

# 12 RULES FOR LIFE

An Antidote to Chaos

**DR. JORDAN B. PETERSON**

Illustrations by Ethan Van Scriver



RANDOM HOUSE CANADA



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## OVERTURE

THIS BOOK HAS A SHORT history and a long history. We'll begin with the short history.

In 2012, I started contributing to a website called Quora. On Quora, anyone can ask a question, of any sort—and anyone can answer. Readers upvote those answers they like, and downvote those they don't. In this manner, the most useful answers rise to the top, while the others sink into oblivion. I was curious about the site. I liked its free-for-all nature. The discussion was often compelling, and it was interesting to see the diverse range of opinions generated by the same question.

When I was taking a break (or avoiding work), I often turned to Quora, looking for questions to engage with. I considered, and eventually answered, such questions as “What's the difference between being happy and being content?”, “What things get better as you age?” and “What makes life more meaningful?”

Quora tells you how many people have viewed your answer and how many upvotes you received. Thus, you can determine your reach, and see what people think of your ideas. Only a small minority of those who view an answer upvote it. As of July 2017, as I write this—and five years after I addressed “What makes life more meaningful?”—my answer to that question has received a relatively small audience (14,000 views, and 133 upvotes), while my response to the question about aging



has been viewed by 7,200 people and received 36 upvotes. Not exactly home runs. However, it's to be expected. On such sites, most answers receive very little attention, while a tiny minority become disproportionately popular.

Soon after, I answered another question: "What are the most valuable things everyone should know?" I wrote a list of rules, or maxims; some dead serious, some tongue-in-cheek—"Be grateful in spite of your suffering," "Do not do things that you hate," "Do not hide things in the fog," and so on. The Quora readers appeared pleased with this list. They commented on and shared it. They said such things as "I'm definitely printing this list out and keeping it as a reference. Simply phenomenal," and "You win Quora. We can just close the site now." Students at the University of Toronto, where I teach, came up to me and told me how much they liked it. As of May 2017, my answer to "What are the most valuable things . . ." has been viewed by a hundred and twenty thousand people and been upvoted twenty-three hundred times. Only a few hundred of the roughly six hundred thousand questions on Quora have cracked the two-thousand-upvote barrier. My procrastination-induced musings hit a nerve. I had written a 99.9 percentile answer.

It was not obvious to me when I wrote the list of rules for living that it was going to perform so well. I had put a fair bit of care into all the sixty or so answers I submitted in the few months surrounding that post. Nonetheless, Quora provides market research at its finest. The respondents are anonymous. They're disinterested, in the best sense. Their opinions are spontaneous and unbiased. So, I paid attention to the results, and thought about the reasons for that answer's disproportionate success. Perhaps I struck the right balance between the familiar and the unfamiliar while formulating the rules. Perhaps people were drawn to the structure that such rules imply. Perhaps people just like lists.

A few months earlier, in March of 2012, I had received an email from a literary agent. She had heard me speak on CBC radio during a show entitled *Just Say No to Happiness*, where I had criticized the idea that happiness was the proper goal for life. Over the previous decades





I had read more than my share of dark books about the twentieth century, focusing particularly on Nazi Germany and the Soviet Union. Aleksandr Solzhenitsyn, the great documenter of the slave-labour-camp horrors of the latter, once wrote that the “pitiful ideology” holding that “human beings are created for happiness” was an ideology “done in by the first blow of the work assigner’s cudgel.”<sup>1</sup> In a crisis, the inevitable suffering that life entails can rapidly make a mockery of the idea that happiness is the proper pursuit of the individual. On the radio show, I suggested, instead, that a deeper meaning was required. I noted that the nature of such meaning was constantly re-presented in the great stories of the past, and that it had more to do with developing character in the face of suffering than with happiness. This is part of the long history of the present work.

From 1985 until 1999 I worked for about three hours a day on the only other book I have ever published: *Maps of Meaning: The Architecture of Belief*. During that time, and in the years since, I also taught a course on the material in that book, first at Harvard, and now at the University of Toronto. In 2013, observing the rise of YouTube, and because of the popularity of some work I had done with TVO, a Canadian public TV station, I decided to film my university and public lectures and place them online. They attracted an increasingly large audience—more than a million views by April 2016. The number of views has risen very dramatically since then (up to eighteen million as I write this), but that is in part because I became embroiled in a political controversy that drew an inordinate amount of attention.

That’s another story. Maybe even another book.

I proposed in *Maps of Meaning* that the great myths and religious stories of the past, particularly those derived from an earlier, oral tradition, were *moral* in their intent, rather than descriptive. Thus, they did not concern themselves with what the world was, as a scientist might have it, but with how a human being should act. I suggested that our ancestors portrayed the world as a stage—a drama—instead of a place of objects. I described how I had come to believe that the constituent elements of the world as drama were order and chaos, and not material things.





Order is where the people around you act according to well-understood social norms, and remain predictable and cooperative. It's the world of social structure, explored territory, and familiarity. The state of Order is typically portrayed, symbolically—imaginatively—as masculine. It's the Wise King and the Tyrant, forever bound together, as society is simultaneously structure and oppression.

Chaos, by contrast, is where—or when—something unexpected happens. Chaos emerges, in trivial form, when you tell a joke at a party with people you think you know and a silent and embarrassing chill falls over the gathering. Chaos is what emerges more catastrophically when you suddenly find yourself without employment, or are betrayed by a lover. As the antithesis of symbolically masculine order, it's presented imaginatively as feminine. It's the new and unpredictable suddenly emerging in the midst of the commonplace familiar. It's Creation and Destruction, the source of new things and the destination of the dead (as nature, as opposed to culture, is simultaneously birth and demise).

Order and chaos are the yang and yin of the famous Taoist symbol: two serpents, head to tail.\* Order is the white, masculine serpent; Chaos, its black, feminine counterpart. The black dot in the white—and the white in the black—indicate the possibility of transformation: just when things seem secure, the unknown can loom, unexpectedly and large. Conversely, just when everything seems lost, new order can emerge from catastrophe and chaos.

For the Taoists, meaning is to be found on the border between the ever-entwined pair. To walk that border is to stay on the path of life, the divine Way.

And that's much better than happiness.

The literary agent I referred to listened to the CBC radio broadcast where I discussed such issues. It left her asking herself deeper questions. She emailed me, asking if I had considered writing a book for a

\* The yin/yang symbol is the second part of the more comprehensive five-part *tajitu*, a diagram representing both the original absolute unity and its division into the multiplicity of the observed world. This is discussed in more detail in Rule 2, below, as well as elsewhere in the book.



general audience. I had previously attempted to produce a more accessible version of *Maps of Meaning*, which is a very dense book. But I found that the spirit was neither in me during that attempt nor in the resultant manuscript. I think this was because I was imitating my former self, and my previous book, instead of occupying the place between order and chaos and producing something new. I suggested that she watch four of the lectures I had done for a TVO program called *Big Ideas* on my YouTube channel. I thought if she did that we could have a more informed and thorough discussion about what kind of topics I might address in a more publicly accessible book.

