

THE EMERGING SCIENCE OF
INTERPERSONAL SYNCHRONY

WHY



CLICK

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Excerpt: *You're Not Listening*.

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For those who take others to heart

Introduction

Have you ever met someone with whom you felt an instant connection or who, conversely, immediately gave you the creeps? Are there people in your life who always seem to lift your spirits, while others just as reliably drag you down? Do you ever cringe at another person's humiliation or swell with pride at someone else's success? While singing at church, chanting at a rally, cheering at a ball game, or dancing at a club, have you ever felt a kind of joyful transcendence or oneness with those around you?

If you answered yes to any of these questions, you have experienced interpersonal synchrony, perhaps the most consequential social dynamic most people have never heard of. Interpersonal synchrony is the seemingly magical, yet scientifically documented, tendency of human beings to fall into rhythm with one another. Not only do we subconsciously match one another's movements, postures, facial expressions, and gestures, recent breakthroughs in technology have revealed we also sync up our heart rates, blood pressure, brain waves, pupil dilation, and hormonal activity. The result is that emotions, moods, attitudes, and subsequent behaviors can be as infectious as any disease and can have just as profound an influence on our health and well-being.

As exquisitely social creatures, humans have evolved to synchronize with, or *embody*, one another because embodiment leads to understanding and empathy, which is the ultimate survival skill. We are wired to perform a kind of deep-seated method acting in social situations. By subconsciously mimicking even the subtlest twitches of expression and biological rhythms of other people, we can channel their thoughts and feelings. When we reflexively smile upon observing someone else's joy, we feel their happiness. Syncing with their racing heart makes us feel their anxiety. Moreover, the synchronization of brain waves during conversations or during shared experiences and activities aligns beliefs and attitudes. You and the other person are, at that moment, of like minds.

Synchronized phenomena occur throughout the natural and life sciences, but research has only recently revealed the extent to which human beings synchronize and its significance. Synchrony between humans is nothing short of a superpower. Compared to other species, we are not imposing in size or strength. We are not terribly fast or nimble. Our senses are pretty feeble, and our brains, while capable of astounding feats of cognition and imagination, are nevertheless limited and subject to all kinds of processing errors. But thanks to interpersonal synchrony, we can marshal and coordinate our bodies and brains to communicate, innovate, create, build, sustain, and succeed in ways far exceeding what we could accomplish alone.

We are all tuning forks roaming the planet, picking up vibes and finding resonance with those we encounter. It's a truth known on some level since antiquity. Plato wrote that we are all born seeking to reunite with our missing other half, but what we are really seeking are those whose internal rhythms harmonize with our own—the people with whom we effortlessly click. And certainly, turns of phrase like being *in sync*, *in tune*, *in step*, and *on the same wavelength* have been part of our vernacular well before recent advances in technology revealed it was actually true.

Our bodies and brains are intricate assemblies of oscillating cells, so it shouldn't be surprising that when two or more humans gather, like pendulum clocks in close proximity, they will begin to swing in unison, ticking and tocking together. It's a natural wonder that is far from fully understood. Some researchers suspect it may be an amplification or elaboration of so-called quantum entanglement—a phenomenon Albert Einstein famously called “spooky action at a distance”—where interacting subatomic particles begin to behave as one, even when separated in time and space.

While we like to think we are not unduly influenced by others, the fact is that interpersonal synchrony shapes what we do, how we feel, who we love, and, indeed, who we are. It determines the duration and quality of human relationships and, at scale, drives things like political ideology, morality, patriotism, business culture, and market sentiment. It is responsible for the best and worst aspects of humanity—from functioning governments, coordinated market economies, cohesive cultures, and scientific advancement to wars, riots, persecutions, and mass hysteria.

Throughout history, and also likely within your own social network, some people are more likely to set the tone or tempo, while others are more likely to tune in and keep time. Or, using the contagion metaphor, some people are more infectious, while others are more vulnerable to infection. But we are all susceptible. In fact, artificial intelligence and social media companies are currently hiring neuroscientists away from academia at a blistering rate, hoping to find ways to get us to synchronize with bots and apps and thereby influence our feelings and behaviors.

It can be difficult to accept that our emotions and actions may not be entirely our own, much less swayed by unseen energy transmitted by others, even total strangers. Early researchers investigating interpersonal synchrony—before it could be objectively measured—were scoffed at and sidelined by the scientific community because it smacked of the occult. Their work suggested a kind of telepathy and lent credence to Carl Jung’s notion of synchronicity, or meaningful coincidences.

The problem we face, as individuals and as a society, is not that we are subject to interpersonal synchrony but that we underestimate the power it exerts on us. Most recognize that fashion may influence the clothes we wear, the slang we use, the cars we drive, and the technology we adopt. But we are less willing to believe that things thought to be more consequential, personal, or uniquely determined—such as academic achievement, loneliness, depression, alcoholism, divorce, violent crime, altruism, body size, voting behavior, and sexual activity—could similarly go viral.

This is not to say humans are indistinct from schools of fish or murmurations of starlings. To the contrary, individuals potentially have as much power to influence as be influenced. So while this book is an exploration of the evolutionary origin, neurobiology, and outsize impact of interpersonal synchrony, it is also a practical guide to the kinds of personalities and contexts that make it more likely to occur. While interpersonal synchrony is largely a subconscious process, you can get better at detecting and encouraging it when it’s beneficial and desynchronizing, or breaking the beat when it is not.

Our interactions with people are what make us most happy and most miserable in life, which is why understanding interpersonal synchrony is so important. It is the neurobiological mechanism by which we form impressions and feelings for one another, which in turn shapes the impressions and feelings we have about ourselves. Again, interpersonal

synchrony is our superpower. But it can also be our kryptonite, especially when it causes us to lose sight of where we stop and others begin. Who hasn't asked themselves, "Why did I do that?" or "What was I thinking?" You were likely syncing at that moment with someone else.

Interpersonal synchrony, above all, reminds us that we are not unto ourselves in this world. We internalize one another, even those we may not know well or at all. We can literally warm people's hearts and get on their nerves. And we carry others' vibes and rhythms around with us like catchy tunes that, once heard, continue to play in our heads. The instinct to sync, then, confers a responsibility to try to be what you want replicated. Your thoughts, feelings, demeanor, and behavior do not begin, nor do they end, with you.

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That Syncing Feeling

A TALE OF TWO NEIGHBORS

Joan moved from Florida to my Houston neighborhood after her husband died a few years ago. Her son and daughter-in-law live a couple of blocks from me and had arranged for Joan to rent a house across the street from them, reasoning a newly widowed octogenarian should be closer to family. Having never lived alone in her life, Joan reluctantly agreed.

Something of a serial entrepreneur before relocating (she ran a children's day care and laundromat, among other things), Joan soon grew bored puttering around her little white cottage and tending her roses. So she signed up to be a crossing guard for a nearby elementary school. She wanted "a reason to be," she told me.

Now, every school day, rain or shine, silver pixie cut blowing in the wind, Joan energetically works her intersection. Back and forth in her reflective orange-and-yellow vest, Joan hoists her stop sign in one hand while using the other to wave or give a thumbs-up to anyone who makes eye contact. Sulky children beneath burdensome backpacks brighten when they see her. Dog walkers, who otherwise ignore the world in favor of their phones, stop and gaily chat with her. Random drivers of cars crawling through the school zone roll down their windows to hand her doughnuts, danishes, and the occasional kale-and-pineapple smoothie.

To say Joan is magnetic doesn't quite cover it. She attracts, but also visibly transforms, those who enter her orbit. Tired and stony faces become more alert and animated. Gaits that were heavy become lighter, even jaunty. In effect, people become iterations of sprightly, smiling Joan. Moreover, after leaving her intersection (we call it "Joan's Corner"), people tend to

smile and cheerfully greet the next person they meet as if infected with her bonhomie.

When Joan broke her wrist and didn't show up at her corner one morning, a pall fell over the neighborhood. Texts flew. "Where is Joan?" Her absence felt a bit like withdrawal—like how you'd feel if you walked into Starbucks and they'd run out of coffee. When Joan reappeared, directing traffic in a sling, there was a collective sigh of relief. One neighbor actually cried.

Now meet Jen, another neighbor and a tenured professor at a nearby university. On her daily walks to and from campus—her determined steps logged on her Fitbit—she probably encounters just as many people as Joan merrily working her intersection. But whereas people react to Joan as if warmed by an unexpected ray of sunshine, they leave interactions with Jen as if under a cloud.

It would be easy to say it's because Jen tends to dwell on what she considers outrages and indiscretions—both in the neighborhood and the wider world. But there is something about Jen's intensity and inflexibility, in posture and opinion, that makes people vaguely uncomfortable even when she's only talking about the weather. Neighbors assume a more closed, or stiff, stance around her, maybe crossing their arms or plunging their hands deep into their pockets. They knit their brows and shift their weight from one foot to the other. As attractive and accomplished as Jen is—and she is both of those things—she leaves people looking, and also feeling, a bit tense and sort of tired.

When Jen took a sabbatical in Italy for six months, Jen's next-door neighbor confided that she was enjoying the break. Behind her hand, she whispered that sometimes she hid in her house or ducked behind bushes to avoid running into Jen. Not that this neighbor could articulate exactly why she did that. Jen had never been insulting or overtly rude to her. All the neighbor could say was that interacting with Jen "felt like too much work."

Do you know a Joan or a Jen? Are you perhaps a Joan or a Jen? We all emit a kind of vibe linked to a combination of factors, including heart rate, respiration, blood flow, hormonal activity, muscle tension, and the neural firing patterns, or oscillations, that are our thoughts. While your vibe may have some overall consistency, just as Joan's tends to be upbeat and Jen's tends to be more downbeat, it varies according to your mood and health, time of day, and, significantly, those with whom you interact. The degree to

which your vibe synchronizes with someone else's can be striking or subtle, lasting or fleeting, but nevertheless, every social interaction provokes an alteration in the rhythm pulsing within each person involved.

