

Winning the Brain Game: Fixing the 7 Fatal Flaws of Thinking

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Each of these flaws carries with it the potential to kill great ideas and prevent an elegant solution from ever seeing the light of day. Innovation, problem-solving, and true learning—the kind where new knowledge is actually created by the learner—employ an iterative process: questioning, framing, hypothesizing, ideating, testing, and reflecting.

FLAWS THAT MISLEAD			
Name of Flaw	Leaping	Fixation	Overthinking
Description	Leaping to solutions in a sort of mental knee jerk manner. Also known as rapid cognition and jumping to conclusions.	Also known as functional fixedness, paradigms, blind spots, mindset, bias, brain lock, and mental models.	A knack for creating problems that weren't even there in the first place. Overanalyzing, overplanning, and generally complicating matters by adding unnecessary complexity and cost. Ignoring the most important constraints of a given problem, which blocks the discovery of a more elegant solution.
Name of Fix	Framestorming	Inversion	Protesting (prototyping and testing)
Fix Description	<ul style="list-style-type: none"> The secret lies in how to trigger SLOW so that it acts and feels like FAST. In framestorming, the focus is on generating questions, not solutions. Framestorming turns problems into puzzles. When we view something as a problem, we naturally engage in Leaping to solutions. When something is a puzzle, though, we naturally slow down a bit: we learn at an early age when doing puzzles that we need to get the corners and edges down first. Getting the puzzle frame right is half the battle. Step 1: Cue the language of frames. Good frames are stated as questions. A beautiful question is an ambitious yet actionable question that can begin to shift the way we perceive or think about something—and that might serve as a catalyst to bring about change. Begin with WHY? (e.g., Why is this a problem? Why hasn't anyone solved it? Why might it represent an opportunity?) The innovator then moves to the WHAT IF questions (imagining possible solutions). With possible solutions imagined, you then move to the more practical and concrete HOW might we do this? Step 2: Generate questions. Generate as many <i>Why? What if?</i> and <i>How?</i> questions as you can (12+). Start by questioning the question you're asking in the first place. Your answer is baked into your question. Step 3: Pick the 2 best. 	<ul style="list-style-type: none"> It involves flipping your thinking around in order to see things through a new, fresh, and unique lens. In neuroscience, it's called neuroplasticity, the ability of the mind to alter brain circuitry. Opposite World: inverting the normal conditions, defining features, or key characteristics of whatever challenge you're tackling. <u>Step 1</u>: list the defining attributes. <u>Step 2</u>: for each element, list the extreme opposite or reverse. <u>Step 3</u>: Framestorm / brainstorm using the opposites as your starting point. Why (not)? What if? How (might we)? 	<ul style="list-style-type: none"> Question, hypothesize, test, and reflect. A prototype in any form is at its core simply a set of educated guesses about the future. Also called a hypothesis. Creating a prototype is play, testing it is <i>purposeful</i> play—without overthinking it. Surface Assumptions: What Must Be True? Simply trying to list assumptions doesn't work for most people because our assumptions are so ingrained in our thinking that they're hard to identify. Also, most people tend to list the "known" things for the sake of ease and to avoid the risk of looking uncertain. But an assumption by definition is something unknown, untested, a guess. That's scary...we fear the unknown, and we are reticent to bring it up and make it public. The best way to surface an assumption and alchemically turn it into an advantage is to ask the question: What must be true? What would have to be true for the option on the table to be a fantastic choice? The best role of the consultant in situations like this is NOT to try to convince clients which choice is best; run a process that enables them to convince themselves. / The goal is not to identify all the many assumptions that may be made, but rather those that are riskiest and most uncertain: your "leaps of faith." For example, determining whether a prototype strategy represents a good set of choices may require asking what must be true about the industry structure, market segmentation, distribution channels, cost structures, and competitive reaction. A prototype product or service offering may require asking what must be true about what users truly value. / Once you develop a list of answers to the questions of what must be true for your concept to be a good choice, you will have a fairly robust set of conditions for success. This list is your portfolio of educated guesses about the future, your hypothesis. The task becomes one of identifying those that might not be true, and thus represent obstacles and barriers. The easiest and most effective way to do this is to start by asking yourself: Which of the <i>what must be true?</i> answers am I most worried might not be true? It is the most worrisome <i>what must be true?</i> that is used to design an initial test. Testing Assumptions: Experiment Design The test requires validity: an easily replicable test of a hypothesis that generates meaningful learning and measurable outcomes. It meaningfully and measurably provides some insight into the relationship—if any—between action and outcome. The importance and significant of that insight depends on the design, implementation and interpretation of that simple experiment. A hypothesis is a testable belief about future value creation. Sample construct of a good hypothesis: The team believes exploring this [action/capability] will likely result in [desirable outcome], and we'll know this because our [metric] [significantly changed]. The more you experiment the easier it becomes; the easier it becomes, the more you experiment. A Virtuous Cycle.
Takeaway: The Flaw & the Fix	Leaping to solutions when tackling a complex challenge is natural and intuitive, but almost never results in an elegant solution. By inserting a simple step called framestorming that feels equally intuitive but is focused on questions rather than answers, we can trigger our deeper and more creative thinking circuits.	Our brains are masterful pattern machines, enabling us to function effectively and efficiently. Unfortunately, that patterned functioning can become so fixed that it becomes difficult to see things not as they are, but as they could be. By inverting the current reality, we can create new patterns and free up our thinking to explore possibility.	We overthink for several reason, including an evolutionary addiction to abundant resources and institutional education focused on certainty and reliability in which the test comes after the learning. By reversing this dynamic with simple, fast, and frugal tests of prototypes, we can rekindle the ethos of experimentation young children naturally exhibit, in which the test precedes the learning.

