or smell. They quickly decide if a sound, for example, belongs to a monkey breaking a branch or a tiger moving toward them and, reacting swiftly, they either flee or return to grazing. The difference between story-telling primates like us and the deer is that, after the ‘crisis’ is over life for the deer returns to what it was before. On the other hand, with us story-tellers, a perseverating self-consciousness and history is born through imagination and the linguistic narratives constructed about the episode. We think about it, compare notes, express fears, grief, relief and a whole range of emotions and thoughts: “What do you think it was; weren’t we lucky this time; do you think it’s safe now; let’s plan for next time...”

Our deep evolutionary roots as prey animals, which have bestowed on us a particularly acute danger alert and response system, appears to be capable of driving our more evolved brains into what appears to be paranoid ideation. By paranoia I am referring to our capacity for creating beliefs and scenarios in which malevolence and threat are ascribed to people, organizations and/or hidden forces where no clear, empirically evident threat can be detected or consensually verified. When experiencing paranoia individuals easily develop a sense that others or dangerous forces are out to get them.

What clearly differentiates paranoia from feelings of justifiable threat is the belief that there is hidden danger that only can be inferred based on a pervasive sense that something threatening is operating behind the scenes even though it cannot be detected directly. Typically, these beliefs are held to be true with an unshakeable certainty, no matter what counter-evidence is provided. Paradoxically, it seems that our higher neurological evolution—our development of an advanced prefrontal cerebral cortex for planning and executive control together with our capacity for symbolic abstraction through language—both gives us the capacity for rational thought and a propensity for paranoia, the latter emerging when meaning, planning, and narrating are driven by the more ancient alert system of the limbic brain without an obvious, empirically evident threat.

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There seems to be a paranoid 'tilt' built into our ideation and self-talk, the internal dialogue that buzzes away in our consciousness as we go about our daily lives. All the internal unconscious projection and conscious imagining is continuously narratized into what I call a 'self-story'. This narrative is how we continually define who we are and our relation to what we understand to be reality. It is worth noting that it has been demonstrated experimentally by psychophysicists, such as John T. Cacioppo of the University of Chicago, that we have a "negativity bias" in what we remember, which probably has its origins in the mechanism I am suggesting underlies the paranoid 'tilt' to our ideation and memory.<sup>2</sup>

The first step to unpack how the paranoid 'tilt' to our cognitive processing and story making has evolved will be to explore how this perceptual mechanism works. Once this is understood we can then look at how this generative process is amplified by input from social media, in which reality-testing becomes difficult, if not impossible. It will then become evident that through our interaction with digital social media our 'self-stories' are altered and the paranoid attributes already present are magnified into sometimes grand conspiratorial stories.

The speed with which such communication takes place in the social media context gives us little time to process and assess the validity of what is being presented. Instead, social media information tends to trigger our ancient danger alert systems which results in what I call 'digital neural-amplification'. In this way conspiracy 'theories', particularly as promulgated on the internet, can be understood as paranoid 'self-stories' run amok. Needless to say, viewing the world through a paranoid 'tilted' lens is not very useful for dealing with the complex and dangerous challenges currently facing our world.

### Evolution of the Paranoid 'Tilted' Brain

In the 40-odd years I have worked as a neuroscientist, social scientist and psychologist, I estimate that I have interviewed and counseled more than 3000 people, which I believe has offered me some useful insights into the way the human mind responds and sometimes overreacts to perceptions of danger. All of our responses to threat subsequently lead to our construction of stories that we use to make sense of what is going on. Interviewing for research, like counseling and psychological assessment, is about listening to and recording the stories that people tell themselves in order to describe and explain (to themselves) who they are and the nature of the world in which they live. Although they are different for each person, in my experience there are certain features of these 'self-stories' that crop up again and again among individuals across any given culture.