Interpersonal synchrony is such an instinctive and dynamic process, few realize it's happening as it's happening. Typically, it isn't until later that we come up with reasons why we liked or didn't like someone, unaware that our assessments are based largely on synchronized neural and physiological activity (or lack thereof) produced during the encounter. Maya Angelou was right: "People will forget what you said, people will forget what you did, but people will never forget how you made them feel."

The instinct to sync makes sense if you think about how we came to be, synchronizing in utero with the physical and emotional rhythms of our mothers. Our inner metronomes, including our biological clocks and our hearts' natural pacemakers, consolidate during the third trimester and align with maternal patterns. Newborns continue to rely on their mothers', or primary caregivers', bodily rhythms to adjust to postnatal life. It's why skin-to-skin contact, or so-called kangaroo care, is recommended for both premature and full-term babies to help stabilize their heart and respiratory rates, improve oxygen saturation, regulate body temperature, boost immune function, and help them sleep.

There is a well-documented tendency of mothers, regardless of whether they are right- or left-handed, to cradle their infants in their left arms and against the left side of their bodies. The left side, of course, is where the heart is. Look at Madonna paintings and sculptures dating back several centuries and you'll notice Mary most often holds baby Jesus on the left side. Surveys of photographs posted online of moms holding their newborns show the same pose. Moreover, fathers and even people without children tend to hold babies on the left side.

In addition to cardiac pacing, the left-side cradling bias is also thought to promote brain-to-brain synchrony because what we see from the left of our visual field is transmitted to the right hemisphere of the brain, which is where emotional decoding takes place. Therefore, the caregiver's neural patterns might more quickly and easily sync with those of the infant and thus more effectively interpret the baby's wants and needs. Perhaps this is also why most people tend to tilt their heads to the right when kissing romantically, thereby putting their beloved on the left side.

Much of our social ability and acuity can be traced back to synchronization with a caregiver. Coordination of gaze, repetitive rhythmic movements such as rocking or bouncing, mimicking facial expressions, and imitating vocalizations provoke an associated coupling of heart rhythms, hormonal activity, and brain waves, or neural patterns, that train, or tune, babies to be socially adept. This may explain the near-universal inclination of people to exaggerate their gestures and facial expressions and use elongated, singsongy speech, known as “motherese,” when interacting with babies. It helps little ones catch on more easily and sync up. Romantic couples, too, have been known to engage in baby talk.

Interestingly, researchers have found that, cross-culturally, moms tend to put their babies into a more calming cadence while dads tend to amp up their kids with more jerky, highly aroused, syncopated rhythms. The happy combination is thought to help babies learn to sync at different tempos, adjusting their behavior and physiology to their interacting partner, which sets them up to navigate more complex multiperson exchanges later on.

Without this kind of consistent one-on-one engagement, infants are more likely to grow into children and later adults who have difficulty recognizing emotions in others and regulating their own emotions. They can struggle to sync up and find resonance or click with others. An early and heartbreaking indicator of the importance of social “tuning” during infancy was psychologist Harry Harlow’s classic behavioral science studies in the 1950s and 1960s, where newborn rhesus monkeys were taken from their mothers and raised in isolation.

The baby monkeys, while physically healthy, showed disturbed behavior—staring blankly, circling their cages, and engaging in self-mutilation. When given the opportunity, they clung to cloth-and-foam imitation mothers and put their little ears to the dummy mothers’ chests where their real mothers’ beating hearts would be.

Lacking the opportunity to synchronize with the physiological, behavioral, and emotional rhythms of their mothers—or any other living thing—the isolated monkeys didn’t know how to respond to overtures when later introduced to their peers. They were often terrified and liable to attack if approached. They crouched in corners, and some even died after refusing to eat.

Studies have shown that human infants who are neglected, or whose mothers are not fully engaged due to depression, extreme stress, or trauma,

likewise grow up struggling to develop and maintain relationships and have measurably lower activity in regions of the brain responsible for sociability and human attachment. Their physiology and neural activity does not easily sync up with others', nor dynamically shift in response to the changing vibes of others. It's as if they are playing off-key or off beat in an orchestra, if not sometimes playing an entirely different melody from everyone else.

"A child's social brain needs to be tuned properly and at the right time," Israeli psychologist and neuroscientist Ruth Feldman told me. "Our brains do not develop in isolation."

Feldman's laboratory at Reichman University in Herzliya, a coastal city outside Tel Aviv, has followed children from birth to young adulthood to assess how behavioral, emotional, and neurobiological synchronization between mothers and their babies impacts their later social development. What she and her team found was that the degree of mother-infant synchrony shaped later empathic and general social abilities when measured during preschool, adolescence, and early adulthood.

Moreover, Feldman and her colleagues identified subcortical regions of the brain that she calls "the human attachment network," which were less active in infants and children who lacked tight biological and behavioral synchrony with their mothers. Feldman told me that this network of brain regions must be activated for "cross-generational transmission of attachment ability" to occur. In other words, synchrony with a caregiver is like the key that opens the lock to our ability to connect and to love. Thus, parents themselves must have first had their own attachment networks unlocked in their early lives to be able to pass the ability on to their children.

This is not to say your attachment network cannot be activated and finely tuned later in life through interpersonal synchrony with mentors, peers, and romantic partners. It's just harder, kind of like it's harder to learn a language when you're older no matter how good the teacher. Our brains are more receptive, our neural patterns less rigid, when we are young.

"The same attachment network that we saw activated in mothers when they see their children was also activated in fathers and gay men raising infants without maternal involvement," Feldman said. "It's the same network that is activated when you see your best friend or lover, or have a reminder of them, like in a video or picture."

Of course, saying any particular area of the brain is responsible for anything is like singling out an individual soccer player as responsible for scoring all the goals. That player might end up scoring all the goals in a particular game, but not every game, and not without significant contributions from teammates. In the same way, the attachment network Feldman identified is likely an essential part of a larger, more complicated, and more widely distributed mechanism that is responsible for our ability to synchronize and bond with other people.

This mechanism, the mechanism of attraction and affiliation, has been of intense interest to writers, poets, and philosophers for centuries but has only recently drawn the attention of scientists, particularly those who study the circuitry of the brain and nervous system. “When I used to go to neuroscience conferences like fifteen years ago and say, ‘I study attachment, bonding, and love,’ they would say, ‘Are you crazy? You are not serious!’” Feldman said. Her colleagues told her she might as well study the brain basis of God and faith.

Social neuroscience has since emerged as a serious discipline, aided by the development of sophisticated technology that allows researchers like Feldman to measure and analyze synchrony in people’s facial expressions, brain impulses, heart rates, respiration, skin conductance, and hormonal levels. Moreover, researchers are increasingly able to make these measurements in more naturalistic social settings. Subjects can now wear strategically placed sensors that allow for more freedom of movement than, say, lying in clunky and cave-like fMRI machines, which were previously used to gauge degree and location of brain activity. You can’t exactly have subjects play with their children, go out on dates, or have arguments in an fMRI machine.

The granularity of the data now being generated is astounding, even a little overwhelming. The result is that neuroscientists and developmental psychologists are now teaming up with computer scientists, mathematicians, anthropologists, sociologists, behavioral economists, and physicists to make sense of it and try to form predictive models of social outcomes based on degree, type, and timing of synchronistic activity. The hope is to understand the Joan-Jen dichotomy—the hidden dynamics of human attraction and aversion. Why do we like who we like? Why are we drawn to some and unmoved, or turned off, by others?

What we know at this point is that synchrony underlies and determines our attachments to other people. It greases the wheels of social interaction and is a measurable indicator of affiliation and bonding. We are a species that has evolved to synchronize physiologically, emotionally, and behaviorally; and we find it immensely pleasurable when it occurs. We are born to sync. We yearn to sync. And we suffer when we do not.

Love at First Sync

THE HIDDEN DYNAMICS OF ATTRACTION

If there were a Hollywood Walk of Fame for matchmaking, Yaacov Deyo would certainly have a star. The Los Angeles rabbi is credited with inventing speed dating in the late 1990s to help Jewish singles more efficiently find marriage partners. He came up with the idea while brainstorming with a group of Jewish entertainment executives, one of whom produced game shows, which may partly explain why Rabbi Deyo reportedly twirled a gragger, the traditional Purim noisemaker, to signal when couples' ten minutes of schmoozing were up and it was time to switch partners. It was a zany table-hopping take on musical chairs, only without removing any chairs.

But speed dating actually began more than a hundred years before Rabbi Deyo's gamified version was embraced by Jews and gentiles alike. In nineteenth-century high society, a nationwide speed-dating event occurred every year on January 1 and involved throngs of eligible gentlemen making round-robin social calls at the homes of marriageable young ladies.

The protocol for what was then known as "New Year's Day Calling" was for well-bred bachelors to arrive between the hours of 10:00 a.m. and 10:00 p.m., place their calling cards (engraved, never printed) on a silver tray held waist-high by a butler, and enter the drawing room to pay their respects to the young lady or young ladies in residence.

The gentleman caller was not invited to take off his coat, because he was not to stay more than five minutes, according to etiquette. This gave him just enough time to make small talk—suitable topics included the weather and how ravishing the young ladies looked—sip some punch, and,

if he was quick about it, have a bite of cake or nibble an oyster before moving on to the next house.

“Called at 107 houses, leaving cards at 36 of them, and finding 71 at home. Started at Washington Square, thence to Bond St, up 2nd to 17th, to Union Square, down the east side to 10th St, up the West Side to 21st, then back and forth, east and west of Fifth Avenue until we reached 47th Street,” John Ward recorded in his diary in 1866.

Mr. Ward might have spent more of his allotted five minutes per visit sampling the refreshments had he known what various studies have since established: It takes less than thirty seconds for both men and women to decide whether they are interested in another person, romantically or otherwise. Indeed, we are often as accurate after so-called thin-slice exposures than when given more time to deliberate, particularly when it comes to detecting deception, making moral judgments, and discerning sexual orientation. So what happens during that brief interlude when people largely make up their minds whether they want to be your friend or your lover or maybe your mentor, client, employee, or boss?