¹ Nearly everything in this document is verbatim from the book. It is intended as a reference tool for me. I seldom note when May quotes a different author. Also, I combined related entries without noting new paragraphs, etc.

Key Learning (why the flaw happens)

Leaping

- For most of us, our formal education as children and young adults has taught us the importance of answering the teacher's questions correctly within strict time limits. Our performance depends on it: we're graded on our ability to regurgitate quickly. As we move up in grade, all of that gets exaggerated, enforced, and accelerated, year after year. Our own questions lose priority, until we eventually lose our desire to ask at all, for fear of disrupting others. As we enter the workforce, we bring with us this embedded *right-answer-now!* mindset.
- Our brains are wired for FAST and SLOW thinking. FAST thinking does the rapid, automatic, reactive, unconscious, and instinctive thinking we employ to solve routine problems. SLOW handles the labored, effortful, conscious, and rational thinking we employ to solve more complex and unfamiliar challenges. If you're taking action of any kind, FAST rules. SLOW kicks in only when FAST has run out of possible alternatives. SLOW, is the system of last resort. When it comes to the more complex problems, FAST leads us astray, gets in the way, and prevents us from solving them. By nature, the mind stays closed as long as possible!
- The neuroscience says that if you are uncertain, or lack evidence, about whether a particular outcome was caused by a preceding event, you are more likely to quickly associate them together.

Fixation

- As soon as our brain recognizes a piece of information as being part of a preexisting pattern, our FAST thinking overrides our SLOW, and we get fixed on our solutions, essentially screening out other possibilities.
- The late Chris Argyris of Harvard University coined the term "mental models." He said many of our mental models are flawed because most of what guides our behavior is related to one of four intentions: 1) to remain in control; 2) to maximize winning & minimize losing; 3) to suppress negative feelings; and 4) to be as rational as possible. He believed people act this way in order to avoid threat or embarrassment. Argyris claimed that one's mental model plays out in a repetitive pattern he called the "ladder of inference." It works like this: You experience something, and that becomes the ladder's first rung. You apply your own theory to the situation, and that's the second rung. Next come the assumptions you make, the conclusions you draw, and the beliefs you hold. Finally, you act. But as you climb the ladder, you are becoming more and more abstract in your thought, further from the facts of the situation. And so you are vulnerable to less than optimal action, which helps explain why so many of our ideas and solutions don't meet the mark.