In particular I have been struck by how often people's 'self-stories' contain significant paranoid attributions—perceived threats constructed from imagined and unverifiable sources. A typical example is a conspiracy 'theory', a notion that a sinister force is deliberately creating harm in order to gain power and to advance its objectives. Classic examples include the belief among some Americans that the US government, not terrorists, blew up the World Trade Center in New York in 2001 and that presidential candidate Hillary Clinton was operating a pedophile ring out of a pizza parlor in 2016. On a more personal level, I often have heard clients tell me that I am watching and

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<sup>2</sup> Reported in:

Marano, Hara Estroff (2003). Our Brain's Negative Bias: Why our brains are more highly attuned to negative news. *Psychology Today*. <https://www.psychologytoday.com/au/articles/200306/our-brains-negative-bias>

judging their behavior between counselling sessions. I believe such paranoid attributions are becoming even more common in the public domain in the age of digital communication.

Like the Sambar deer described earlier, we started out primarily as prey animals and as a result we also made use of this highly attuned system we inherited via natural selection—a system that is balanced between under-reaction and over-reaction to perceptions of danger. In the case of pre-human hominins (proto-humans) and for those members of the genus *Homo* (humans) that followed, it seems to me that this highly attuned attention-perception-reaction system came to play an even greater role in behavior, far more than just danger avoidance.

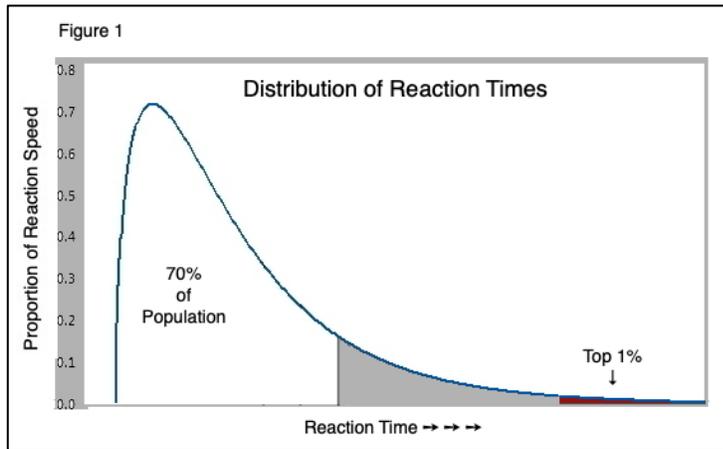
With the evolution of a prefrontal cortex our brains became capable of future planning and even imagining an entire future world. The addition of a capacity for symbolic cognitive processing, primarily mediated through language, gave us the ability to create complex scenarios (stories) in which we could test potential strategies and responses in our minds. These inner narratives constitute our 'self-stories' through which we define our beliefs about who we are as well as what is real or not and this allows us to choose possible roles for ourselves in addition to giving order and meaning to our perceptions.

I would argue that the more evolved brain of modern humans, when activated by the primitive danger alert system of the forebrain limbic system, creates a distinct paranoid 'tilt' to the way it interprets perceptions of threat—they become imbued with feelings of portentous danger. As our alert system rapidly attends to the threat, the more advanced brain (prefrontal cortex), with its capacity to narratize and strategize, will, together with language, create a story that 'explains' what is going on and who we are and how we should respond in relation to events.

In the context of our on-going internal storytelling process there is a tendency for us to over-construct narratives by filling in more than what our senses have perceived, for example, imagining a source for a threat when the data is unclear or missing entirely. This increases overall fear, which can have negative consequences as President Franklin Delano Roosevelt recognized at the height of the Great Depression of the 1930s when he proclaimed: "We have nothing to fear but fear itself." As we evolved from living in small bands of hunter-gatherers to being participants in large-scale, complex modern societies, danger signals became more difficult to discern and, as a result, our 'self-stories' became more complex and took on meanings beyond what might have been real.

The impetus underlying our ancient neurological alert system is self-protection and survival, but it evolved in far less complex environmental and social circumstances. The 'self-stories' our brains now construct for us to 'explain' what is happening, while still focused primarily on danger and survival, have become more intricate as the sources of threat have become more diffuse and less clear. Therefore, it is difficult for our ancient warning system to clearly identify the precise danger. This ambiguous situation inevitably leads to a paranoid 'tilt' to our cognitive processing as we attempt to specify the source of the danger signals that are sounding internally and try to fill in the nature of the danger.