Numerous speed-dating and speed-networking experiments (using the rabbinical rather than the Victorian model) have been conducted since the early 2000s attempting to answer that question. The early findings were confounding. For example, subjects often picked partners outside what they had previously said were their parameters, or redlines, such as “must observe the same faith” or “must be located within thirty miles of my home” or “must have a good income.”

How animated people were, how much they laughed, and what people said during the brief encounter were equally unreliable indicators—something painfully obvious to anyone who has been ghosted after a date or job interview that they thought had gone really well. And while physical attractiveness correlated with more initial interest, being hot didn’t guarantee ultimate success, nor that the attractive person’s interest in someone else would be reciprocated.

After almost twenty years of speed-dating studies conducted in laboratory settings as well as at music festivals, science fairs, bars, and coffee shops, researchers discovered something that was inconceivable when they began their investigations: The couples that hit it off were literally on the same wavelength. Their bodily movements and internal

rhythms were coordinated, and the wavelike neural firing patterns in their brains coupled, or coincided.

Of course, researchers as far back as the 1960s have noted people's tendency to mirror one another's behaviors, such as touching their hair, crossing their legs, or scratching their faces at the same time. But it was less of a scientific discovery than a curiosity, similar to what E. M. Forster wrote about in his 1908 novel *A Room with a View*: "She stopped and leant her elbows against the parapet of the embankment. He did likewise. There is at times a magic in identity of position; it is one of the things that have suggested to us eternal comradeship."

It wasn't until the dawn of the twenty-first century that the scientific community began to overcome its incredulity that people would, or even could, synchronize not only observable behaviors, like leaning against a parapet, but also their neural and autonomic activity, such as brain waves, respiration, and heart rate. Much less that such interpersonal synchrony might predict, and even be the basis of, mutual affection and attachment.

To be fair, there previously hadn't been ways to precisely measure the phenomenon. Hence, credit for ushering in this new age of social neuroscience is due, at least in part, to the invention of laser motion sensors, eye-tracking "smart" eyeglasses, and a neuroimaging technique called *hyperscanning*, which allows for the simultaneous recording of the brain activity of multiple subjects.

These monitoring devices, along with sophisticated analytics software that makes sense of all the biometric data they provide, have revealed some of what happens in our bodies and our brains when we click with another person. For instance, pairs of speed daters had a greater sense of connection and affiliation when they mirrored one another's involuntary facial expressions. They matched not only one another's visible smiles, frowns, raised eyebrows, and furrowed foreheads but also microexpressions that are too subtle to see, such as faint twitches around the eyes and mouth, of which people are totally unaware and cannot fake.*

Couples who wanted to see each other again also tended to match each other's speech patterns. Not just number of words spoken and word choice but also tonality, pitch, and something called *style matching*, which has to do with sentence structure. Specifically, people who liked each other strangely started to use function words like *a* and *the*, as well as pronouns, in much the same way. Because function words are typically short,

frequently used, and mean little outside the context of the sentence, linguists say they are generated and processed rapidly and largely subconsciously when people converse.

Another sign of attraction between speed daters was the matching of the depth and fixity of gaze, as well as the alignment of gestures and postural sway, which is the overall gestalt of your bodily movement. Even more telling was the degree to which people synced up their neural patterns (brain waves), heart rate, respiration, and skin conductance, which is a measure of how well the skin conducts electricity, and thus, how emotionally charged up a person is. Such metrics are obviously useful when, as is often the case, people's inner truths are at odds with their outward behaviors, like, say, when someone behaves nonchalantly or coolly around someone they are crazy about because they fear rejection, or smiles at someone they detest so as not to be rude.

While interpersonal synchrony—what some might call *chemistry*—can occur during the briefest of encounters, it still demands an encounter to be experienced in its deepest, truest sense. You need to be in each other's living, breathing presence, which perhaps explains the growing dissatisfaction with technology's Mach 2 answer to speed dating: dating apps. Despite their assortative efficiency—swipe right to accept, swipe left to reject—deletions of dating apps have been increasing and downloads decreasing precipitously since 2022 largely because many singles just aren't "feeling it" online. Or if they do feel as though they've developed a connection with someone virtually, they are often disappointed when they finally meet in person.

It's not only that people's online selves tend to be buffed and filtered versions of their actual selves; it's also that whether two people click or sync is as much physiological and neurobiological as it is emotional and intellectual. We've all known couples where we've thought: "I'd *never* have put those two together." They likely never imagined they'd be together either.

Someone can check all the boxes of what you or a dating app's algorithm thinks is a perfect match, and yet, when you meet that person face-to-face, all you can think about is what you'd rather be watching on Netflix. At the same time, you might have an instant attraction to someone you meet in person whose online dating profile would have caused you to immediately swipe left.

It's also a matter of timing. Other things going on in your life, such as other romantic interests, illness, job stress, or family issues, can color or cloud your perception or interfere with your reception of another person's neurophysiological signals. The lesson of interpersonal synchrony is that it is ideally and most exquisitely felt in the moment and in the flesh. It's hubris to think we can commodify or codify connection.

"What we're talking about is a much older, evolutionary, more animalistic way of understanding the social world, which is basically using information that doesn't need to be taken into consciousness, thought about, or inferred," said Eliska Prochazkova, a postdoctoral researcher at the Cognitive Psychology Unit of Leiden University in the Netherlands.

In multiple speed-dating studies, Prochazkova and her colleagues have found that mutual attraction is not so much a matter of arousal as the ability of two people to put each other in a similar physiological state, which the couple together interpret as pleasurable. The interpretation part is key, which we will get to later. But for now, suffice it to say that the more the impulses undulating throughout your brain and body synchronize with the impulses undulating throughout the brain and body of another person, the more potentially rewarding and pleasurable the encounter.

Other research has found that once a relationship is established, the more couples synchronize physiologically and behaviorally, the better they are able to identify each other's emotions, particularly recognizing when their partner is upset, and the higher they rate their romantic or sexual satisfaction. It's a dynamic process that in healthy relationships likely occurs homeostatically, whereby one partner, in effect, taps on the gas while the other taps on the brake, and vice versa, moment by moment, so that both arrive at a comfortable equilibrium.

The most obvious manifestation is during mutually satisfying sex, where both partners are tuned in and playing off each other physically, emotionally, and hormonally, each building to a climax, one's excitement stoking the other's, until there is release and they fall back together into a sense of calm and fulfillment.

Put another way, securely attached partners contingently stimulate or soothe each other so that they remain synchronized within an optimal arousal zone. What constitutes "optimal" is dependent on both the couple (their personalities, health status, mood, and stress levels) and demands of the situation (having sex, silently reading together, hiking a mountain trail,

or watching the kids). Studies have shown the mere presence of a supportive partner slows the heart rate of an anxious partner and lessens the perception of physical pain, more so when the supportive partner holds the afflicted partner's hand.

This kind of co-regulation is at work when a couple is arguing and one of them draws back, or maybe tells a joke, which tamps down or defuses the other's agitation. It's also fundamentally why not only securely attached romantic partners but also best friends and close family members tend to seek out one another when they are in distress. Our confidants may ask us questions and provide needed perspective about our situation, but often just being with them, their very presence, makes us feel better. They return us to a comfortable baseline, not just emotionally but also physiologically, because the two are intertwined. Scientists call it *biobehavioral* or *psychobiological balancing*.

In dysfunctional relationships, the mutual regulatory system between couples breaks down and you can get what is known as *co-dysregulation*. When this happens, people's emotions and physiology are synchronized but in an escalating way so that the couple spins away from stability. This is the case when one person gets mad, which makes the other person get mad, which only reinforces the first person's anger: Hearts begin to pound, blood pressure rises, sharp words turn into shouts, cross facial expressions lead to furious gesticulation, foot stamping begets door slamming, and so on, until the pair is so torqued up, it's hard to disentangle the argument from the reciprocal amplification of physiology and emotion. When the dust clears, both partners are often puzzled how things spun so horribly out of control.

Again, it's not just lovers. Co-dysregulatory dynamics can occur in any close relationship. We have all heard of, and perhaps also been party to, epic blowups and meltdowns between friends, family members, and business partners. Most relationships are on a continuum of healthy to dysfunctional, where sometimes you co-regulate, and other times you might co-dysregulate, along with periods of asynchrony where one or the other disengages, which is not necessarily a bad thing. Sometimes we need a break to get back in touch with ourselves and recalibrate.

But when you do fall into a comfortable groove with someone, where you balance each other out rather than set each other off, it is accompanied by a flood of feel-good neurochemicals such as oxytocin and dopamine that induce a natural high and general sense of well-being. It's the by-product of

close, stable relationships, but you get snatches of the same kind of solace moving into and out of synchrony with more distant friends, acquaintances, and even strangers throughout the day. Examples might include a friendly back-and-forth with a checker at the grocery store or commiserating with a fellow traveler at the airport when your flight is delayed.

These moments of attunement, or resonance, cumulatively make up your social life. Without them, you are left to regulate yourself, which humans are not very good at in the long term. When we are socially cut off from others, it leads to all sorts of negative cognitive, emotional, and physiological effects, as shown in the previously mentioned study on isolated rhesus monkeys, as well as research on inmates in solitary confinement, people living off the grid, astronauts, and polar explorers—not to mention all those forced into extended quarantine during the COVID scare. One's sense of time, reality, and self begin to unravel.

People tend to think of loneliness as having no one with whom to share thoughts and feelings. But it's more than that. If disclosure and conversation were sufficient, we would have been fine engaging with family and friends on the phone or over Zoom during the pandemic. Science now tells us what you probably intuitively already figured out: We require one another's physical presence to feel truly connected and whole. The Latin expression for “being alive” is *inter hominem esse*, which means “to be among men”; whereas “to be dead” is *inter hominem esse desinere*, or “to cease to be among men.”