Overthinking

- Our love of planning comes from our evolutionary addiction to resources: the more we have, the more we feel safe, secure, in control, shielded from risk, and thus able to perform better. But in reality, just the opposite is often true—the more we attempt to control and regulate apparent risk, the more exposed and at risk we often are. That's because the more protected we think we are, the less vigilant we become.
- The ability to view finite resources as the very source of creative thought is the hallmark of an artist. Restraining forces always rule, and relying on slack resources or ignoring constraints not only stifles creative thinking, but also breeds Overthinking.
- In neuroscience, there's the concept of attention density: the denser your attention is, the more likely a specific habit will be wired into your brain. Repeatedly focusing your attention on something strengthens brain circuits. Attention density cuts both ways, working for or against you. When you focus your attention on a strong and enduring brain circuit, it can slow you down, and even shut you down. Athletes and other performers experience this as *choking*: what has become automatic through years of practice can become crippling under pressure when attention is focused on it.... Thinking can get in the way when the information is actually already in your motor memory. If you stop thinking so hard, then you actually perform better.
- Another part of the answer centers on our needed to be certain and correct, a need easily traced to how we learn, and how we are educated.
- Many of us are now trying to rekindle the childlike ethos of curiosity and experimentation with which we entered the world, eager to embrace failures, which are often directional signs on the road to achievement.

FLAWS THAT PRODUCE MEDIOCRITY

Name of Flaw	Satisficing	Downgrading
Description	The natural inclination to settle for “good enough” when faced with a decision. Failure to move beyond the first obvious solution that looks good enough.	Downgrading is much like Satisficing, but is more of a premeditated, downward or backward revision of a stated goal. Downgrading, if left unchecked, often results in total disengagement from the challenge, a complete abandonment of objectives. The problem you’re trying to solve remains unsolved.
Name of Fix	Synthesis	Jumpstarting
Fix Description	<ul style="list-style-type: none"> ▪ “Both-and” thinking versus the more typical “either-or” thinking that contributes to Satisficing. ▪ Double Down – when you have two solutions, one of which has many benefits with one huge drawback and the other of which has one huge benefit but many drawbacks, a way forward is to synthesize – finding a 3rd option. The trick is to find the conditions under which the first approach can provide the benefits of the second. Ask: under what conditions could model A actually generate the benefits of model B? ▪ Decomposition – When you have two equally attractive solutions that you wish you could fully implement simultaneously but can’t because they are in direct conflict and require significant trade-offs, break the larger context down into component parts, so that you can apply each solution in whole to those components. The goal of decomposition is to avoid satisficing compromises and “either-or” trade-offs in order to create more value through “both-and” thinking. Rather than choosing Option A or B to apply to the entire situation, or at all times, the integrative thinker applies the different models together by carefully distinguishing when and how each model can be applied to which elements of the problem space. Each model is then applied selectively. The essential question to ask in this scenario: Can I parse the problem in a new way, such that I can apply each model to a different part of the problem space? ▪ Integrative thinkers show us what is possible: they consider more features of the problem as salient to its resolution; they consider more complex kinds of causal relationship between the features; they are able to keep the whole problem in mind while they work on the individual parts; and they end up with creative resolutions. Importantly, they do all of this explicitly, pushing to understand “the thinking behind their thinking. 	<ul style="list-style-type: none"> ▪ My word for tapping into alternate sources of thinking power that help to revitalize and rejuvenate the creative neurons that may be blocking us from pursuing what seems to be impossible, but almost never truly is. ▪ Can-If Cascading – this is a close cousin to What if? thinking. If the first reaction to a challenge (even a private one of your own) is some version of “Impossible!” you’ve probably set a worthy goal. But emotional reactions like “Impossible!” can quickly decay into rational ones that start with “I/we can’t because...” It’s a very slippery slope, because before you know it, you’ve completely talked yourself out of a winning aspiration. That’s where “Can-If” comes in. Quite simply, force yourself to replace “can’t, because” with a “can, if” statement. Without a positive construct, the inability to have a ready answer to a difficult question kills the momentum and the flow of exploration.” Converting a “Can’t, because” to a “Can-if” is just such a positive construct, as it is an effective way to Jumpstart the effort, and to keep it rolling once you’re on your way. ▪ Why-How Laddering – Seemingly impossible challenges seem impossible because there is no clear <i>how</i>, and the entire point of such a challenge is the creative search for a solution. So we can be fairly confident that we are in for a difficult struggle with the <i>how</i> at some point. That’s where laddering comes in. If the <i>how</i> isn’t yielding the desired progress, we can ladder up to asking ourselves the <i>why</i>. If the <i>why</i> isn’t as clear as it could be, we can ladder down to a lower level how until we find something we can accomplish to get a quick win and restart our progress toward the <i>why</i>. ▪ Fresh Starts – According to a University of Pennsylvania study, people are more likely to set a new goal corresponding with or immediately following an event such as a birthday or the start of a week, month, season, or year, suggesting that temporal landmarks or timestamps might make it easier to engage in aspirational behavior. Researchers propose two mental processes to explain the effect. First, that these landmarks create new “mental accounting periods” that psychologically distance our present self from its past imperfections, propelling us to behave in line with their renewed self. Second, temporal landmarks interrupt attention to day-to-day details, causing us to take a big-picture view of our situation and focus more on the broader challenge we’re facing. However, fresh starts can be triggered more routinely through the power of pulsing: working in 90-minute cycles, effectively achieving the Fresh Start effect several times a day. It doesn’t matter much what you do as long as you change your space every 90 minutes or so. The science shows that after working hard for more than 90 minutes, our brains begin to slow down to conserve energy. We become more reactive and less capable of thinking clearly and reflectively, or seeing the big picture. Our FAST thinking takes a firm grasp on the steering wheel, while our deeper SLOW thinking goes into hibernation.
Takeaway: The Flaw & the Fix	We satisfice for a variety of reasons, most of them focused on our bias for action and emphasis on short-term expediency and efficiency. By taking a more maximizing approach to complex problems that entails examining various options before synthesizing a solution that incorporates the best of the multiple worlds, we can achieve longer-term effectiveness and sustainable success.	Downgrading is a futile attempt to declare victory through a preemptive surrender. We downgrade our goals for several reasons, including a natural tendency to sell our capacity short, failing to construct goals with motive and means, and a lack of good old-fashioned grit. A few simple techniques for embracing possibility, constructing goals, and engineering fresh starts can help to jumpstart our mental machinery and get us back on track toward solving our challenge.