Like everything else in nature, the speed of reactivity to danger, the time required to respond to a new perception, can be plotted graphically and be represented by a plot called a 'bell curve'. The reaction time of each animal is slightly different, but if we create a plot for all cases for each reaction time, we discover that most (about 70 percent of all individuals) will fall in a small range with very few animals reacting at speeds slower than the main group and similarly for those who are showing faster times than the majority.



The curve, if we were to plot it from actual data, unlike the standard bell curve, probably would be somewhat skewed, with almost no 'leg' at the low (left) end and a much longer 'leg' at the high (right) end (see Figure 1). Obviously, those individuals slow to react or who tend to ignore novel background 'signals' will very likely be eliminated from the gene pool over time, because they will be the first to be

eaten. On the other hand, at the right leg of the curve we find the remaining thirty percent of the reaction times, ever diminishing in numbers to the top one percent of extreme outliers who drastically overreact as compared to the 70 percent majority of the group.

One might ask, 'Why are all animals not the fastest to react, with no individuals being in a group more extreme than necessary?' The main group represents the population that reacts just fast enough to evade capture most of the time. To the left are almost no 'slow responders', those most likely to get eaten by a predator, while to the far right of the graph are what we might call 'over-reactors', animals who, due to neurological variation, respond much faster than necessary. The latter group have the disadvantage of using too much energy and becoming fatigued, by reacting too frequently and extremely, as well as separating themselves from the herd too often. Reacting too fast affords these animals less protection because separation from the herd puts these individuals at greater risk of predation. The protection of numbers is lost for those who jump the gun and they tend to get caught slightly more often than the bulk of the herd, but somewhat less than the slow or non-reactors. This skewed distribution of reaction times is the result of evolution through natural selection. For millions of years the pressure caused by predators has created the bulk of any prey population to be slightly over-reactive to potential threats. Individuals who were 'just fast enough' to escape predators were best equipped to survive. However, the overly quick reactors will tend to survive more than the overly slow reactors, thus leading to more over-reactors than under-reactors in the general population.

Observations show that non-primates, like Sambar deer who escape a predator or who discover that the sound of a cracking twig is nothing to respond to after all, quickly return to their usual activities, such as grazing. This is because mammals without any significant prefrontal cortex or language capacity have no need to retell the story of their "harrowing escape", either to themselves or others, nor is there ongoing anxiety about what "might have happened". In other words, there is no capacity cognitively or verbally for symbolic recreation of the events and therefore no possibility of developing a history of what happened and a 'self-story' imbued with proditomania—the belief that someone or some *thing* "is out to get me".

As we move up the evolutionary ladder of neural development we discover that humans have the most advanced prefrontal cortex of all mammals. Our prefrontal cortex is like an executive command center in which decisions are made as to how to react to any given situation. It also oversees responses through planning and strategizing. When a novel stimulus lights up our limbic brain alert mechanism, like the deer with a tiger on its tail, we react quickly but unlike deer our cortical

oversight and language go on to create a narrative about what has happened and why. A 'self-story' is thus constructed which includes a decision as to what the signal means immediately followed by planning and decision-making as to what the appropriate response should be. For most of us we literally tell ourselves what is going on and how we should understand its meaning—threat or not, useful or not, desirable or not—as well as how we should react.

As I have argued, our reactive nervous systems are finely balanced, with most people's behaviors falling into that main portion of the distribution. So, for most of us, these 'self-stories' will contain an edge of threat when being generated in novel situations, but not so intense that the alert reaction cannot be managed and contained through prefrontal assessment. For the majority of us, there are properly functioning inhibitory neurological mechanisms that moderate alarm responses, thereby preventing perseveration into an out of control positive feedback loop in which paranoid ideation gains momentum and takes over and dominates how we perceive the world around us. Of course, that fine-tuned control sometimes breaks down as seen in hysterical mob behavior where the emotional and physical messaging initiates a positive feedback sensory-behavioral loop.