She contacted me a few weeks later, after watching all four lectures and discussing them with a colleague. Her interest had been further heightened, as had her commitment to the project. That was promising—and unexpected. I’m always surprised when people respond positively to what I am saying, given its seriousness and strange nature. I’m amazed I have been allowed (even encouraged) to teach what I taught first in Boston and now in Toronto. I’ve always thought that if people really noticed what I was teaching there would be Hell to pay. You can decide for yourself what truth there might be in that concern after reading this book. :)

She suggested that I write a guide of sorts to what a person needs “to live well”—whatever that might mean. I thought immediately about my Quora list. I had in the meantime written some further thoughts about of the rules I had posted. People had responded positively toward those new ideas, as well. It seemed to me, therefore, that there might be a nice fit between the Quora list and my new agent’s ideas. So, I sent her the list. She liked it.

At about the same time, a friend and former student of mine, the novelist and screenwriter Gregg Hurwitz, was considering a new book, which would become the bestselling thriller *Orphan X*. He liked the rules, too. He had Mia, the book’s female lead, post a selection of them, one by one, on her fridge, at points in the story where they seemed apropos. That was another piece of evidence supporting my supposition of their attractiveness. I suggested to my agent that I write a brief chapter on each of the rules. She agreed, so I wrote a book proposal



suggesting as much. When I started writing the actual chapters, however, they weren't at all brief. I had much more to say about each rule than I originally envisioned.

This was partly because I had spent a very long time researching my first book: studying history, mythology, neuroscience, psychoanalysis, child psychology, poetry, and large sections of the Bible. I read and perhaps even understood much of Milton's *Paradise Lost*, Goethe's *Faust* and Dante's *Inferno*. I integrated all of that, for better or worse, trying to address a perplexing problem: the reason or reasons for the nuclear standoff of the Cold War. I couldn't understand how belief systems could be so important to people that they were willing to risk the destruction of the world to protect them. I came to realize that shared belief systems made people intelligible to one another—and that the systems weren't just about belief.

People who live by the same code are rendered mutually predictable to one another. They act in keeping with each other's expectations and desires. They can cooperate. They can even compete peacefully, because everyone knows what to expect from everyone else. A shared belief system, partly psychological, partly acted out, simplifies everyone—in their own eyes, and in the eyes of others. Shared beliefs simplify the world, as well, because people who know what to expect from one another can act together to tame the world. There is perhaps nothing more important than the maintenance of this organization—this simplification. If it's threatened, the great ship of state rocks.

It isn't precisely that people will fight for what they believe. They will fight, instead, to maintain *the match between* what they believe, what they expect, and what they desire. They will fight to maintain the match between what they expect and how everyone is acting. It is precisely the maintenance of that match that enables everyone to live together peacefully, predictably and productively. It reduces uncertainty and the chaotic mix of intolerable emotions that uncertainty inevitably produces.

Imagine someone betrayed by a trusted lover. The sacred social contract obtaining between the two has been violated. Actions speak louder than words, and an act of betrayal disrupts the fragile and





carefully negotiated peace of an intimate relationship. In the aftermath of disloyalty, people are seized by terrible emotions: disgust, contempt (for self and traitor), guilt, anxiety, rage and dread. Conflict is inevitable, sometimes with deadly results. Shared belief systems—shared systems of agreed-upon conduct and expectation—regulate and control all those powerful forces. It's no wonder that people will fight to protect something that saves them from being possessed by emotions of chaos and terror (and after that from degeneration into strife and combat).

There's more to it, too. A shared cultural system stabilizes human interaction, but is also a system of value—a hierarchy of value, where some things are given priority and importance and others are not. In the absence of such a system of value, people simply cannot act. In fact, they can't even perceive, because both action and perception require a goal, and a valid goal is, by necessity, something valued. We experience much of our positive emotion in relation to goals. We are not happy, technically speaking, unless we see ourselves progressing—and the very idea of progression implies value. Worse yet is the fact that the meaning of life without positive value is not simply neutral. Because we are vulnerable and mortal, pain and anxiety are an integral part of human existence. We must have something to set against the suffering that is intrinsic to Being.\* We must have the meaning inherent in a profound system of value or the horror of existence rapidly becomes paramount. Then, nihilism beckons, with its hopelessness and despair.

So: no value, no meaning. Between value systems, however, there is the possibility of conflict. We are thus eternally caught between the

\* I use the term Being (with a capital "B") in part because of my exposure to the ideas of the 20<sup>th</sup>-century German philosopher Martin Heidegger. Heidegger tried to distinguish between reality, as conceived objectively, and the totality of human experience (which is his "Being"). Being (with a capital "B") is what each of us experiences, subjectively, personally and individually, as well as what we each experience jointly with others. As such, it includes emotions, drives, dreams, visions and revelations, as well as our private thoughts and perceptions. Being is also, finally, something that is brought into existence by action, so its nature is to an indeterminate degree a consequence of our decisions and choices—something shaped by our hypothetically free will. Construed in this manner, Being is (1) not something easily and directly reducible to the material and objective and (2) something that most definitely requires its own term, as Heidegger labored for decades to indicate.





most diamantine rock and the hardest of places: loss of group-centred belief renders life chaotic, miserable, intolerable; presence of group-centred belief makes conflict with other groups inevitable. In the West, we have been withdrawing from our tradition-, religion- and even nation-centred cultures, partly to decrease the danger of group conflict. But we are increasingly falling prey to the desperation of meaninglessness, and that is no improvement at all.

While writing *Maps of Meaning*, I was (also) driven by the realization that we can no longer afford conflict—certainly not on the scale of the world conflagrations of the twentieth century. Our technologies of destruction have become too powerful. The potential consequences of war are literally apocalyptic. But we cannot simply abandon our systems of value, our beliefs, our cultures, either. I agonized over this apparently intractable problem for months. Was there a third way, invisible to me? I dreamt one night during this period that I was suspended in mid-air, clinging to a chandelier, many stories above the ground, directly under the dome of a massive cathedral. The people on the floor below were distant and tiny. There was a great expanse between me and any wall—and even the peak of the dome itself.

I have learned to pay attention to dreams, not least because of my training as a clinical psychologist. Dreams shed light on the dim places where reason itself has yet to voyage. I have studied Christianity a fair bit, too (more than other religious traditions, although I am always trying to redress this lack). Like others, therefore, I must and do draw more from what I do know than from what I do not. I knew that cathedrals were constructed in the shape of a cross, and that the point under the dome was the centre of the cross. I knew that the cross was simultaneously, the point of greatest suffering, the point of death and transformation, and the symbolic centre of the world. That was not somewhere I wanted to be. I managed to get down, out of the heights—out of the symbolic sky—back to safe, familiar, anonymous ground. I don't know how. Then, still in my dream, I returned to my bedroom and my bed and tried to return to sleep and the peace of unconsciousness. As I relaxed, however, I could feel my body transported. A great wind was dissolving me, preparing to propel me back





to the cathedral, to place me once again at that central point. There was no escape. It was a true nightmare. I forced myself awake. The curtains behind me were blowing in over my pillows. Half asleep, I looked at the foot of the bed. I saw the great cathedral doors. I shook myself completely awake and they disappeared.

My dream placed me at the centre of Being itself, and there was no escape. It took me months to understand what this meant. During this time, I came to a more complete, personal realization of what the great stories of the past continually insist upon: the centre is occupied by the individual. The centre is marked by the cross, as X marks the spot. Existence at that cross is suffering and transformation—and that fact, above all, needs to be voluntarily accepted. It is possible to transcend slavish adherence to the group and its doctrines and, simultaneously, to avoid the pitfalls of its opposite extreme, nihilism. It is possible, instead, to find sufficient meaning in individual consciousness and experience.