You feel more alive during in-person social interactions because you receive the full complement of other people's vast and varied vibes and sync up accordingly. It's why you may insert cartoony emojis and emotive animations into your texts. You're trying to compensate for the missing facial expressions and body language that humans rely on to find resonance. Researchers are even experimenting with ways to infuse body odors indicative of different emotions such as fear and anger into virtual reality experiences.

While some social signals might be entirely absent during technologically mediated communication, others can be significantly distorted. Take the phenomenon of Zoom fatigue. The problem stems from the way video images are digitally encoded and decoded, altered and adjusted, patched and synthesized to preserve bandwidth. It produces all sorts of artifacts—blocking, freezing, blurring, jerkiness, and out-of-sync

audio—that confound perception and scramble subtle social cues, subverting our ability to sync. Our brains strain to fill in the gaps and find resonance, which makes us feel vaguely disturbed, uneasy, and tired without quite knowing why.

Sheryl Brahn, a professor in the department of information technology and cybersecurity at Missouri State University in Springfield, compares video calls to highly processed foods. “In-person communication resembles video conferencing about as much as a real blueberry muffin resembles a packaged blueberry muffin that contains not a single blueberry but artificial flavors, textures, and preservatives,” she said. “You eat too many, and you’re not going to feel very good.”

Moreover, researchers at Carnegie Mellon University published a study that showed pairs communicating over just an audio connection were more successful in synchronizing their vocal cues and speaking turns and performed better on a collective intelligence task than pairs videoconferencing using an online platform similar to Zoom. “Our findings show that nonverbal synchrony is important in distributed collaboration and call into question the necessity of video support,” the researchers wrote.

Not that video calls aren’t useful for showing off new product developments, your kids’ Halloween costumes, or just casually checking in. But if you really want to have a meaningful conversation, you might consider turning off the camera. No signal is better than a faulty signal. And let’s be honest—most people are looking at themselves on video chats anyway.

Interpersonal synchrony suggests that we have more senses than the five we take for granted, which means mere two-dimensional or even three-dimensional representations of other people online are doomed to be impoverished facsimiles, no matter how many billions of dollars are poured into creating virtual social worlds and experiences. Little wonder a study by the Center for Humane Technology showed that the top ten apps that leave people feeling sad and empty were almost all social media and online dating apps.

Of course, failing to achieve synchrony when you are in the company of others can be just as depressing and destabilizing. When you’re talking to someone at a party and not connecting, it’s as if you are wildly spinning your inner radio tuner up and down the dial and only coming up with static or, worse, landing on a station playing opera (my prejudice, but feel free to

insert a musical genre that similarly grates on your nerves). Eventually, you are going to get fed up and snap off the radio, which, in the interpersonal context, translates to vacantly nodding and smiling, saying something snarky, or maybe excusing yourself to get another drink, depending on how you handle social discomfort.

There are many reasons why a lack of connection, or asynchrony, might occur. If it happens consistently, neurological disorders, such as autism and attention deficit hyperactivity disorder (ADHD), could be the reason. Psychological problems, such as depression, anxiety, and narcissism, can also subvert synchrony. Such conditions often manifest in a distracted, inward, or self-oriented focus. Developing and sustaining synchrony requires an attentive, outward, and other-oriented focus. In the case of autism and ADHD, there may also be deficits in timing ability (i.e., an impaired sense of rhythm), which means the person can't keep a beat musically, nor it appears neurophysiologically.

Of course, some may fail to connect because, whether due to nature or nurture, they just lack sensitivity. As the Victorian novelist and poet George Eliot put it: “We must learn to accommodate ourselves to the discovery that some of those cunningly-fashioned instruments called human souls have only a very limited range of music, and will not vibrate in the least under a touch that fills others with tremulous rapture or quivering agony.”

But if disaffection or disconnection happens more occasionally or situationally, it could be that you and that person, at that particular moment, are just not a good fit. Sometimes, some people, for whatever reason, are not going to sync physiologically, biochemically, emotionally, and/or cognitively. As the British spy novelist Mick Herron wrote: “You meet someone and right there in the first flush of new acquaintance—forget about taking time to be sure, sometimes you can feel it in your marrow, no hesitation—right there in that first moment you think, ‘Well this isn’t going to fucking work is it?’”

Certainly, you want to question whether personal insecurities or unfair biases are getting in the way. German researchers have found that people who have been primed with negative information about someone are less likely to subconsciously mimic their facial expressions and thus achieve emotional resonance and connection. The same may sometimes be true when people perceive their interacting partner as “other,” such as from a different ethnic, political, religious, or socioeconomic group.*

But more broadly, synchrony science suggests that there will be occasions when despite your best efforts and best intentions, without fear or prejudice, you're going to run across individuals who rub you the wrong way, just as you're going to run across people with whom you feel an instant ease and connection. Of course, you always want to be courteous and kind. Just know that sometimes, with some people, it's going to feel like serious work. You're basically swimming against the tide of your neurophysiology.

Our culture has conditioned us to think it's a virtue to like everybody and be universally liked ourselves. But that's more an ideal than attainable reality. Will Rogers may have professed to never meeting a man he didn't like, but according to his youngest son, Jim: "I don't know exactly what Dad meant by that. I do know there were people he didn't like." Even my neighbor Joan says some people give her a "headache." Though, like many people, she's loath to admit it. "I really want to like them," she said.

Eric Wind, a vintage watch dealer in Palm Beach, Florida, told me part of his maturity has been realizing that he's not going to be in sync with everyone. He meets all kinds traveling the world buying and selling watches and has a vast network of friends and business associates. But sometimes, for reasons he can't entirely explain, he'll come across someone he doesn't want to deal with or who maybe doesn't want to deal with him. "There's nothing you can do about it. It's not worth forcing the issue. It's just life," he said.

While you may wish you synced with everyone all the time, it's not possible or even necessarily desirable. First, because some people are just toxic. And second, research on social networks going back decades has shown that you only have the emotional and cognitive capacity to maintain a handful of truly close relationships, with a maximum of 150 contacts with whom you are friendly enough to comfortably sit down and have a beer. In other words, you only have the bandwidth to sustainably sync with so many.

Of course, just because you're in sync with someone today doesn't necessarily mean you'll sync up again tomorrow. As mentioned earlier, friends, family, colleagues, and lovers move into and out of synchrony all the time. The relationships that last are those where you are in sync more than you are not. Grace is riding the tide.

It's part of the human condition that every encounter has the potential of leaving you cold or changing your life forever. That's the gamble of social interaction. We keep rolling the dice because the payoff—that feeling of connection—is bliss. It feels good because pleasure is nature's way of saying, "Do this." Evolution has selected for individuals and groups that can coordinate their efforts. Whether predator or prey, if you're a social animal, synchrony is the ultimate survival skill.

Engaging with other people, and trying to interpret their layered verbal and nonverbal messaging, is one of the most complicated and consequential things human beings do. Every interaction not only depends on what is happening in that moment but what happened to every person involved right before that interaction and their history of interactions in general, which is embedded in our every twitch and neural vibration, in spite of ourselves.

"So many signals you get from another person are subliminally processed by our brains and bodies," Prochazkova told me. "We are not consciously tagging them." When interacting with someone, you are not thinking, *His coloration shifted slightly in his face, and therefore he is angry*, or *Her heart rate is elevated, so she is anxious*.

We simply cannot perceive or process all the incoming data consciously. Nor would we want to. It would take an impractical amount of time and be a serious cognitive burden. So we rely on a more primitive or gut-level sense: our instinct to sync. Faster and more efficient than lightning rounds of speed dating or even swiping on a dating app, interpersonal synchrony streamlines your social interactions. It eliminates the vacuum between you and the other person because the two of you, in that moment, become one.

This singularity offers a kind of shorthand that is not only quicker but can also be more accurate than your more conscious calculations, provided you are as in tune with yourself as you are with others. While we may all have the instinct to sync, some have significantly more mastery over it. Whether it's rallying others to a cause or intuiting the feelings and intentions of others, such feats of interpersonal synchrony are the basis of influence and power. The ability to deftly engage, and also disengage, when appropriate is a remarkable skill shared by successful political, business, and religious leaders—not to mention those who leave speed-dating events clutching a fistful of phone numbers.

Bad Apples

WHEN SYNCING SPOILS THE BARREL

When Ian Massey was appointed dean of libraries at a large Midwestern state university, he thought he'd landed his dream job. For twenty-five years, he'd worked at academic libraries in staff and management positions, most recently as director of the library at a small private college in the Pacific Northwest. But now he was overseeing a massive collection serving tens of thousands of faculty and students. His mandate was to turn the library into a next-generation information resource with all the physical and digital architecture that implies.

Massey, who smiles easily and is in a Beatles cover band during his off-hours, could hardly wait to get started. On his first day, he went around introducing himself to all the staff. "I get to this one librarian's office, and immediately, I felt it," said Massey, recalling a kind of visceral dread. "It's hard to explain, but it was this weird aura."

The librarian didn't return his smile or reach out her hand when he extended his, which he told himself was probably a holdover precaution from COVID. Staring fixedly at a wall of her office, she launched into a litany of complaints. She told Massey that staff morale was shot and the library generally "sucked." Massey gamely said he appreciated her candor and suggested they meet and talk more about her concerns. "I don't want to meet with you," she said coldly.

So began a managerial nightmare as this one woman's relentless negativity derailed every attempt Massey made at progress. Two other librarians who had offices right next to hers were like her backup singers at meetings, nodding in unison and echoing approval as their ringleader shot down every improvement or initiative Massey or anyone else suggested.

New hires went from energetic and full of ideas to sullen and withdrawn within weeks. Many quit, citing the “toxic culture” in their exit interviews. Administrators told Massey that while they commiserated, the librarian had tenure, which pretty much meant—short of death or retirement—there was no getting rid of her.