Key Learning (why the flaw happens)

Satisficing

- Peter Senge (5th Discipline) said that “business and human endeavors are systems...we tend to focus on snapshots of isolated parts of the system. And then wonder why our deepest problems never get solved.”
- Smaller teams do not view themselves as part of the larger group and, thus, do not try to achieve a larger group win. The teams do not communicate with one another.
- In Satisficing behavior, I see people ignore the very constraints that can paradoxically open up new and different ways of looking at things. I watch them mistakenly pose the question, “What should we do?” before asking “What is possible?”
- Lacking a solid algorithm for making decisions, our only choice is to use the most efficient means we have, which are rules of thumb (heuristics).
- FOMO = fear of missing out
- Most of us, most of the time, do whatever we can to simplify this [problem-solving] process: we cut down the number of variables we will consider to a minimum; we think about the simplest and most straightforward kinds of causal relationships; we break the problem apart into manageable chunks and then accept the trade-offs that emerge from our thinking as “inevitable.” Or, we imagine the trade-offs away...taking the shortest possible route to remedying the tension between the two models. We do all of this in a highly implicit way, failing to look deeply into our thinking at each stage, and thus when we fall victim to a logical misstep, we are entirely unaware of it and only become cognizant of a problem when the outcome is not what we would wish for ourselves. (Roger Martin)
- When faced with higher-order decisions or seeking farther-reaching solutions in which the potential impact can result in significant downstream effects that prevent us from achieving the kind of success we seek, we need to give the pursuit of an optimal solution more consideration. We need to wear the hat of the maximizer if we want to win.

Downgrading

- The paradox at play is that by Downgrading we somehow fool ourselves into believing we can declare victory...through preemptive surrender!
- When we view a problem as unsolvable or a goal as unattainable, we go through four phases. The first thing we do is try harder. Next, if our efforts don’t yield the results we want, we get angry. Third, we resign, mentally distancing ourselves from the goal, and we get depressed. Finally, our commitment dissolves completely and we become open to committing to a new goal.
- We often and automatically impose limits on ourselves that can unnecessarily hold us back, rather than propel us forward. The fact is that we can’t possibly know our true limits until we put our capacity on trial.
- Another reason we Downgrade is the lack of an appropriate challenge. A goal must be achievable, a problem solvable. Otherwise, we will disconnect. Consider the Lexus tagline that refers to the pursuit of perfection. If perfection is not achievable, why pursue it? The answer is that perfection is in fact not the goal, but rather a vector, like the horizon line. Perfection as a pursuit and process drives breakthroughs. Perfection as a goal can stall progress and stunt creativity.
- The neuroscience of goal-direction action deals with the Motive and the Means. UCLA researchers state that actions are constituted by both movement and the mind. Actions possess both a **how**—the executed movements of the body and its mechanical interactions with the physical world around it—and a **why**—the relatively disembodied motives, beliefs, and intentions of the actor. The **how** and the **why** light up completely different parts of the brain: **how** thinking engages the left brain circuitry, while **why** thinking engages right brain circuitry. The findings also suggest an inverse relation between the two circuits, meaning when one is on the other is off. The implications are significant: a well-structured goal requires a **how** as well as a **why** for whole-brain engagement, and it is important to maintain a connection between both. However, trying to focus on both simultaneously may work against us.