How could the world be freed from the terrible dilemma of conflict, on the one hand, and psychological and social dissolution, on the other? The answer was this: through the elevation and development of the individual, and through the willingness of everyone to shoulder the burden of Being and to take the heroic path. We must each adopt as much responsibility as possible for individual life, society and the world. We must each tell the truth and repair what is in disrepair and break down and recreate what is old and outdated. It is in this manner that we can and must reduce the suffering that poisons the world. It's asking a lot. It's asking for everything. But the alternative—the horror of authoritarian belief, the chaos of the collapsed state, the tragic catastrophe of the unbridled natural world, the existential angst and weakness of the purposeless individual—is clearly worse.

I have been thinking and lecturing about such ideas for decades. I have built up a large corpus of stories and concepts pertaining to them. I am not for a moment claiming, however, that I am entirely correct or complete in my thinking. Being is far more complicated than one person can know, and I don't have the whole story. I'm simply offering the best I can manage.





In any case, the consequence of all that previous research and thinking was the new essays which eventually became this book. My initial idea was to write a short essay on all forty of the answers I had provided to Quora. That proposal was accepted by Penguin Random House Canada. While writing, however, I cut the essay number to twenty-five and then to sixteen and then finally, to the current twelve. I've been editing that remainder, with the help and care of my official editor (and with the vicious and horribly accurate criticism of Hurwitz, mentioned previously) for the past three years.

It took a long time to settle on a title: *12 Rules for Life: An Antidote to Chaos*. Why did that one rise up above all others? First and foremost, because of its simplicity. It indicates clearly that people need ordering principles, and that chaos otherwise beckons. We require rules, standards, values—alone and together. We're pack animals, beasts of burden. We must bear a load, to justify our miserable existence. We require routine and tradition. That's order. Order can become excessive, and that's not good, but chaos can swamp us, so we drown—and that is also not good. We need to stay on the straight and narrow path. Each of the twelve rules of this book—and their accompanying essays—therefore provide a guide to being there. “There” is the dividing line between order and chaos. That's where we are simultaneously stable enough, exploring enough, transforming enough, repairing enough, and cooperating enough. It's there we find the meaning that justifies life and its inevitable suffering. Perhaps, if we lived properly, we would be able to tolerate the weight of our own self-consciousness. Perhaps, if we lived properly, we could withstand the knowledge of our own fragility and mortality, without the sense of aggrieved victimhood that produces, first, resentment, then envy, and then the desire for vengeance and destruction. Perhaps, if we lived properly, we wouldn't have to turn to totalitarian certainty to shield ourselves from the knowledge of our own insufficiency and ignorance. Perhaps we could come to avoid those pathways to Hell—and we have seen in the terrible twentieth century just how real Hell can be.

I hope that these rules and their accompanying essays will help people understand what they already know: that the soul of the

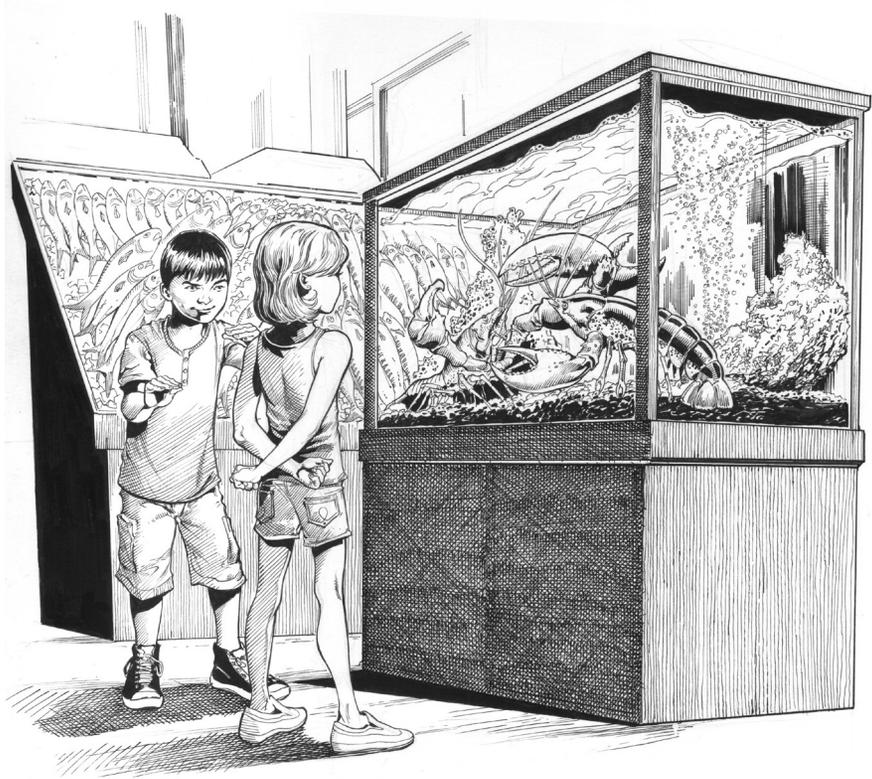


individual eternally hungers for the heroism of genuine Being, and that the willingness to take on that responsibility is identical to the decision to live a meaningful life.

If we each live properly, we will collectively flourish.

Best wishes to you all, as you proceed through these pages.

Dr. Jordan B. Peterson  
Clinical Psychologist and Professor of Psychology





## R U L E 1

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# STAND UP STRAIGHT WITH YOUR SHOULDERS BACK

### LOBSTERS—AND TERRITORY

IF YOU ARE LIKE MOST PEOPLE, you don't often think about lobsters<sup>2</sup>—unless you're eating one. However, these interesting and delicious crustaceans are very much worth considering. Their nervous system is comparatively simple, with large, easily observable neurons, the magic cells of the brain. Because of this, scientists have been able to map the neural circuitry of lobsters very accurately. This has helped us understand the structure and function of the brain and behaviour of more complex animals, including human beings. Lobsters have more in common with you than you might think (particularly when you are feeling crabby—ha ha).

Lobsters live on the ocean floor. They need a home base down there, a range within which they hunt for prey and scavenge around for stray edible bits and pieces of whatever rains down from the continual chaos of carnage and death far above. They want somewhere secure, where the hunting and the gathering is good. They want a home.





This can present a problem, since there are many lobsters. What if two of them occupy the same territory, at the bottom of the ocean, at the same time, and both want to live there? What if there are hundreds of lobsters, all trying to make a living and raise a family, in the same crowded patch of sand and refuse?

Other creatures have this problem, too. When songbirds come north in the spring, for example, they engage in ferocious territorial disputes. The songs they sing, so peaceful and beautiful to human ears, are siren calls and cries of domination. A brilliantly musical bird is a small warrior proclaiming his sovereignty. Take the wren, for example, a small, feisty, insect-eating songbird common in North America. A newly arrived wren wants a sheltered place to build a nest, away from the wind and rain. He wants it close to food, and attractive to potential mates. He also wants to convince competitors for that space to keep their distance.