“Everyone synced to her, even me,” Massey said. “I started being blunt in a way that I never had been previously with anybody under me or above me.” The situation was so demoralizing that he consulted his doctor about taking antidepressants. “The place literally changed my personality, at least with this group of people,” he said. Although the librarian eventually retired, Massey left not long after to take a job at another academic library. “Let’s just say, the source of the contagion might leave, but the disease remains,” he said.

The librarian exerted what organizational psychologists and business management experts call the “bad apple effect,” referring to the proverb: “One bad apple spoils the whole barrel.” The saying dates back to at least the sixteenth century when Geoffrey Chaucer in *The Canterbury Tales* compared an apprentice chef to a bad apple because his drinking and debauchery threatened to corrupt his coworkers. In the eighteenth century, Benjamin Franklin wrote in *Poor Richard’s Almanack*: “The rotten Apple spoils his Companion,” cementing the idea that the principle applies to people as well as fruit.

The bad apple effect is a downside of interpersonal synchrony. Our instinct to sync can make us susceptible to getting mired in other people’s psychosocial muck, particularly in work situations where we are not necessarily free to choose with whom we affiliate. It’s not like a speed date, where you can do a quick sample sync and move on if you don’t like what you feel.

Perhaps the most interesting and informative experiment on the bad apple effect was conducted back in 2007 by William “Will” Felps, then a PhD candidate at the Foster School of Business at the University of Washington in Seattle. The study was for his dissertation: “Developing and Testing a Theory of When, Why, and How Bad Apple Group Members Spoil the Barrel.” While dissertations typically aren’t page-turners, this one is interesting reading, particularly when you know the backstory.

Felps, who is now an associate professor at the School of Management and Governance at the University of New South Wales in Sydney, Australia,

said he got the idea for his dissertation from his wife. Back when he was in graduate school, his wife had a job she didn't like—so much so that she considered quitting.

“But then this guy who my wife worked with came down with a chronic illness, and he had to be gone some of the days of the week,” Felps told me. When his wife's coworker was absent, the atmosphere around the office changed dramatically. People started playing music, communicated more frequently, went to lunch together, and overall worked more collaboratively and effectively. As soon as the guy came back, things went back to the way they were.

This intrigued Felps because it seemed counter to research that showed group members modify one another's behavior through training, compensation, motivation, and ostracism to impose uniformity. “This was a case where instead of the individual conforming to the group, the group conformed to the individual,” Felps said. “That was surprising.”

So he devised a study where he would have a confederate (scientific speak for a coconspirator) act like a jerk, a slacker, or a depressing downer in sixty, four-person work teams, each comprised of unsuspecting undergraduate business students at the University of Washington. Felps's hypothesis was that the confederate's bad behavior would have a significant impact on group functioning and dynamics, based not only on his wife's experience but also previous research that suggested the strongest predictor of a team's performance is not how stellar its best member is or even what its average members are like but rather how awful its worst member is (hello, angry librarian).

Felps expected to see resistance and defensiveness on the part of team members in reaction to the confederate's antics. “But really some of the most interesting responses, I didn't know how to measure,” he told me. “Had I known about interpersonal synchrony, I might have done the study differently, because when you look at the videos, you see the people in the groups really start behaving like the confederate.”

For example, in the slacker condition, the confederate is eating food, he's leaning way back in his chair, and he's acting bored and distracted like someone who couldn't be bothered with the task at hand. Sure enough, pretty soon, everyone else is leaning back in their chairs and saying things like, “Okay, let's get this over with.” They adopted the confederate's

attitude that what they were doing wasn't important and they performed poorly.

Same thing in the depressive condition. Just like the confederate, everyone started acting lethargic, putting their heads down on the table and behaving as if the task, and life in general, were meaningless. Probably because there was less overt body language in the jerk condition, there was less obvious physical mimicry. But team members nevertheless acted just as obnoxious by being either passive- or more actively aggressive.

No doubt part of the reason the study participants synced so readily was due to the extraordinarily convincing confederate, a University of Washington drama student whom Felps had seen perform in a school production of *The Rocky Horror Picture Show*. "He played Dr. Frank N. Furter, the main nasty guy," Felps said. "He was amazing."

That drama student was Nick Fascitelli, now a Hollywood comedy writer working on sitcoms like *B Positive* and *Fuller House*.^{*} In preparation for the study, Felps coached Fascitelli on how to be as annoying and obstinate as possible. "I was like, 'Oh, I was born for this!'" Fascitelli told me. "I think being gay and growing up in a very conservative town, I was a very angry nineteen-year-old, and this gave me a way to unleash all that."

And unleash he did, effectively dismantling one work group after another. Time after time, Fascitelli drew team members into his negative vortex. He and Felps were both a little stunned at his impact when they viewed videos of the sessions afterward and frame by frame counted the number of times subjects emotionally and behaviorally synced to Fascitelli's bad behavior.

The only part that Fascitelli said was hard for him was the control condition when he was to be genuinely helpful so Felps could get a baseline for what a team could achieve when not corrupted by one of the "assholes," as Fascitelli collectively called his slacker, downer, and jerk personas. "Being nice was when I was acting," he said.

Looking back now, Fascitelli said the study had a huge impact on his life. He was in a unique position to have a *Sliding Doors* experience, where he could play and replay the same scene over and over in different ways to effect different outcomes, not only in relation to others but also within himself. While he was really good at acting the asshole, he discovered in the control condition how much better it felt to be cooperative and how

everyone else responded in kind. It forever transformed how he related to people.

“It was like the world’s most specific cognitive behavioral therapy for me,” he told me. “I became very aware that if you’re depressed or angry, the dangerous thing is you are never going to be in a room that you are not in, so you could be walking around making everyone depressed or angry, and you’ll just think that’s how the world is.”

Also seared in Fascitelli’s memory is the one study participant who beat him at his own game—the subject Felps refers to as the “good apple.” Impervious to Fascitelli’s extravagantly bad behavior, this business student instead asked questions and personally connected with each group member in turn, including Fascitelli, and then established connections between members by pointing out their areas of agreement.

“In my nineteen-year-old mind, I was thinking, *Oh, I’m fucking up the study*, because my asshole routine wasn’t working,” Fascitelli said. “Not being a scientist, I didn’t realize you want that kind of data.” He described the good apple as like a couples counselor bringing down the temperature in the room and drawing everyone in. “The kid basically did to me what I was doing to everyone else, which was control the energy in the room,” said Fascitelli. He and Felps later found out that the kid was the son of a diplomat.

While Felps has gone on to study other aspects of organizational behavior, he, like Fascitelli, said the bad apple study changed how he thinks about human interaction. He hadn’t previously realized how susceptible and also how oblivious people were to the effect others were having on them. “We had a debrief when the whole thing was done, and there was a lot of ‘I had no idea’ and ‘Oh, can you send me the results?’” he told me. “But nobody said, ‘Oh yeah, that guy was a weirdo.’”

Now Felps said he makes a point of sharing any and every positive emotion or sentiment. “Like when I’m an audience member during talks, I’m always the one who, if I understand something, I nod, and I smile when someone says something fun,” he said. “The idea is ‘Oh, someone will really pick up on this and it will make a difference,’ which I’m not sure I believed before.”

He’s also realized that if he lets go of his concern about appearing all-knowing or scholarly in front of his students, they also relax, and his classes become much more fun and participatory. “I’ve become more and more

authentic as I've gotten older," he said, which his research and his personal experience have shown him makes others follow his lead.

★ ★ ★

A study published in the journal *Psychological Science* a few years after Felps's study took the bad apple concept a step further. The study was the brainchild of Noah Eisenkraft, a business consultant with doctoral degrees in applied economics and managerial science who is also a visiting scholar at Duke University's Fuqua School of Business. His focus, in both his consulting and scholarly work, is workplace interpersonal dynamics.

What fascinates Eisenkraft is not that we have some consistency in how we feel, what we call *personality*, but the curious question of whether we may have a similar consistency in how we make other people feel, which he calls *affective presence*. Basically, do we have an intrinsic vibe to which the world syncs so it becomes a happier, sadder, or angrier place? "That's a really intriguing question, because you're never going to see the world when you are not in it," Eisenkraft told me, echoing Fascitelli's takeaway from his participation in Felps's bad apple study.

A person's intrinsic vibe or affective presence is an extremely hard thing to measure because it's not something people can tell you directly or even indirectly about themselves. Unlike personality, there isn't a battery of tests that reveals the consistent "you" effect on most people you encounter.

Undaunted, Eisenkraft and his colleagues set about quantifying affective presence by gathering data from 239 master of business administration students—the entire first-year class at a major university. The model at most MBA programs is to assign students to so-called learning teams that take all their courses together, work on projects together, and often socialize together outside of class. It's meant to simulate work teams in the real world.

The MBA learning teams suited Eisenkraft's purpose because they weren't self-selecting. His hunch was that, left to our own devices, we typically choose our affiliations based on how others make us feel, which would obviously be a confounding factor in a research context. Moreover, in the workplace, just as in families, we typically don't get to choose.

The MBA students were also ideal because there was enough diversity in terms of ethnicity and background to be somewhat representative of the wider population but also enough homogeneity—they were all smart and

around the same age—for there to be some basis for connection. The teams' consistent and long-term association meant Eisenkraft could ask members about their holistic feelings about each team member rather than trying to draw conclusions based on a discrete interaction, which is the more typical experimental design.

In addition to rating how each member in their work team made them feel, students completed a personality inventory as well as filled out a social network questionnaire where they indicated who among their 238 other classmates they liked the most and with whom they spent the most time. The total number of people who listed a participant as a close friend determined that person's "network centrality," essentially his or her popularity.

Using a complicated statistical technique known as *variance partitioning*, Eisenkraft was able to figure out each member's affective presence—how they made others feel—while controlling for "trait affect"—how each member tended to feel anyway. He was also able to control for the peculiar alchemy that might occur between two people that is not translatable to other interactions.