Flaws that Stem from Mindlessness		
Name of Flaw	Not Invented Here (NIH)	Self-Censoring
Description	A strong resistance to, or automatic rejection of, concepts (knowledge, ideas, solutions) produced somewhere else, somewhere external to the individual or team, often resulting in an unnecessary reinvention of the wheel. The pairing of these two aspects—external idea origination and immediate internal devaluation—is the defining characteristic of NIH.	The act of rejecting, denying, stifling, squelching, striking, silencing, and otherwise putting ideas of our own to death. The deadliest of all 7 fatal flaws because any voluntary shutdown of the imagination is an act of mindlessness, the long-term effects of which eventually kill off our natural curiosity and creativity.
Name of Fix	Proudly Found Elsewhere (PFE)	Self-Distancing
Fix Description	<ul style="list-style-type: none"> ▪ PFE is a term coined at Proctor and Gamble (P&G) in 2000. ▪ Open Hackathons: Bringing the Outside In – hackathons have moved well beyond the technology-only focus that “hack” conjures up, to become a valid method of bringing a diverse and passionate group of people—designers, storytellers, marketers, coders, entrepreneurs—together over a short time to solve real-world problems and produce a basket of strong ideas. Innovation is a contact sport, and having dozens of talented individuals rub shoulders and put their heads together is bound to produce something profound. ▪ Knowledge Network: Reaching Out to Connect – (see the knowledge network graphic on p. 147, which is a 3-ringed bullseye divided equally (like pie pieces) among the following: social media [individuals, groups, pages, forums]; experts [authors, scholars, coaches, consultants]; events [conferences, seminars; hackathons]; thinking partners [collaborators, colleagues, peers, coworkers]; organizations [associations, clubs, groups]; listening [books, podcasts, broadcasts]; viewing [videos, webinars, slideshows, talks]; and reading [books, periodicals, sites, blogs]. To turn this visual into a useful tool, think about three possible levels of connections: the outer circle representing your loosest connections, and those in your innermost circle being your highest-quality connections. A high-quality connection is one that you reference and connect with constantly. The information, knowledge, and guidance you receive is excellent, and enables you to be faster, better, and smarter. The connection is also characterized by easy access. Your relationship to individuals is characterized by the high levels of dialogue, responsiveness, and collaboration. To continuously improve the value of your knowledge network, focus on deepening ties to those with the potential to become part of your inner circle. 	<ul style="list-style-type: none"> ▪ The trick to fixing Self-Censoring is making everything interesting again. It requires us to embrace uncertainty. Mindfulness follows from uncertainty. When you’re uncertain, everything becomes interesting again. ▪ Self-Distancing is a version of mindfulness—a higher-order attention, noticing moment-to-moment changes around you. ▪ Invoke “the impartial and well-informed spectator,” which is defined as the ability to observe our behavior as an objective onlooker does, while remaining fully aware of our thoughts, emotions, and circumstances. ▪ When you think of yourself as another person, it allows you to give yourself more objective, helpful feedback. ▪ By toggling the way we address the self—1st person or 3rd—we flip a switch in the cerebral cortex, the center of thought, and another in the amygdala, the seat of fear, moving closer to our further from our sense of self and all its emotional intensity. Gaining psychological distance enables self-control, allowing us to think clearly, perform competently. The language switch also minimizes rumination, a handmaiden of anxiety and depression after we complete a task. Released from negative thoughts, we gain perspective, focus deeply, and plan for the future. ▪ Even minimal mental distancing oneself from the sources of the problem can have a dramatically positive influence on creative performance. ▪ When you become aware of something that’s causing you stress, you’re making an unwarranted assumption that something <u>will</u> happen with devastating results. First, give to yourself 3-5 reasons why this thing might not happen. Then ask yourself for 3-5 reasons why if it does actually happen, it’ll be a good thing. Now you’ve gone from “there’s this terrible thing that’s going to happen” to “there’s this thing that may or may not happen,” but if it does, it’ll have good things and bad things.” That leads us to become less reactive to the world; you stay responsive, not just reactive. ▪ As soon as you realize the issue looks different from a different perspective, take that perspective.
Takeaway: The Flaw & the Fix	When we perceive a boundary across which knowledge must travel, we resist and reject the ideas of others. Science tells us that assimilating the ideas of others drains our mental banks of cognitive resources without a corresponding reward. But by making a concerted effort to render our perceived boundaries more permeable by reaching beyond them to absorb concepts created and founds elsewhere, we can improve our thinking and productivity.	Self-Censoring is the mental mechanisms by which we learn from our mistakes can and will automatically censor our present and future desire to explore and create, rendering and reinforcing a mindless state. By becoming more attentive to the moment and seeing the situation from the perspective of an objective outsider, this mindlessness yields to mindful thinking, a nonnegotiable requirement for winning the brain game.