It also can be argued that some of those at the rightmost end of the population distribution, who are very extreme reactors, are prone to their paranoid 'self-stories' taking over their lives. It is an empirical fact that slightly more than one percent of the general population will have at least one schizophrenic episode in their lifetime. The vast majority of these episodes are diagnosed as paranoid psychoses and are imbued with intense fearful ideation that cannot to be modified by rational thought, no matter how illogical the 'self-story' is, or appears to contradict the 'self-stories' of the majority. Such individuals appear to be caught in a loop from which they cannot escape and, arguably, are probably the same one percent of outlier reaction times as shown in Figure 1.

Schizophrenic 'self-stories' consist of extreme and often bizarre fears and represent outliers in the distribution of intensity of paranoid ideation in the general population. Based on statistical laws we would expect to find the occurrence of a fairly constant background rate of close to one percent for paranoid psychosis as inevitable in a population skewed toward over-reactivity, a situation that would have been set by natural selection in prey animals. More importantly, the background rate of occurrence of paranoid psychosis tells us that these types of 'self-stories' exist across the entire human population, but for the majority of us they are at a diminished intensity that can be rationalized and are therefore manageable.

### Paranoid Storytelling

For social psychologists the way people misconstrue the world around them and the intentions of others is called the "fundamental attribution error." Typically, this is most clearly observed in how people determine the social status of someone by how he dresses, what kind of car he drives, etc. So, an elderly man, wearing a thread-worn jacket and driving an old car will most likely be viewed as being poor or even "down and out" when it could be that he is just an eccentric member of the top one percent of society who does not like change. This reminds me of a line from a blues song I heard years ago: "I might look like a farmer, but I'm a lover, you can't tell a book by looking at the cover."

Over the years I have observed that there is a tendency for individuals to attribute meaning and value to ambiguous situations in a way that gives such events the paranoid 'tilt' I have been describing. I also have observed that the degree a story (interpretive description) becomes paranoid in response

to an alert tends to be related to an individual's associations with fearful and/or anxiety producing events from his past as well as to how much the individual perceives the event as being a violation of his cultural norms and beliefs. In summary, the more intensely the danger alert system is activated by an event, the more likely the 'self-story' will have paranoid overtones.

We can look at an example from recent political history: the widespread and persistent vilification of Hillary Rodham Clinton from the moment she stepped into the White House as the United States' First Lady, through to her run for the US presidency. This seemed to me to result from a widely shared story that was deeply paranoid and at odds with my own assessment of Clinton, whom I met socially on one occasion many years ago. To me she seemed quite shy and remote, hardly the "devious evil one" of future stereotypes. What made her more of a target of negative and paranoid speculation than any other woman in public life?

To answer this we might consider studies done by scientists on troupes of baboons in the wild. Many of us have seen wildlife documentaries about these distant primate cousins of ours, in which we can observe that Baboons possess fairly strict social hierarchies for male and female behavior. Any actions by individuals that signal a break from what is expected brings swift retaliation. A male baboon occupying a status position below an alpha-male, must show subservience or he will be threatened. If he fails to act appropriately in short order, he will be attacked. Female baboons also have a hierarchy in which each knows her place, with 'inappropriate' behavior being taken as a challenge to higher ranking females and males, requiring retaliatory responses.

These types of social relationships exist amongst all the great apes as well as us, the human ape. A version of that 'baboon brain', steeped in hierarchy and dominance, is wired into all of us as part of our threat alerting system. If we do not see the appropriate behaviors (expected signals) in those we encounter socially, an internal alarm sounds and we automatically become suspicious of them and quickly create a projected set of negative attributions (in the form of a 'self-story') that casts them as being potentially dangerous. These 'self-stories' (paranoid tilted narratives) turn those that appear to be different into outcasts, and so, I believe, it was for HRC.

She appears not to send social signals in what is considered a typical female style. It has been an observation of mine that highly intelligent, self-motivated, high-achieving women often do not manifest the standard, expected signaling for females in their social interactions. They may use facial expressions, language and tone of voice in ways that do not fit what our brains expect from an 'average' woman. When taken in the context of her obvious introversion, my personal experience of Hillary was of someone who does not send the expected non-verbal messages that are easily interpreted by others as 'normal'. Thus, her behavior will often cause an 'alert' to sound in our danger signaling system because she does not automatically activate the expected responses in our 'baboon brains'. Of course, when one has a direct interaction with such a person, our other capacities for knowing and evaluating social interactions can come into play as well, but, even then, such a person can easily be misinterpreted through a fundamental mis-attribution.