What he found was that trait affect was responsible for 31 percent of positive affect and 19 percent of negative affect, while affective presence accounted for 10 percent of positive affect and 23 percent of negative affect. In other words, someone else's bad vibe has about as much effect on how you feel as your own personality. Someone's positive juju has a smaller but still significant effect, which makes sense. "If you're making a lot of people angry, that's a bigger deal—it has a bigger impact," said Eisenkraft. "It's very easy for me to think of people who make me angry but a lot harder to think of people who make me happy." It also makes sense that positive affective presence correlated with greater network centrality: We like to be around people who make us feel good.

It's worth noting that while affective presence and your own personality can have a significant impact on how you feel about someone, together they still won't add up to the impact of the unique synchrony that can develop between two people. Think about all the odd couples and unlikely friendships in this world. So it's not only the positive or negative valence of the vibes people put out there that impacts your feelings but the reciprocal dynamic between their vibes and your vibes. In other words, it's not a one-

way street. However, with very strong personalities like Fascitelli and the angry librarian, it can sometimes feel that way.

“Because I move from team to team to team in my consulting practice, I get to see affective presence at play a lot more than most people,” Eisenkraft told me. “It’s hard when people are striving, and you can see it; they are not going to be able to get to that next level, because they are not making people feel the way they need to make them feel.”

He gave the example of two executives—same rank, same age, same background—who worked at two different tech firms that had separately hired him in the midst of similar crises. “The kind of crises that get you hauled before Congress,” Eisenkraft said. One of the leaders’ affective presence was making everyone stressed and nervous. The other one radiated the sense that, despite the high stakes, everything was going to be okay.

“The conversations were the same, but the tenor in the room was different,” Eisenkraft told me. “The leadership was very competent in both instances, but not every leader has that ability to keep everybody calm and feeling good.” It wasn’t that the leader who kept everyone in a good place was more lighthearted or cheerleading or even commiserating. In fact, he was actually the more reserved of the two.

“Just by being there, he made you feel more calm,” Eisenkraft told me. “I talked to both of these leaders individually and they were both incredibly stressed, but one didn’t give his stress to other people.” That leader seemed to metabolize his stress more effectively and as a result transferred to his team a kind of composure, resolve, and at times a wry amusement about the more absurd aspects of their situation.

Both teams successfully navigated through their crises, but when it was over, everyone on the team whose leader radiated calm assurance throughout was trying to stay on that team, whereas the people on the other team were looking for ways to get out. “They didn’t want to leave so they could do different work,” Eisenkraft told me. “They weren’t negative about the leader either. They really respected him, but going to work was just harder.”

While not everyone has a great emotional vocabulary, most of us can readily distinguish between someone who is “easy to be around” versus “hard to be around.” Remember Joan and Jen from chapter 1? Easy to be around is an ineffable quality that makes you without hesitation say, “Absolutely!” when someone invites you to go grab coffee versus thinking,

Hmmm ... what's the rest of my day look like? In the latter case, some part of you knows it is going to cost you something. It's going to involve what Eisenkraft calls "emotional labor." With some people, it's just more work trying to get on their wavelength. Syncing is a struggle.

An emergency room nurse who has done stints at hospitals in Boston, Chicago, and Tampa told me that the difficulty of her job has less to do with the number of patients who arrive or the severity of their injuries than who else is on her shift. "There are definitely people who when you walk in, you see them, and you're like, 'This will be a good day no matter what gets thrown down,'" she told me. "And there are other days when you walk in and you're like, 'Okay, this is going to be a struggle.'"

Technical skills are easy to teach, but affective presence is something else entirely. The dynamics are not well understood even by Eisenkraft. "That scares a lot of people because they are like, 'Where's the textbook?' and I'm like, 'We left the textbook behind ten years ago,'" he said. "We're now in a place of 'Can you connect with individuals?'" There isn't a checklist or if-then flowchart for that. You either can or you can't. You do or you don't.

When asked about his own affective presence, Eisenkraft told me he has no idea how he makes people feel and isn't sure he wants to know. "There's a little bit of fear to that because I don't know if I can change it," said Eisenkraft, who has nothing to worry about as far as I could tell. "You publish a paper like this hoping people pick up on it and find out more about it."



Future research on affective presence and the bad apple effect will undoubtedly involve using biometric and hyperscanning techniques to track physiological and neural synchrony between group members in addition to more observable behavioral and emotional coordination. Also begging further investigation is how affective presence and the bad apple effect may relate to projective identification, a psychodynamic construct first identified by Austrian British psychoanalyst Melanie Klein in 1946.

Ask five different psychoanalysts to define *projective identification* (which I did) and you'll get five slightly different definitions. But basically, it's the idea that people often subconsciously project their unwanted or intolerable emotions onto other people so that the receiver feels and

subsequently behaves as if those emotions are their own. It's interpersonal synchrony but with a tinge of gaslighting.

For example, someone who feels incompetent or worthless may induce whoever they are with to feel that way themselves. Without either side necessarily realizing it, projectors infuse others with their anger, distress, shame, or frustration. Saddled with projectors' discharged emotions, people predictably begin to feel pretty awful and behave even worse. They don't know what "got into them." Of course, once you take on projectors' feelings, in their mind, you are the one with the problem, not them.

While projective identification is generally thought of as a subconscious off-loading of unwanted or undesirable emotions, people can also sometimes project positive feelings. Someone who is brimming with self-confidence and agency may project those attributes onto others. Think of your best coach, teacher, or supportive friend. They imbue you with the sense that you can do it, whatever "it" is.

A steady diet of these kinds of positive or negative projections, particularly when they come from important figures in your life like a parent, partner, close friend, teacher, or boss, can have a significant impact on how you feel about yourself and even determine the course of your life.

"Even if you see it, projective identification is very hard to stop," said Dr. Kathryn Zerbe, a training and supervising analyst at the Oregon Psychoanalytic Center and clinical professor of psychiatry at Oregon Health and Science University in Portland. "This is actually what we try to do in therapy: What gets deposited in you as a therapist, you then try to contain it and you process it so the patient can eventually own it."

The operative word is *try*. Despite extensive training, therapists can still be haunted by feelings projected onto them by patients. Zerbe recalls how, earlier in her career, a patient with an eating disorder had an insidious way of making her, Zerbe, feel fat and unattractive even though she was objectively the opposite. Her patient projected onto Zerbe how the patient herself felt.

People who are highly empathetic, as therapists tend to be, are most at risk of identifying or syncing with other people's projections. Research suggests that there is a bidirectional relationship between the strength of someone's instinct to sync and empathy. The more often and closely you sync with people, the more empathetic you are, and vice versa.

A paper published in *The Journal of Psychotherapy Practice and Research* titled “Projective Identification, Countertransference, and the Struggle for Understanding over Acting Out” provides a helpful analogy for resisting projective identification. The author, Robert Waska, a psychotherapist who has published widely on Kleinian psychoanalytic theory, writes that emotions people project onto us are like various notebooks, coats, and lunch boxes left scattered about the schoolyard at the end of the day. Our job is like that of a grade-school teacher who must carefully examine each item, determine who it belongs to, and then return it to its rightful owner. Neutralizing someone else’s negative projections—their unmetabolized rage, sadness, anxieties, or insecurities—is a matter of first identifying the feeling and then telling yourself, “This isn’t mine.”

But if you keep finding the same bad apple in your psychological schoolyard, Zerbe advises you to get rid of it. “I’m telling the truth here,” she told me. “You need to become vigilant about your own self-care.” Someone who consistently makes you feel rotten may not be worth the emotional labor. And if circumstances will not permit elimination, at least try to limit your exposure. We all have people in our lives who are better taken in small doses.

On the other hand, pay particular attention to those in your social network who consistently make you feel good—the good apples who radiate positive affective presence. Cultivate those relationships and try to find out what they are projecting onto you that is so satisfying, and not only give it back to them but also try to pass it along to someone else.

Rockettes and Military Cadets

SYNCHRONIZED ACTIVITY AND THE SCIENCE OF GETTING OVER YOURSELF

Every spring, hundreds of women who are the right height (five foot five to five foot ten and a half inches in stocking feet) and have the right training (ballet, tap, and jazz) arrive at Radio City Music Hall in Midtown Manhattan to audition for the Rockettes. Known for their highly synchronized dance routines and iconic kick line, the Rockettes have been an institution since the 1930s. Watching them perform in the Macy's Thanksgiving Day Parade or Radio City Music Hall's annual Christmas Spectacular is like looking through a kaleidoscope where all the pieces constantly rearrange to form precise new patterns. During each show, a cast of thirty-six individual dancers seems to morph into one shape-shifting organism.

At the annual auditions, aspiring Rockettes are given various combinations of dance steps to perform. Those whose moves pass muster go on to the next round. The rejects—some sobbing, some stoic—take off their dance shoes and leave as if booted off the island on *Survivor*. Showoffs are typically the first to go—the ones who kick to the top of their head when they were instructed to kick to eye level or who do a triple turn when asked to do a double.

The point is not to grandstand but to move in effortless form and time with everyone else. The brutal culling process continues over three days until the last remaining dancers are finally dismissed to go home and anxiously wait (pray) for a call offering them a coveted spot.

"I auditioned three times before I got it," said Beth Dukleth Honea, who danced with the Rockettes from 1999 to 2010 and now owns a Pilates

studio outside Austin, Texas. “I saw them on TV when I was little and just knew it was something I wanted to do.”

Dukleth Honea told me that dancing helped her overcome her shyness as a child: “I felt more comfortable expressing myself through movement.” Dancing was her mode of communication and connection. She developed great friendships while dancing in high school and college and later in regional musical theater. But she said those relationships were qualitatively different from those she formed with her fellow Rockettes.

After rehearsing the synchronized routines for several weeks, six hours a day, six days a week, and performing up to six shows a day during the holiday season, she said you begin to lose yourself, not only in the coordinated movement but also in relation to the other dancers. Everyone in the cast begins to feel like an extension of everyone else.