### **Birds—and Territory**

My dad and I designed a house for a wren family when I was ten years old. It looked like a Conestoga wagon, and had a front entrance about the size of a quarter. This made it a good house for wrens, who are tiny, and not so good for other, larger birds, who couldn't get in. My elderly neighbour had a birdhouse, too, which we built for her at the same time, from an old rubber boot. It had an opening large enough for a bird the size of a robin. She was looking forward to the day it was occupied.

A wren soon discovered our birdhouse, and made himself at home there. We could hear his lengthy, trilling song, repeated over and over, during the early spring. Once he'd built his nest in the covered wagon, however, our new avian tenant started carrying small sticks to our neighbour's nearby boot. He packed it so full that no other bird, large or small, could possibly get in. Our neighbour was not pleased by this pre-emptive strike, but there was nothing to be done about it. "If we take it down," said my dad, "clean it up, and put it back in the tree, the wren will just pack it full of sticks again." Wrens are small, and they're cute, but they're merciless.





I had broken my leg skiing the previous winter—first time down the hill—and had received some money from a school insurance policy designed to reward unfortunate, clumsy children. I purchased a cassette recorder (a high-tech novelty at the time) with the proceeds. My dad suggested that I sit on the back lawn, record the wren's song, play it back, and watch what happened. So, I went out into the bright spring sunlight and taped a few minutes of the wren laying furious claim to his territory with song. Then I let him hear his own voice. That little bird, one-third the size of a sparrow, began to dive-bomb me and my cassette recorder, swooping back and forth, inches from the speaker. We saw a lot of that sort of behaviour, even in the absence of the tape recorder. If a larger bird ever dared to sit and rest in any of the trees near our birdhouse there was a good chance he would get knocked off his perch by a kamikaze wren.

Now, wrens and lobsters are very different. Lobsters do not fly, sing or perch in trees. Wrens have feathers, not hard shells. Wrens can't breathe underwater, and are seldom served with butter. However, they are also similar in important ways. Both are obsessed with status and position, for example, like a great many creatures. The Norwegian zoologist and comparative psychologist Thorlief Schjelderup-Ebbe observed (back in 1921) that even common barnyard chickens establish a "pecking order."<sup>3</sup>

The determination of Who's Who in the chicken world has important implications for each individual bird's survival, particularly in times of scarcity. The birds that always have priority access to whatever food is sprinkled out in the yard in the morning are the celebrity chickens. After them come the second-stringers, the hangers-on and wannabes. Then the third-rate chickens have their turn, and so on, down to the bedraggled, partially-feathered and badly-pecked wretches who occupy the lowest, untouchable stratum of the chicken hierarchy.

Chickens, like suburbanites, live communally. Songbirds, such as wrens, do not, but they still inhabit a dominance hierarchy. It's just spread out over more territory. The wiliest, strongest, healthiest and most fortunate birds occupy prime territory, and defend it. Because of this, they are more likely to attract high-quality mates, and to hatch





chicks who survive and thrive. Protection from wind, rain and predators, as well as easy access to superior food, makes for a much less stressed existence. Territory matters, and there is little difference between territorial rights and social status. It is often a matter of life and death.

If a contagious avian disease sweeps through a neighbourhood of well-stratified songbirds, it is the least dominant and most stressed birds, occupying the lowest rungs of the bird world, who are most likely to sicken and die.<sup>4</sup> This is equally true of human neighbourhoods, when bird flu viruses and other illnesses sweep across the planet. The poor and stressed always die first, and in greater numbers. They are also much more susceptible to non-infectious diseases, such as cancer, diabetes and heart disease. When the aristocracy catches a cold, as it is said, the working class dies of pneumonia.

Because territory matters, and because the best locales are always in short supply, territory-seeking among animals produces conflict. Conflict, in turn, produces another problem: how to win or lose without the disagreeing parties incurring too great a cost. This latter point is particularly important. Imagine that two birds engage in a squabble about a desirable nesting area. The interaction can easily degenerate into outright physical combat. Under such circumstances, one bird, usually the largest, will eventually win—but even the victor may be hurt by the fight. That means a third bird, an undamaged, canny bystander, can move in, opportunistically, and defeat the now-crippled victor. That is not at all a good deal for the first two birds.

### **Conflict—and Territory**

Over the millennia, animals who must co-habit with others in the same territories have in consequence learned many tricks to establish dominance, while risking the least amount of possible damage. A defeated wolf, for example, will roll over on its back, exposing its throat to the victors, who will not then deign to tear it out. The now-dominant wolf may still require a future hunting partner, after all, even one as pathetic as his now-defeated foe. Bearded dragons, remarkable



social lizards, wave their front legs peaceably at one another to indicate their wish for continued social harmony. Dolphins produce specialized sound pulses while hunting and during other times of high excitement to reduce potential conflict among dominant and subordinate group members. Such behavior is endemic in the community of living things.

Lobsters, scuttling around on the ocean floor, are no exception.<sup>5</sup> If you catch a few dozen, and transport them to a new location, you can observe their status-forming rituals and techniques. Each lobster will first begin to explore the new territory, partly to map its details, and partly to find a good place for shelter. Lobsters learn a lot about where they live, and they remember what they learn. If you startle one near its nest, it will quickly zip back and hide there. If you startle it some distance away, however, it will immediately dart towards the nearest suitable shelter, previously identified and now remembered.

A lobster needs a safe hiding place to rest, free from predators and the forces of nature. Furthermore, as lobsters grow, they moult, or shed their shells, which leaves them soft and vulnerable for extended periods of time. A burrow under a rock makes a good lobster home, particularly if it is located where shells and other detritus can be dragged into place to cover the entrance, once the lobster is snugly placed inside. However, there may be only a small number of high-quality shelters or hiding places in each new territory. They are scarce and valuable. Other lobsters continually seek them out.

This means that lobsters often encounter one another when out exploring. Researchers have demonstrated that even a lobster raised in isolation knows what to do when such a thing happens.<sup>6</sup> It has complex defensive and aggressive behaviours built right into its nervous system. It begins to dance around, like a boxer, opening and raising its claws, moving backward, forward, and side to side, mirroring its opponent, waving its opened claws back and forth. At the same time, it employs special jets under its eyes to direct streams of liquid at its opponent. The liquid spray contains a mix of chemicals that tell the other lobster about its size, sex, health, and mood.

Sometimes one lobster can tell immediately from the display of claw size that it is much smaller than its opponent, and will back down



without a fight. The chemical information exchanged in the spray can have the same effect, convincing a less healthy or less aggressive lobster to retreat. That's dispute resolution Level 1.<sup>7</sup> If the two lobsters are very close in size and apparent ability, however, or if the exchange of liquid has been insufficiently informative, they will proceed to dispute resolution Level 2. With antennae whipping madly and claws folded downward, one will advance, and the other retreat. Then the defender will advance, and the aggressor retreat. After a couple of rounds of this behaviour, the more nervous of the lobsters may feel that continuing is not in his best interest. He will flick his tail reflexively, dart backwards, and vanish, to try his luck elsewhere. If neither blinks, however, the lobsters move to Level 3, which involves genuine combat.

This time, the now enraged lobsters come at each other viciously, with their claws extended, to grapple. Each tries to flip the other on its back. A successfully flipped lobster will conclude that its opponent is capable of inflicting serious damage. It generally gives up and leaves (although it harbours intense resentment and gossips endlessly about the victor behind its back). If neither can overturn the other—or if one will not quit despite being flipped—the lobsters move to Level 4. Doing so involves extreme risk, and is not something to be engaged in without forethought: one or both lobsters will emerge damaged from the ensuing fray, perhaps fatally.