At a distance most people do not get the opportunity to have additional input about HRC, so the responses of their 'baboon brains' easily dominate their perceptions and reactions, albeit unconsciously. Those responses, when the 'signaling' contradicts what we are wired to expect, are felt with a visceral certainty and the attributions made about the person sending them are usually a 'self-story' that has a potential for as yet unknown threat at its thematic core. The story is thus shaped by our tendency to create a paranoid narrative—she must be up to something nefarious—because

the alert system for danger has been activated and, once operational, an ongoing 'self-story' with a negative valence is set in motion and maintained.

Since our brains have evolved to be suspicious of the unfamiliar, it doesn't take much for us to imagine that the unspecified 'rustling' in the 'bushes' might be a predator. Once this fear-generating attribution process is in motion, we can easily imagine harpies, devils and villains where there may be only a 'mouse' scratching around in the undergrowth. Without reliable empirical evidence, we do not really know to what our 'baboon brains' are alerting us. The less certain we are of what the threat is, the more we have room to create ever wilder narratives that, when sufficiently amplified by additional fear charged input, can include a story of a HRC's child sex-trafficking ring in the basement of a basement-less pizza shop.

What I am suggesting is that someone like HRC, who sends unexpected or ambiguous signals, can set off a cascade of responses in our brains that activate the deeply embedded alarm system. For us humans that includes the linguistic story-making that is tinged with paranoid attributions arising from ambiguous signals that appear to us to have threatening overtones.

This type of perception of possible danger and the generation of subsequent paranoid ideation is largely unconscious and reactive. It is a normal response to an unclear situation of possible threat and only becomes pathological when the paranoid ideation becomes a looping, vicious infinite regress most often witnessed as occurring in that outlying one percent of over-reactors. We beheld this kind of extreme acting out, born of a paranoid looping 'self-story', when a young man 'stormed' the basement-less pizza shop, armed and ready to liberate the children who were being held captive in the basement.

### Digital Amplification of Paranoid Storytelling

Before modern, electronic communication there was gossip—messaging in which hidden truths were revealed and sources of threat and difficulty were uncovered and exposed to the light of day. This activity, like mutual grooming amongst pre-human primates, is inherently rewarding, apparently causing small surges of dopamine in parts of the brain that register this neurotransmitter as a reward. As parasites are removed during grooming and malevolent forces or persons are revealed through gossip, a reduction in anxiety occurs as hidden threats are brought out in the open, relieving an individual of irritation, fear and uncertainty.

Gossip was the primary method of opening 'self-stories' to social scrutiny probably from the time linguistic communication came into being. It only started to evolve into mass public news media when printing allowed for the wider distribution of stories to a literate audience. Gossip remained, of course, but now there was more than one way to learn whether or not it was a mouse or a monster. With the advent of electronic media, the communication process increased in speed and, once again, there was a person, more or less directly, telling us the 'truth' about what is rustling in the bushes.

Differences of opinion and interpretation of 'facts' had always been part of the process from the age of gossip to the age of broadcast media. But the reliability of large scale electronic mass media as a source of 'true' signal to the herd regarding the current situation started to finally disappear when various media outlets began telling stories that sharply contradicted each other, first with newspapers, and then more so as networks became outlets for widely differing 'self-stories' held by different social and political groups.

Into this decaying epistemic certainty emerged what we now call social media. This was made possible by the rise of digital technology for data transmission and processing. Now, the previous social rules of conduct and related standards of reliable and useful knowledge started to disincorporate into ever increasing numbers of differing epistemic fragments—each claiming knowledge of the absolute truth regarding what is *really* rustling in the undergrowth. The speed at which this occurs and the sheer volume of wildly differing stories as possible activity in the underbrush is now overwhelming to a brain that has evolved to handle a much reduced rate and variety of input. ‘Self-stories’, as a result, have become evermore complex and filled with the vague, threatening, unknown forces that underpin on-going and growing paranoid ideation.