Key Learning (why the flaw happens)

Not Invented Here (NIH)

- While NIH in popular business literature is almost always discussed in a social context—organization, team, even a two-person partnership—it is my experience that it is entirely of an individual origin, perhaps a special strain of Fixation.
- NIH is not always directed toward concepts and knowledge developed outside a company. I've seen it happen inside teams, especially when the team members are geographically separated, and it doesn't seem to matter whether they are located on opposite ends of the campus or opposite ends of the earth.
- One of the most prevalent strains of NIH, and perhaps the deadliest to a culture because of its power to stifle creativity and alienate people, is the kind related to pecking order.
- Wikipedia states: In many cases, NIH occurs as a result of simple ignorance, as many companies simply never do the research to know whether a solution already exists. Also common, however, are deliberate cases where the organization's staff rejects a known solution because they don't take the time to understand it fully before rejecting it; because they would have to embrace new concepts in infrastructure or terminology; because they believe they can produce a superior product; or because they would not get as much credit for finding an existing solution as inventing a new one.
- A study of the literature devoted to NIH reveals that it is above all a predisposition (acquired attitude or bias) arising out of perceived burden, mental load, or possible threat.
- NIH becomes more prevalent as we develop subject matter expertise, which is a form of power. Subject matter expertise is the mother of all biases.... Psychologists maintain that deep but narrow bands of knowledge, aka subject matter expertise, provide us a bounded personal and social domain closely integrated with our self-image. As a result, we perceive anything that may breach that domain as a potential threat to our status, position, or power base.... NIH, then, is tied to domains of knowledge and activity we believe we own.
- The neuroscience of NIH suggests that for insights to be useful, they need to be generated from within, not given to individuals as conclusions. This is true for several reasons. First, people will experience the adrenaline-like rush of insight only if they go through the process of making connections themselves. The moment of insight is well known to be a positive and energizing experience. This rush of energy may be central to facilitating change: it helps fight against the internal (and external) forces trying to keep change from occurring, including the fear response.
- Invoke the wisdom of Pablo Picasso, who famously said that “bad artists copy, great artists steal.”

Self-Censoring

- Also known as VOJ (voice of judgement), Resistance, deceptive brain messaging.
- Self-censoring is wrapped in the wisdom of the old idiom “once burned, twice shy.”
- Neuroscience: the adrenaline-fueled threat-protection system in our brain that not only governs our fight-flight-surrender response but also enables us to learn from our mistakes. Our threat-protection system is stimulated even when there is no actual external threat, but just us being self-critical. When we are self-critical, we try to flee from the knowledge of our own faults.
- Recognize that events don't cause us stress. Stress is a function of outcomes, which are simply our interpretation of events, not of events themselves.
- Self-Censoring is firmly rooted in the past, not the present, the messages arising from it can indeed be deceptive. And if what our censoring self thinks it knows may not be true, then automatically accepting it as some sort of inert truth is indeed mindless and self-defeating.