The animals advance on each other, with increasing speed. Their claws are open, so they can grab a leg, or antenna, or an eye-stalk, or anything else exposed and vulnerable. Once a body part has been successfully grabbed, the grabber will tail-flick backwards, sharply, with claw clamped firmly shut, and try to tear it off. Disputes that have escalated to this point typically create a clear winner and loser. The loser is unlikely to survive, particularly if he or she remains in the territory occupied by the winner, now a mortal enemy.

In the aftermath of a losing battle, regardless of how aggressively a lobster has behaved, it becomes unwilling to fight further, even against another, previously defeated opponent. A vanquished competitor loses confidence, sometimes for days. Sometimes the defeat can have even more severe consequences. If a dominant lobster is badly



defeated, its brain basically dissolves. Then it grows a new, subordinate's brain—one more appropriate to its new, lowly position.<sup>8</sup> Its original brain just isn't sophisticated to manage the transformation from king to bottom dog without virtually complete dissolution and regrowth. Anyone who has experienced a painful transformation after a serious defeat in romance or career may feel some sense of kinship with the once successful crustacean.

### **The Neurochemistry of Defeat and Victory**

A lobster loser's brain chemistry differs importantly from that of a lobster winner. This is reflected in their relative postures. Whether a lobster is confident or cringing depends on the ratio of two chemicals that modulate communication between lobster neurons: serotonin and octopamine. Winning increases the ratio of the former to the latter.

A lobster with high levels of serotonin and low levels of octopamine is a cocky, strutting sort of shellfish, much less likely to back down when challenged. This is because serotonin helps regulate postural flexion. A flexed lobster extends its appendages so that it can look tall and dangerous, like Clint Eastwood in a spaghetti Western. When a lobster that has just lost a battle is exposed to serotonin, it will stretch itself out, advance even on former victors, and fight longer and harder.<sup>9</sup> The drugs prescribed to depressed human beings, which are selective serotonin reuptake inhibitors, have much the same chemical and behavioural effect. In one of the more staggering demonstrations of the evolutionary continuity of life on Earth, Prozac even cheers up lobsters.<sup>10</sup>

High serotonin/low octopamine characterizes the victor. The opposite neurochemical configuration, a high ratio of octopamine to serotonin, produces a defeated-looking, scrunched-up, inhibited, drooping, skulking sort of lobster, very likely to hang around street corners, and to vanish at the first hint of trouble. Serotonin and octopamine also regulate the tail-flick reflex, which serves to propel a lobster rapidly backwards when it needs to escape. Less provocation is necessary to trigger that reflex in a defeated lobster. You can see an

echo of that in the heightened startle reflex characteristic of the soldier or battered child with post-traumatic stress disorder.

### **The Principle of Unequal Distribution**

When a defeated lobster regains its courage and dares to fight again it is more likely to lose again than you would predict, statistically, from a tally of its previous fights. Its victorious opponent, on the other hand, is more likely to win. It's winner-take-all in the lobster world, just as it is in human societies, where the top 1 percent have as much loot as the bottom 50 percent<sup>11</sup>—and where the richest eighty-five people have as much money as the bottom three and a half billion.

That same brutal principle of unequal distribution applies outside the financial domain—indeed, anywhere that creative production is required. The majority of scientific papers are published by a very small group of scientists. A tiny proportion of musicians produces almost all the recorded commercial music. Just a handful of authors sell all the books. A million and a half separately titled books (!) sell each year in the US. However, only five hundred of these sell more than a hundred thousand copies.<sup>12</sup> Similarly, just four classical composers (Bach, Beethoven, Mozart, and Tchaikovsky) wrote almost all the music played by modern orchestras. Bach, for his part, composed so prolifically that it would take decades of work merely to hand-copy his scores, yet only a small fraction of this prodigious output is commonly performed. The same thing applies to the output of the other three members of this group of hyper-dominant composers: only a small fraction of their work is still widely played. Thus, a small fraction of the music composed by a small fraction of all the classical composers who have ever composed makes up almost all the classical music that the world knows and loves.

This principle is sometimes known as Price's law, after Derek J. de Solla Price,<sup>13</sup> the researcher who discovered its application in science in 1963. It can be modelled using an approximately L-shaped graph, with number of people on the vertical axis, and productivity or resources on the horizontal. The basic principle had been discovered



much earlier. Vilfredo Pareto (1848–1923), an Italian polymath, noticed its applicability to wealth distribution in the early twentieth century, and it appears true for every society ever studied, regardless of governmental form. It also applies to the population of cities (a very small number have almost all the people), the mass of heavenly bodies (a very small number hoard all the matter), and the frequency of words in a language (90 percent of communication occurs using just 500 words), among many other things. Sometimes it is known as the Matthew Principle (Matthew 25:29), derived from what might be the harshest statement ever attributed to Christ: “to those who have everything, more will be given; from those who have nothing, everything will be taken.”

You truly know you are the Son of God when your dicta apply even to crustaceans.

Back to the fractious shellfish: it doesn't take that long before lobsters, testing each other out, learn who can be messed with and who should be given a wide berth—and once they have learned, the resultant hierarchy is exceedingly stable. All a victor needs to do, once he has won, is to wiggle his antennae in a threatening manner, and a previous opponent will vanish in a puff of sand before him. A weaker lobster will quit trying, accept his lowly status, and keep his legs attached to his body. The top lobster, by contrast—occupying the best shelter, getting some good rest, finishing a good meal—parades his dominance around his territory, rousting subordinate lobsters from their shelters at night, just to remind them who's their daddy.

### **All the Girls**

The female lobsters (who also fight hard for territory during the explicitly maternal stages of their existence<sup>14</sup>) identify the top guy quickly, and become irresistibly attracted to him. This is brilliant strategy, in my estimation. It's also one used by females of many different species, including humans. Instead of undertaking the computationally difficult task of identifying the best man, the females outsource the problem to the machine-like calculations of the dominance hierarchy.





They let the males fight it out and peel their paramours from the top. This is very much what happens with stock-market pricing, where the value of any particular enterprise is determined through the competition of all.

When the females are ready to shed their shells and soften up a bit, they become interested in mating. They start hanging around the dominant lobster's pad, spraying attractive scents and aphrodisiacs towards him, trying to seduce him. His aggression has made him successful, so he's likely to react in a dominant, irritable manner. Furthermore, he's large, healthy and powerful. It's no easy task to switch his attention from fighting to mating. (If properly charmed, however, he will change his behaviour towards the female. This is the lobster equivalent of *Fifty Shades of Grey*, the fastest-selling paperback of all time, and the eternal Beauty-and-the-Beast plot of the archetypal romance. This is the pattern of behaviour continually represented in the sexually explicit literary fantasies that are as popular among women as provocative images of naked women are among men.)