The seventy percent of the normal population, that evolved to be slightly over-reactive to alarm stimuli, is now being activated to a more intense reactivity and paranoid ‘self-story’ making given the way social media works. The entire alerting, attending and reaction system is amplified so that it is now showing characteristics of perception and behavior that previously tended to belong primarily to the one percent of extreme reactors.

The Facebook system, for example, intensifies the input into our paranoid ‘self-story’ making by increasing the rate of alerts and the perceptual complexity of the situation. This, in turn, drives the process into continuous looping for more input required to clarify and resolve the increasing number and ambiguity of perceived threats. A positive feedback loop is thus maintained as we are rewarded by incoming fragments offering partial resolution as well as being given ‘likes’ for our responses.

Here is how it works: A sudden fear-inducing stimulus appears on our news feeds and we react with a ‘like’. You have been told what the threat is and what is really going on and then other similar reaction-inducing stories appear, you ‘like’ them and the process continues to loop as you are fed ‘gossip’ and are rewarded with more ‘likes’. The ‘self-story’, too, loops into evermore paranoid forms as it is continuously recreated to meet the barrage of threat signals. The story creation process continues as we experience the reward generated by feeling a momentary epistemic certainty and relief. The more we respond, the more input we receive and the more likely we are to keep responding and rewriting or confirming our ‘self-stories’.

When applications like Facebook become the main source of mutual social grooming and gossip, the positive feedback loop established in those contexts tend to drive most participants into dependency on social media. The reward system thus feeds our ‘self-stories’ generating often bizarre, ungrounded and paranoid ideation.

One important factor underlying this story looping, allowing it to continue, is that the information received usually cannot be empirically verified or discounted. Another important element underlying the continuation of this course is the absence of direct emotional knowing that we usually experience in face-to-face interactions. A message that is charged with threat and ambiguity, regarding its source and the person behind the message, who is most often unknown to the recipient, remains ungrounded regarding the person sending it.

For example, most of us have had our intention behind an email we sent misinterpreted or found ourselves reacting to something we thought was implied in an email we received, only to learn later that we had attributed meaning, emotion or intention that was not actually coming from the sender. For example, a simple declarative statement can be misconstrued as sarcasm, as if the recipient was ‘hearing’ the tone and intonation of the sender’s voice, when in fact there was no non-verbal or emotional signaling directly conveyed in an email. This ‘writing’ of emotional meaning into an email

message, without any other indication being given, is an example of the projection of intent and meaning generated by a paranoid 'tilt' to our 'self-stories'. Without direct emotional feedback, whether through facial expressions, tone and intonation of voice, bodily gestures, or directly through the tone of the other's emotional 'field', our 'self-story' and context will cause us to make our own selection regarding the intent and meaning being sent.

Given that the signaling provided by direct, face-to-face communication is missing in digital communication, emojis have emerged as an attempt to send emotional and non-verbal signals, recognizing that the internet is only capable of sending binary digits. These symbols are not the same as unmanipulated non-verbal communications and certainly do not have the presence or intentionality manifested by an actual organismic presence. They merely represent a signal that the sender wants us to see, which is only part of what is available in direct, face-to-face communication. With a lack of honest emotional and non-verbal signaling to apply some negative feedback to the loop, the power of digital social media to amplify perceived danger signaling and cause it to loop out of control remains unchecked.

### Social Media and "Fast Thinking"

As I have indicated in this essay, the 'tilt' of the brain's 'self-story' generation is toward looking for danger and projecting possible forms of it on to people, places and things. However, the response generated by digital amplification of the alert-response system goes far beyond merely a 'tilt' in that it can work to create an effective cognitive-behavioral 'stampede' toward a desired object or goal. This reaction can be driven by a longing to achieve a wished-for positive outcome, such as safety (either through returning to a past halcyon time or by moving toward an idealized future), or by a desire to attack a perceived enemy who is seen as standing in the way of getting to the desired goal. We have observed this occurrence many times in recent years, from social movements like the protest movement in Egypt at Tahrir Square to the recent anti-Chinese government demonstrations in Hong Kong. There is little doubt that Facebook and Twitter have been instrumental in driving recruitment and turnout for these demonstrations and in these events we can witness an amplified, paranoid over-amped self-constructed signal being created.