Dukleth Honea described it as a kind of “dissolving of boundaries.” While she took it for granted at the time, looking back, she now realizes how much they were in one another’s personal space. The Rockettes’ tight choreography demanded it onstage, but it was the same offstage. There was a degree of physical closeness—leaning into and on one another—that you would never see in an office environment. “We literally had each other’s back,” Dukleth Honea said.

There was also notably more nonverbal communication—dramatic gestures and facial expressions, as well as physical humor and miming. People didn’t necessarily have to speak to make their feelings known. Of course, Dukleth Honea said, some Rockettes were closer than others, but the general atmosphere was one of fluidity and familiarity.

“There was an openness, a comfort level, a peace and understanding,” she said. “Part of it is the fact that we all went through the intense training and performance schedule together, but there’s something about moving as one—you develop this bond I can’t quite describe.” Pilates, she said, is different: “It feels wonderful to move and there is a community, but for me, there is something about moving together to music and choreography that is different from Pilates.”

Science backs her up on this. Synchronous marching, drumming, dancing, rowing, pedaling, and finger tapping have been shown in experiments to build rapport and trust, as well as make people more likely to disclose personal information, cooperate, and generally be kind and helpful. Even infants strapped into face-forward carriers and bounced in

time to music were significantly more likely to favor experimenters who were likewise bouncing in time, compared to experimenters who bounced out of sync or who did not move at all.

Moreover, researchers have found that during synchronous activity, people's perceptions of themselves and others often merged: They became confused whether they or those with whom they were in sync were experiencing bodily sensations such as a light brushing of their cheek or mild electrical stimulation. This was true even in experiments where subjects' sensory inputs were synced with those delivered to a rubber hand or to someone in a video. Subjects also had trouble separating their thoughts and emotions from those of confederates, real or simulated, whose actions mirrored their own.

Of course, synchronized activity, particularly to music or a beat, has been used to promote unity and cohesion long before anyone thought to investigate why this was so. Think soldiers marching to a drumbeat, religious congregants bowing, singing, and reciting prayers in unison, protesters chanting, and any kind of dancing, whether around a ritual fire or under a disco ball. Indeed, coordinated displays have been acting as a kind of social glue since prehistory. Warriors marching and figures dancing are depicted in cave paintings that date back at least thirty-five thousand years.

Eric Algoe, an army veteran who served in Iraq, South Korea, and Haiti, told me that during basic training, not only did his unit march and exercise in synchrony, they also ate, slept, and even brushed their teeth at the same time. They dressed the same. They had the same haircuts. They kept the same precise schedule. Moreover, he said each recruit in his unit was assigned a "battle buddy" who never left your side, even accompanying you to the bathroom.

Algoe's battle buddy was a Black guy from a rough part of New Orleans, Louisiana, who had a full set of gold-capped teeth on the top and silver-capped teeth on the bottom. Algoe, who is white, is from an Amish community in Plain City, Ohio. "But the amazing thing is that by day three, we were just the same," he said. "The whole point of breaking everybody down and building them back up together as one cohesive, coordinated unit was to create a sense of 1) you will obey an order without questioning, and 2) you will lay down your life if told to do so."

Still committed to public service, only now as chief financial officer for a large state-run university, Algoe turns reflective when recalling his basic

training, a period in his life that was as intense as it was transformative. “That kind of loyalty and commitment is not easy to teach somebody. You can’t have a philosophical discussion: ‘Let me just explain to you why you should do this,’” he said. “It has to become almost muscle memory, and somewhat without thinking, and that’s why you have to feel you are one with everyone else. If it’s happening to another soldier, it’s happening to you.”

Synchronistic principles have also been applied to promote cohesion, loyalty, and general wellness in workplace environments, particularly in more communal cultures. Before banks open for business in China, for example, you’ll find uniformed tellers being led through synchronized calisthenics routines. Same thing at many barbershops, beauty salons, restaurants, and hotels.

In Japan, there is something known as *rajio taiso*, or “radio exercise,” broadcast every morning on government-funded radio stations. Individuals at home and at work, as well as at schools and in parks, perform the rhythmic exercises accompanied by a tinkling piano tune. The synchronized routine may last for only three to four minutes, but studies indicate the positive effects, including increased enthusiasm and energy, last throughout the day.

Similarly, some Swedish businesses, including the construction and project development company Skanska, have begun encouraging employees to take part in ten-minute exercise-and-stretch workouts in the morning. In surveys, participating employees reported feeling a greater sense of community and motivation, and the company has seen a significant reduction in absenteeism and improved work performance.

To be clear, the effect is not just due to the exercise. A study in Germany found that employees of a publishing company who did weekly synchronized exercises together felt a greater sense of cohesion, experienced less work-related stress, and had fewer sick days immediately following a nine-week program compared to groups that did asynchronous exercise during the same time period. This corroborates other research that showed synchronized training in a college rowing crew resulted in a greater endorphin surge and, hence, sense of well-being, compared with a similar training regime carried out alone.

Moreover, the beneficial effects accrue even if the synchronized activity isn’t exercise-oriented or even particularly aerobic. Corporate employees in

Japan who participated in weekly drumming sessions together were less stressed, were in a better mood, and had improved immune function. A similar rhythmic music-making intervention significantly reduced burnout among first-year associate-degree nursing students in the United States.

The evolutionary psychologist and anthropologist Robin Dunbar has written that any coordinated behavior, including laughing, feasting, and emotional storytelling, can have a bonding and mood-boosting effect due to the endogenous opioids our bodies subsequently release that give us a natural high. His theory is that synchronized activity is an evolutionary adaptation that allowed humans to develop a sense of unity and attachment without the need for physical touch. This allowed us to increase the size of our social groups beyond what was characteristic of our primate forebears. A chieftain of a burgeoning tribe could not go around grooming or hugging everyone to promote cohesion, but he could get his followers to do the same thing at the same time, like hunting, eating, drumming, and worshipping.

There's also the idea of the so-called beacon effect. Some anthropologists have argued that the human ability to sync to a beat (rare in the animal world) intensifies the percussive and resonant signal and, therefore, increases geographic reach and psychological impact. This leads to a mating advantage as well as deters would-be aggressors because 1) the signal attracts greater attention, 2) it communicates power by indicating membership in a large group, and 3) it signals a high level of cooperation among group members.

In terms of the neuroscience, the human brain organizes neural impulses into firing patterns known as *oscillations*, or *brain waves*. This continuous rhythmic activity encodes information that we use to perceive and make predictions about the world around us and thus creates our conscious experience. When individuals engage in the same activity, particularly to a beat that keeps everyone moving more or less in time, their brains organize and oscillate in much the same way, which unifies thinking and can also align emotions, particularly when people have a common goal or purpose.

This perhaps explains why coordinated exercises as well as jumping and clapping to thumping music are a big part of Tony Robbins's motivational speaking events. Something of a synchrony savant, Robbins is literally getting his audiences, which typically number in the tens of thousands, on the same wavelength. The rhythm of the music he plays, 120–140 beats per minute, is probably no accident. It's the rate your heart beats when you are

energized and exhilarated, such as when you embark on a new adventure or anticipate seeing someone you love.

It's also the tempo of now-ubiquitous house music developed by DJs in Chicago's underground club scene in the late 1970s and early 1980s. Love it or hate it, your heart rate, breathing, and neural activity will inexorably sync to it and further rise and fall with the crescendos and decrescendos of the melody. As Robbins tells his followers: "It all starts with physiology. The way you use your body, your physical state."

Your brain also likes the predictability of synchronized activities because it doesn't have to waste cognitive resources thinking about what the people around you are going to do next. They will be doing the same thing as you. Predictability puts us in our happy place because thinking is metabolically expensive. The brain takes up only 2 percent of overall body weight, yet consumes a whopping 20 percent of our calories. Since our survival has historically depended on judicious use of resources, we instinctively like anything that lets us cognitively coast. It's also why we love being right and hate being wrong. Wrong means you need to stoke the cerebral furnace and think again.

It's worth pointing out here that the word *synchrony* derives from the Greek words *syn*, which means "the same or common," and *chronos*, which means "time." *Synchrony* thus means "occurring at the same time." But synchronous patterns can vary in how tightly linked the activity is and the immediacy with which it occurs. Imagine the difference between the Rockettes' kick line and one performed by, say, the Chicago Bears. Feelings of connection are typically stronger the more similar, seamless, and simultaneous people's behaviors and underlying neurobiological rhythms. The Bears, therefore, might feel more unified by, say, doing bench presses in time to music or formation sprints up and down the football field. Mimicry, of course, denotes a slight time delay, but many scholars nevertheless categorize it as synchrony or at least its close cousin, because one action reliably triggers another in time. And indeed, mimicry often leads to simultaneity due to greater predictive accuracy over time.

Synchronized activity can also be in-phase, where the action is the same, or anti-phase, where there is complementary movement. An example of in-phase is when people spontaneously fall into step with one another while walking: left, right, left, right. Look down the expanse of Fifth Avenue in Manhattan during rush hour and you'll likely see a mass of

humanity bobbing more or less together in a walking wave. It's also why the Millennium Bridge in London is called the Wobbly Bridge—because engineers didn't take into account the spontaneous syncing of people's footsteps, causing the structure to disconcertingly sway with their unified movement.

Anti-phase interpersonal synchrony, on the other hand (or foot, in this case), would be like if you were dancing a tango with someone. You and your partner's steps would correspond but in opposite directions. Your partner steps forward on the right foot and you step backward on your left. It could also be like a classic back-and-forth dialogue, where one person speaks while the other listens and vice versa, or the coordinated groove you might get into with your spouse while doing the dishes: I wash, you dry. There are other dynamical, or rapidly changing, synchronistic patterns that occur between couples and within crowds that are more complicated and require some expertise in nonlinear systems, or chaos theory, to discern, but that doesn't make the linkage and potential bonding effect any less real.