It should be pointed out, however, that sheer physical power is an unstable basis on which to found lasting dominance, as the Dutch primatologist Frans de Waal<sup>15</sup> has taken pains to demonstrate. Among the chimp troupes he studied, males who were successful in the longer term had to buttress their physical prowess with more sophisticated attributes. Even the most brutal chimp despot can be taken down, after all, by two opponents, each three-quarters as mean. In consequence, males who stay on top longer are those who form reciprocal coalitions with their lower-status compatriots, and who pay careful attention to the troupe's females and their infants. The political ploy of baby-kissing is literally millions of years old. But lobsters are still comparatively primitive, so the bare plot elements of *Beast and Beauty* suffice for them.

Once the *Beast* has been successfully charmed, the successful female (lobster) will disrobe, shedding her shell, making herself dangerously soft, vulnerable, and ready to mate. At the right moment, the male, now converted into a careful lover, deposits a packet of sperm into the appropriate receptacle. Afterward, the female hangs around,



and hardens up for a couple of weeks (another phenomenon not entirely unknown among human beings). At her leisure, she returns to her own domicile, laden with fertilized eggs. At this point another female will attempt the same thing—and so on. The dominant male, with his upright and confident posture, not only gets the prime real estate and easiest access to the best hunting grounds. He also gets all the girls. It is exponentially more worthwhile to be successful, if you are a lobster, and male.

Why is all this relevant? For an amazing number of reasons, apart from those that are comically obvious. First, we know that lobsters have been around, in one form or another, for more than 350 million years.<sup>16</sup> This is a very long time. Sixty-five million years ago, there were still dinosaurs. That is the unimaginably distant past to us. To the lobsters, however, dinosaurs were the *nouveau riche*, who appeared and disappeared in the flow of near-eternal time. This means that dominance hierarchies have been an essentially permanent feature of the environment to which all complex life has adapted. A third of a billion years ago, brains and nervous systems were comparatively simple. Nonetheless, they already had the structure and neurochemistry necessary to process information about status and society. The importance of this fact can hardly be overstated.

### **The Nature of Nature**

It is a truism of biology that evolution is conservative. When something evolves, it must build upon what nature has already produced. New features may be added, and old features may undergo some alteration, but most things remain the same. It is for this reason that the wings of bats, the hands of human beings, and the fins of whales look astonishingly alike in their skeletal form. They even have the same number of bones. Evolution laid down the cornerstones for basic physiology long ago.

Now evolution works, in large part, through variation and natural selection. Variation exists for many reasons, including gene-shuffling (to put it simply) and random mutation. Individuals vary within a



species for such reasons. Nature chooses from among them, across time. That theory, as stated, appears to account for the continual alteration of life-forms over the eons. But there's an additional question lurking under the surface: what exactly is the "nature" in "natural selection"? What exactly is "the environment" to which animals adapt? We make many assumptions about nature—about the environment—and these have consequences. Mark Twain once said, "It's not what we don't know that gets us in trouble. It's what we know for sure that just ain't so."

First, it is easy to assume that "nature" is something with a nature—something static. But it's not: at least not in any simple sense. It's static and dynamic, at the same time. The environment—the nature that selects—itself transforms. The famous yin and yang symbols of the Taoists capture this beautifully. Being, for the Taoists—reality itself—is composed of two opposing principles, often translated as feminine and masculine, or even more narrowly as female and male. However, yin and yang are more accurately understood as chaos and order. The Taoist symbol is a circle enclosing twin serpents, head to tail. The black serpent, chaos, has a white dot in its head. The white serpent, order, has a black dot in its head. This is because chaos and order are interchangeable, as well as eternally juxtaposed. There is nothing so certain that it cannot vary. Even the sun itself has its cycles of instability. Likewise, there is nothing so mutable that it cannot be fixed. Every revolution produces a new order. Every death is, simultaneously, a metamorphosis.

Considering nature as purely static produces serious errors of apprehension. Nature "selects." The idea of *selects* contains implicitly nested within it the idea of *fitness*. It is "fitness" that is "selected." Fitness, roughly speaking, is the probability that a given organism will leave offspring (will propagate its genes through time). The "fit" in "fitness" is therefore the matching of organismal attribute to environmental demand. If that demand is conceptualized as static—if nature is conceptualized as eternal and unchanging—then evolution is a never-ending series of linear improvements, and fitness is something that can be ever more closely approximated across time. The





still-powerful Victorian idea of evolutionary progress, with man at the pinnacle, is a partial consequence of this model of nature. It produces the erroneous notion that there is a destination of natural selection (increasing fitness to the environment), and that it can be conceptualized as a fixed point.

But nature, the selecting agent, is not a static selector—not in any simple sense. Nature dresses differently for each occasion. Nature varies like a musical score—and that, in part, explains why music produces its deep intimations of meaning. As the environment supporting a species transforms and changes, the features that make a given individual successful in surviving and reproducing also transform and change. Thus, the theory of natural selection does not posit creatures matching themselves ever more precisely to a template specified by the world. It is more that creatures are in a dance with nature, albeit one that is deadly. “In my kingdom,” as the Red Queen tells Alice in Wonderland, “you have to run as fast as you can just to stay in the same place.” No one standing still can triumph, no matter how well constituted.

Nature is not simply dynamic, either. Some things change quickly, but they are nested within other things that change less quickly (music frequently models this, too). Leaves change more quickly than trees, and trees more quickly than forests. Weather changes faster than climate. If it wasn’t this way, then the conservatism of evolution would not work, as the basic morphology of arms and hands would have to change as fast as the length of arm bones and the function of fingers. It’s chaos, within order, within chaos, within higher order. The order that is most real is the order that is most unchanging—and that is not necessarily the order that is most easily seen. The leaf, when perceived, might blind the observer to the tree. The tree can blind him to the forest. And some things that are most real (such as the ever-present dominance hierarchy) cannot be “seen” at all.

It is also a mistake to conceptualize nature romantically. Rich, modern city-dwellers, surrounded by hot, baking concrete, imagine the environment as something pristine and paradisaical, like a French impressionist landscape. Eco-activists, even more idealistic in their





viewpoint, envision nature as harmoniously balanced and perfect, absent the disruptions and depredations of mankind. Unfortunately, “the environment” is also elephantiasis and guinea worms (don’t ask), anopheles mosquitoes and malaria, starvation-level droughts, AIDS and the Black Plague. We don’t fantasize about the beauty of these aspects of nature, although they are just as real as their Edenic counterparts. It is because of the existence of such things, of course, that we attempt to modify our surroundings, protecting our children, building cities and transportation systems and growing food and generating power. If Mother Nature wasn’t so hell-bent on our destruction, it would be easier for us to exist in simple harmony with her dictates.

And this brings us to a third erroneous concept: that nature is something strictly segregated from the cultural constructs that have emerged within it. The order within the chaos and order of Being is all the more “natural” the longer it has lasted. This is because “nature” is “what selects,” and the longer a feature has existed the more time it has had to be selected—and to shape life. It does not matter whether that feature is physical and biological, or social and cultural. All that matters, from a Darwinian perspective, is permanence—and the dominance hierarchy, however social or cultural it might appear, has been around for some half a billion years. It’s permanent. It’s real. The dominance hierarchy is not capitalism. It’s not communism, either, for that matter. It’s not the military-industrial complex. It’s not the patriarchy—that disposable, malleable, arbitrary cultural artefact. It’s not even a human creation; not in the most profound sense. It is instead a near-eternal aspect of the environment, and much of what is blamed on these more ephemeral manifestations is a consequence of its unchanging existence. We (the sovereign *we*, the *we* that has been around since the beginning of life) have lived in a dominance hierarchy for a long, long time. We were struggling for position before we had skin, or hands, or lungs, or bones. There is little more natural than culture. Dominance hierarchies are older than trees.