The use of Facebook in January 2011 helped to ignite what has been called the 'Arab Spring'.<sup>3</sup> Over 100,000 demonstrators came out to protest the oppressive Egyptian regime as a result of a social media chain-reaction. Many more protestors also joined in because of the influence of the initial digital responders leading to a total of about a million. The groundswell of optimism that spread electronically was, however, a result of the same amplified fear response central to my argument, but this time it activates the creation of a 'self-story' of salvation (escape from danger), but still in response to perceived danger (the regime).

The cascade of a 'self-story' facilitating a belief that the Mubarak regime could be overthrown was rewarded and further enhanced by his actual abdication. Of course, a response that was congruent with the extant 'self-story' only further activated an even more intense response. Because this type of on-line amplification works with such speed, high volume and efficiency, few of the participants seemed to be engaging in what the Nobel laureate, Daniel Kahneman, has called 'slow thinking'.<sup>4</sup>

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<sup>3</sup> Eaton, T. (2013). Internet activism and the Egyptian uprisings. *Westminster Papers*, 9(2), 5-23.

<sup>4</sup> Kahneman, Daniel (2011). *Thinking, Fast and Slow*. Farrar, Straus and Giroux. Kindle Edition.

In his approach to generating pragmatically useful knowledge and rational decision-making, he advocates an empirical method in which participants would be more likely to gather data and calculate, that in the Egyptian context, a new dictator and more repression had a much higher probability of arising than the 'self-story' that was whizzing through social media amongst the participants: this was going to bring reform and 'freedom'.

Kahneman describes 'fast thinking' as being what most people would call their 'gut feeling'. I would call it an instantaneous projection of a 'self-story', which is not generated from empirical data gathering and logical construction. 'Self-stories' are sometimes modified by empirical data and rational thought, but for the most part their foundations are built on limbic brain reactivity aimed at the recognition of danger and need for self-preservation. When the danger is not clearly discernable, the prefrontal brain, driven by a limbic alert, creates a constructed 'picture' of possible sources that are causing the alarm as it attempts to strategize a solution. Associative memory and prior learning play a major role in the immediate demands of this process and, therefore, it is difficult for an experient to make a 'slow-thinking' assessment of the danger, much less whether or not it is empirically real and the response realistic.

### In Summary

In this short essay I have attempted to map the evolution of what I have called the paranoid 'tilted' brain. My thesis is that natural selection has shaped how prey animals respond to threat and how the probability of survival has selected for mammals, including primates, that are more likely to be slightly over-reactive to danger. As I have argued in this essay, our 'self-stories'—the way we describe ourselves and the world around us to ourselves—usually are given a paranoid 'slant' by our hereditary alert system. In addition, I have proposed that our brain's alert system, when operating in a digital social media environment, often generates a positive feedback loop. The digital amplification of our innate danger alert and higher processing systems generate a chain of mis-attributions with the consequence of creating monsters more fierce than any to be found under any bed.

I also have argued, that in our current world, alerts that activate self-preservation can be much subtler than simple threats to physical life. These struggles often take the form of: my idea versus yours, my business versus yours, my belief of where my property line is, versus yours, etc. Nonetheless, even in these less dire challenges to our self-preservation, that same survival mechanism and 'self-story' making operates—often as if the situation is, in fact, one of life and death. Our "fast thinking" is most often our first line of response and makes us vulnerable to the amplification of our survival responses by the action of digital platforms ostensibly designed for social communication.

Digital media, originally intended to be a useful aid to interpersonal connecting, was designed without an understanding of how it would interact with our basic neural wiring and alert-response-cognitive systems. The provision of social media to our human herd, who, whether or not they are consciously aware that they are always on alert for danger, has had the effect of directly over-activating the paranoid nature of our 'self-stories'. It also seems evident that the speed and capacity of these digital systems for generating positive feedback loops directly interferes with our capacity for clear-minded responding and our ability to know what is going on in the world around us.