The part of our brain that keeps track of our position in the dominance hierarchy is therefore exceptionally ancient and fundamental.<sup>17</sup> It is a master control system, modulating our perceptions, values,



emotions, thoughts and actions. It powerfully affects every aspect of our Being, conscious and unconscious alike. This is why, when we are defeated, we act very much like lobsters who have lost a fight. Our posture droops. We face the ground. We feel threatened, hurt, anxious and weak. If things do not improve, we become chronically depressed. Under such conditions, we can't easily put up the kind of fight that life demands, and we become easy targets for harder-shelled bullies. And it is not only the behavioural and experiential similarities that are striking. Much of the basic neurochemistry is the same.

Consider serotonin, the chemical that governs posture and escape in the lobster. Low-ranking lobsters produce comparatively low levels of serotonin. This is also true of low-ranking human beings (and those low levels decrease more with each defeat). Low serotonin means decreased confidence. Low serotonin means more response to stress and costlier physical preparedness for emergency—as anything whatsoever may happen, at any time, at the bottom of the dominance hierarchy (and rarely something good). Low serotonin means less happiness, more pain and anxiety, more illness, and a shorter lifespan—among humans, just as among crustaceans. Higher spots in the dominance hierarchy, and the higher serotonin levels typical of those who inhabit them, are characterized by less illness, misery and death, even when factors such as absolute income—or number of decaying food scraps—are held constant. The importance of this can hardly be overstated.

### **Top and Bottom**

There is an unspeakably primordial calculator, deep within you, at the very foundation of your brain, far below your thoughts and feelings. It monitors exactly where you are positioned in society—on a scale of one to ten, for the sake of argument. If you're a number one, the highest level of status, you're an overwhelming success. If you're male, you have preferential access to the best places to live and the highest-quality food. People compete to do you favours. You have limitless opportunity for romantic and sexual contact. You are a successful lobster, and the most desirable females line up and vie for your attention.<sup>18</sup>



If you're female, you have access to many high-quality suitors: tall, strong and symmetrical; creative, reliable, honest and generous. And, like your dominant male counterpart, you will compete ferociously, even pitilessly, to maintain or improve your position in the equally competitive female mating hierarchy. Although you are less likely to use physical aggression to do so, there are many effective verbal tricks and strategies at your disposal, including the disparaging of opponents, and you may well be expert at their use.

If you are a low-status ten, by contrast, male or female, you have nowhere to live (or nowhere good). Your food is terrible, when you're not going hungry. You're in poor physical and mental condition. You're of minimal romantic interest to anyone, unless they are as desperate as you. You are more likely to fall ill, age rapidly, and die young, with few, if any, to mourn you.<sup>19</sup> Even money itself may prove of little use. You won't know how to use it, because it is difficult to use money properly, particularly if you are unfamiliar with it. Money will make you liable to the dangerous temptations of drugs and alcohol, which are much more rewarding if you have been deprived of pleasure for a long period. Money will also make you a target for predators and psychopaths, who thrive on exploiting those who exist on the lower rungs of society. The bottom of the dominance hierarchy is a terrible, dangerous place to be.

The ancient part of your brain specialized for assessing dominance watches how you are treated by other people. On that evidence, it renders a determination of your value and assigns you a status. If you are judged by your peers as of little worth, the counter restricts serotonin availability. That makes you much more physically and psychologically reactive to any circumstance or event that might produce emotion, particularly if it is negative. You need that reactivity. Emergencies are common at the bottom, and you must be ready to survive.

Unfortunately, that physical hyper-response, that constant alertness, burns up a lot of precious energy and physical resources. This response is really what everyone calls stress, and it is by no means only or even primarily psychological. It's a reflection of the genuine constraints of unfortunate circumstances. When operating at the bottom, the ancient brain counter assumes that even the smallest unexpected



impediment might produce an uncontrollable chain of negative events, which will have to be handled alone, as useful friends are rare indeed, on society's fringes. You will therefore continually sacrifice what you could otherwise physically store for the future, using it up on heightened readiness and the possibility of immediate panicked action in the present. When you don't know what to do, you must be prepared to do anything and everything, in case it becomes necessary. You're sitting in your car with the gas and brake pedals both punched to the mat. Too much of that and everything falls apart. The ancient counter will even shut down your immune system, expending the energy and resources required for future health now, during the crises of the present. It will render you impulsive,<sup>20</sup> so that you will jump, for example, at any short-term mating opportunities, or any possibilities of pleasure, no matter how sub-par, disgraceful or illegal. It will leave you far more likely to live, or die, carelessly, for a rare opportunity at pleasure, when it manifests itself. The physical demands of emergency preparedness will wear you down in every way.<sup>21</sup>

If you have a high status, on the other hand, the counter's cold, pre-reptilian mechanics assume that your niche is secure, productive and safe, and that you are well buttressed with social support. It thinks the chance that something will damage you is low and can be safely discounted. Change might be opportunity, instead of disaster. The serotonin flows plentifully. This renders you confident and calm, standing tall and straight, and much less on constant alert. Because your position is secure, the future is likely to be good for you. It's worthwhile to think in the long term and plan for a better tomorrow. You don't need to grasp impulsively at whatever crumbs come your way, because you can realistically expect good things to remain available. You can delay gratification, without forgoing it forever. You can afford to be a reliable and thoughtful citizen.

## Malfunction

Sometimes, however, the counter mechanism can go wrong. Erratic habits of sleeping and eating can interfere with its function. Uncertainty



can throw it for a loop. The body, with its various parts, needs to function like a well-rehearsed orchestra. Every system must play its role properly, and at exactly the right time, or noise and chaos ensue. It is for this reason that routine is so necessary. The acts of life we repeat every day need to be automatized. They must be turned into stable and reliable habits, so they lose their complexity and gain predictability and simplicity. This can be perceived most clearly in the case of small children, who are delightful and comical and playful when their sleeping and eating schedules are stable, and horrible and whiny and nasty when they are not.

It is for such reasons that I always ask my clinical clients first about sleep. Do they wake up in the morning at approximately the time the typical person wakes up, and at the same time every day? If the answer is no, fixing that is the first thing I recommend. It doesn't matter so much if they go to bed at the same time each evening, but waking up at a consistent hour is a necessity. Anxiety and depression cannot be easily treated if the sufferer has unpredictable daily routines. The systems that mediate negative emotion are tightly tied to the properly cyclical circadian rhythms.

The next thing I ask about is breakfast. I counsel my clients to eat a fat and protein-heavy breakfast as soon as possible after they awaken (no simple carbohydrates, no sugars, as they are digested too rapidly, and produce a blood-sugar spike and rapid dip). This is because anxious and depressed people are already stressed, particularly if their lives have not been under control for a good while. Their bodies are therefore primed to hypersecrete insulin, if they engage in any complex or demanding activity. If they do so after fasting all night and before eating, the excess insulin in their bloodstream will mop up all their blood sugar. Then they become hypoglycemic and psychophysiologicaly unstable.<sup>22</sup> All day. Their systems cannot be reset until after more sleep. I have had many clients whose anxiety was reduced to subclinical levels merely because they started to sleep on a predictable schedule and eat breakfast.

Other bad habits can also interfere with the counter's accuracy. Sometimes this happens directly, for poorly understood biological



reasons, and sometimes it happens because those habits initiate a complex positive feedback loop. A positive feedback loop requires an input detector, an amplifier, and some form of output. Imagine a signal picked up by the input detector, amplified, and then emitted, in amplified form. So far, so good. The trouble starts when the input detector detects that output, and runs it through the system again, amplifying and emitting it again. A few rounds of intensification and things get dangerously out of control.

Most people have been subject to the deafening howling of feedback at a concert, when the sound system squeals painfully. The microphone sends a signal to the speakers. The speakers emit the signal. The signal can be picked up by the microphone and sent through the system again, if it's too loud or too close to the speakers. The sound rapidly amplifies to unbearable levels, sufficient to destroy the speakers, if it continues.

The same destructive loop happens within people's lives. Much of the time, when it happens, we label it mental illness, even though it's not only or even at all occurring inside people's psyches. Addiction to alcohol or another mood-altering drug is a common positive-feedback process. Imagine a person who enjoys alcohol, perhaps a bit too much. He has a quick three or four drinks. His blood alcohol level spikes sharply. This can be extremely exhilarating, particularly for someone who has a genetic predisposition to alcoholism.<sup>23</sup> But it only occurs while blood alcohol levels are actively rising, and that only continues if the drinker keeps drinking. When he stops, not only does his blood alcohol level plateau and then start to sink, but his body begins to produce a variety of toxins, as it metabolizes the ethanol already consumed. He also starts to experience alcohol withdrawal, as the anxiety systems that were suppressed during intoxication start to hyper-respond. A hangover is alcohol withdrawal (which quite frequently kills withdrawing alcoholics), and it starts all too soon after drinking ceases. To continue the warm glow, and stave off the unpleasant aftermath, the drinker may just continue to drink, until all the liquor in his house is consumed, the bars are closed and his money is spent.



The next day, the drinker wakes up, badly hungover. So far, this is just unfortunate. The real trouble starts when he discovers that his hangover can be “cured” with a few more drinks the morning after. Such a cure is, of course, temporary. It merely pushes the withdrawal symptoms a bit further into the future. But that might be what is required, in the short term, if the misery is sufficiently acute. So now he has learned to drink to cure his hangover. When the medication causes the disease, a positive feedback loop has been established. Alcoholism can quickly emerge under such conditions.

Something similar often happens to people who develop an anxiety disorder, such as agoraphobia. People with agoraphobia can become so overwhelmed with fear that they will no longer leave their homes. Agoraphobia is the consequence of a positive feedback loop. The first event that precipitates the disorder is often a panic attack. The sufferer is typically a middle-aged woman who has been too dependent on other people. Perhaps she went immediately from over-reliance on her father to a relationship with an older and comparatively dominant boyfriend or husband, with little or no break for independent existence.

In the weeks leading up to the emergence of her agoraphobia, such a woman typically experiences something unexpected and anomalous. It might be something physiological, such as heart palpitations, which are common in any case, and whose likelihood is increased during menopause, when the hormonal processes regulating a woman’s psychological experience fluctuate unpredictably. Any perceptible alteration in heart-rate can trigger thoughts both of heart attack and an all-too-public and embarrassing display of post-heart attack distress and suffering (death and social humiliation constituting the two most basic fears). The unexpected occurrence might instead be conflict in the sufferer’s marriage, or the illness or death of a spouse. It might be a close friend’s divorce or hospitalization. Some real event typically precipitates the initial increase in fear of mortality and social judgment.<sup>24</sup>

After the shock, perhaps, the pre-agoraphobic woman leaves her house, and makes her way to the shopping mall. It’s busy and difficult





to park. This makes her even more stressed. The thoughts of vulnerability occupying her mind since her recent unpleasant experience rise close to the surface. They trigger anxiety. Her heart rate rises. She begins to breathe shallowly and quickly. She feels her heart racing and begins to wonder if she is suffering a heart attack. This thought triggers more anxiety. She breathes even more shallowly, increasing the levels of carbon dioxide in her blood. Her heart rate increases again, because of her additional fear. She detects that, and her heart rate rises again.

Poof! Positive feedback loop. Soon the anxiety transforms into panic, regulated by a different brain system, designed for the severest of threats, which can be triggered by too much fear. She is overwhelmed by her symptoms, and heads for the emergency room, where after an anxious wait her heart function is checked. There is nothing wrong. But she is not reassured.

It takes an additional feedback loop to transform even that unpleasant experience into full-blown agoraphobia. The next time she needs to go to the mall, the pre-agoraphobic becomes anxious, remembering what happened last time. But she goes, anyway. On the way, she can feel her heart pounding. That triggers another cycle of anxiety and concern. To forestall panic, she avoids the stress of the mall and returns home. But now the anxiety systems in her brain note that she ran away from the mall, and conclude that the journey there was truly dangerous. Our anxiety systems are very practical. They assume that anything you run away from is dangerous. The proof of that is, of course, the fact you ran away.

So now the mall is tagged “too dangerous to approach” (or the budding agoraphobic has labelled herself, “too fragile to approach the mall”). Perhaps that is not yet taking things far enough to cause her real trouble. There are other places to shop. But maybe the nearby supermarket is mall-like enough to trigger a similar response, when she visits it instead, and then retreats. Now the supermarket occupies the same category. Then it’s the corner store. Then it’s buses and taxis and subways. Soon it’s everywhere. The agoraphobic will even eventually become afraid of her house, and would run away from that if she could. But she can’t. Soon she’s stuck in her home. Anxiety-induced



retreat makes everything retreated from more anxiety-inducing. Anxiety-induced retreat makes the self smaller and the ever-more-dangerous world larger.

There are many systems of interaction between brain, body and social world that can get caught in positive feedback loops. Depressed people, for example, can start feeling useless and burdensome, as well as grief-stricken and pained. This makes them withdraw from contact with friends and family. Then the withdrawal makes them more lonesome and isolated, and more likely to feel useless and burdensome. Then they withdraw more. In this manner, depression spirals and amplifies.

If someone is badly hurt at some point in life—traumatized—the dominance counter can transform in a manner that makes additional hurt more rather than less likely. This often happens in the case of people, now adults, who were viciously bullied during childhood or adolescence. They become anxious and easily upset. They shield themselves with a defensive crouch, and avoid the direct eye contact interpretable as a dominance challenge.

This means that the damage caused by the bullying (the lowering of status and confidence) can continue, even after the bullying has ended.<sup>25</sup> In the simplest of cases, the formerly lowly persons have matured and moved to new and more successful places in their lives. But they don't fully notice. Their now-counterproductive physiological adaptations to earlier reality remain, and they are more stressed and uncertain than is necessary. In more complex cases, a habitual assumption of subordination renders the person more stressed and uncertain than necessary, *and* their habitually submissive posturing continues to attract genuine negative attention from one or more of the fewer and generally less successful bullies still extant in the adult world. In such situations, the psychological consequence of the previous bullying increases the likelihood of continued bullying in the present (even though, strictly speaking, it wouldn't have to, because of maturation, or geographical relocation, or continued education, or improvement in objective status).