While humans will physiologically sync up to some degree just being in the same room together, the effect is significantly enhanced during joint behaviors, whether it's forming a kick line or just having a meaningful conversation. Certainly, having a conversation isn't as dramatic as forming a kick line, but, as discussed in the previous chapter, it can trigger a reflexive matching of facial expressions, overall body movements, breathing, heart rate, and brain patterns, resulting in alignment of thinking and emotions. They don't call deep conversations *heart-to-hearts* for nothing. Notably, researchers have found that subjects show significantly less synchrony during vacuous small talk.

During meaningful conversations, just like when dancing, both parties have to be engaged and paying keen attention to what the other person is communicating, verbally as well as nonverbally. In other words, you have to be a good listener, and part of being a good listener is maintaining an open mind, which is not always easy. Studies have shown that when two people with opposing opinions, different backgrounds, or unequal status interact, there can be a significant asynchrony or misalignment in physiological, behavioral, neural, and emotional markers. This is likely due to the human tendency to rely more on biases and prior assumptions than tuning in to one another as unique individuals.

Not surprisingly, eye contact is important because if you are not looking at someone, you will not be able to perceive or mirror that person's subtle expressions, movements, and pupil dilation—all key to developing a connection and implicit understanding, even if it's the understanding that the person is in some way dodgy or dangerous and you need to be on your guard. It's a subconscious process, but on some level, you still have to observe the other person.

While studies have shown that you can get some neural, or brain wave, synchronization when communicating with another person remotely, as during a phone call or even texting, it's not as robust, or as encompassing, as when you are making actual, in-person eye contact. Research further suggests that the moment when people's eyes lock, across a crowded room or otherwise, there is a so-called phase-reset within each individual, kind of like when you restart your computer, which clears out the cluttered or frozen parts inside us and makes us more accessible and inclined to sync up.

Some of the most alluring women in history were said to have intuitively used gaze to great effect. According to a French diplomat to the court of King Henry VIII, Anne Boleyn's large black eyes were her most attractive feature, which she knew well how to use: "In truth such was their power that many a man paid his allegiance." Jacqueline Kennedy Onassis was also known for her unwavering gaze, which her father, the rakish "Black Jack" Bouvier, told both his daughters was the very art of seduction. He instructed them to fasten their eyes on men like they were "staring into the sun."

If that seems a tad too intense, other activities that promote interpersonal synchrony might include singing in a choir, attending line dancing classes, joining a knitting or running club, or maybe volunteering someplace that has you doing coordinated tasks with others, such as shelving canned goods or packing boxes at a food pantry. Even housework can be a bonding experience if you and your housemates do it in a synchronized way. Some studies suggest that couples that do the same household chores together versus divvying them up have greater marital satisfaction. All the better if you do it to music with a groovy beat.

Realize that interpersonal synchrony isn't just the result of a shared stimulus. If you and I separately watched the same movie or basketball game, there would likely be some similarity in brain patterns and other

measures, such as a quickening heartbeat during the suspenseful parts. But the alignment of neural and physiological measures is less robust and less comprehensive, and the feelings of affiliation and connection are absent when people are apart. Indeed, researchers have found that working puzzles together increased neural synchronization far more than if subjects separately worked on identical puzzles or observed others working on puzzles.

It's the same with walking. Two people can, on their own, walk the same route and, if you looked at their various physiological markers, you might see a few similarities. But if those same people walked that route together, they would inevitably fall into step with each other, which then triggers a cascade of physiological, neurochemical, and emotional linkages, particularly if they talked while they walked.

Aristotle was probably onto something when he lectured his students, the Peripatetics, while walking the grounds of the Lyceum. Apple Computer cofounder Steve Jobs was known for inviting people he wished to influence to take long walks with him. Anyone who has a regular walking or running buddy knows how close the two of you can become, even if you have little else in common. I myself have four wildly different walking partners, who are among my closest friends.

This is not to say that all you have to do is get people to engage in synchronized activities and there will be peace and harmony in the world. It depends on how routine and how immersive the activity is and also whether the people engaging in the activity have similar goals and intentions, like serving one's country in the case of the military or entertaining audiences in the case of the Rockettes. Laboratory experiments suggest that when people are anxious, self-centered, or in conflict while engaging in synchronous tasks, they are less likely to develop physiological or neural linkages or experience the attendant emotional benefits. Again, it's this idea that an inner-directed, self-interested, or self-absorbed focus subverts interpersonal synchrony. Moreover, people who are in conflict tend to develop fixed ideas about their rivals or opponents, particularly over the long term. Entrenched neural patterns aren't as easily entrained to external rhythms. Put another way, neural synchrony requires a degree of flexibility or plasticity in one's thinking.

However, the success of programs such as the Jerusalem Youth Chorus, which brings together Israeli and Palestinian youths to play music, suggests

synchronous activities can forge bonds even between divided factions. So it's unclear whether Democrat Alexandria Ocasio-Cortez and Republican Mike Johnson would develop a more cooperative working relationship if required to dance a tango together on the floor of the US House of Representatives. Or whether Britain's Prince William and Prince Harry would resolve their differences if they teamed up to row a double scull. The research indicates they would most certainly achieve some degree of interpersonal synchrony. But how much, on what level, and to what effect is difficult to predict given how entrenched and resistant they might be. If the power of such an intervention is dose-dependent, as many researchers believe, then it might take a lot of dancing and rowing. Still, wouldn't you just love to see them try?

Synchrony and Social Contagion

HOW EMOTIONS, ATTITUDES, BELIEFS, AND BEHAVIORS ARE “CATCHING”

In December 2020, a man pulled up to the drive-through window of a Dairy Queen in Brainerd, Minnesota, just north of Minneapolis. With his words forming condensate puffs in the frigid air, he told the cashier that in addition to paying for his own order, he wished to pay for the order of the person in line behind him. This led to an unbroken chain of generosity, each drive-through customer paying for the next, that lasted for two and a half days, involving more than nine hundred cars and sales of around \$10,000.

“It kinda restores your faith in humanity,” said one customer whose family’s dinner was paid for by a stranger and who, in turn, paid for the stranger in the car behind her.

The manager of the Dairy Queen, Tina Jensen, was struck by how one person could have such a positive impact on so many people, particularly during the fretful depths of the COVID-19 pandemic. Her employees, who were not directly benefiting from their customers’ generosity, were swept up in the good cheer, and the feeling spread throughout the wider community. Locals reported that it seemed like everyone was nicer and in a better mood. “I think this touched a lot of people that we didn’t even know it touched, deeper than we know,” Jensen said.

While the Brainerd Dairy Queen can boast one of the longest unbroken chains of generosity recorded, the so-called pay-it-forward phenomenon has been the subject of media reports since at least 2013. As someone whose meal was once paid for at a Chick-fil-A drive-through in New Braunfels, Texas (thank you, driver of a Ford F-150), and then paid it forward for someone else (you’re welcome, driver of a Toyota Camry), I can testify that

it does indeed renew your faith in humanity. It also represents a pervasive knock-on effect of interpersonal synchrony: social contagion.

Social contagion is syncing at scale, where emotions, attitudes, beliefs, and, ultimately, behaviors, spread like an infectious disease throughout social networks and entire populations. The result is that people begin to behave less like individuals and more like a synchronized superorganism. Unpredictable and orders of magnitude more complicated than peer pressure, social contagion has elements of what mathematicians and meteorologists call the *butterfly effect*, where the flap of a butterfly's wings might ultimately cause a tornado.*

When social contagion tips into the bizarre, the *Diagnostic and Statistical Manual of Mental Disorders*, or *DSM*, calls it “mass hysteria” or “group psychosis,” as when an order of French nuns started meowing like cats in the Middle Ages. There was also the June bug plague in 1962, when workers at a textile mill in South Carolina suffered from mysterious fainting fits, nausea, and rashes that they attributed to malicious June bugs. Entomologists dispatched to the scene failed to find any.

In this century, there have been multiple regional outbreaks of Koro (Malay for “head of a turtle”), which have caused thousands of men in China, Southeast Asia, India, Africa, Europe, Canada, and the United States to believe, without any objective or observable evidence, that their penises were withdrawing into their abdomens and that they would die once the retraction was complete.

But social contagion also contributes to more familiar phenomena, such as fad diets, political movements, religious revivals, and the kind of collective grief that leads to piles of flowers and teddy bears following high-profile deaths. It drives swings in stock and commodity markets, provokes bank runs, and causes panic buying of consumer goods such as toilet paper and chocolate.

The effects can be positive, like what happened at the Brainerd Dairy Queen and other rolling acts of altruism, such as Ice Bucket Challenges to support medical research and relief drives following natural disasters. But social contagion can also be incredibly negative, propelling waves of copycat suicides, epidemics of crime and violence, and Greek chorus-style persecutions, on- and offline, that destroy reputations and careers.

In the same way epidemiologists track the evolution and transmission of variants of COVID-19 and the flu, social science researchers have done

contact tracing to figure out the seeding and spread of social contagion. They've looked at the transmissibility of happiness, depression, loneliness, fitness, obesity, smoking, alcohol consumption, divorce, health screening, snacking and sleeping habits, sexual behavior, political views, and tastes in books, movies, and music. What they found was that like the spread of any infectious agent, the pace and efficiency of social contagion depend on: 1) viral load, or the intensity of exposure, 2) the immunity, or resistance, of the exposed person, and 3) the type of exposure, including the duration and proximity of the contact.

While you can catch a cold from anyone, regardless of your relationship or lack thereof, several studies indicate your susceptibility to social contagion is in many cases greatest if your contact is within three degrees of separation—meaning you are more likely to be infected by the moods, attitudes, beliefs, and behaviors of your friends, your friends' friends, and your friends' friends' friends. Everyone in Hollywood may be connected to Kevin Bacon by six degrees of separation, but your particular sphere of social influence might be a more limited three. Nevertheless, when each contact can have an impact within three degrees, and contacts within those three degrees can sway contacts within another three degrees, that is more than enough for social contagion to rip through a population like wildfire.

This makes sense given research shows that the neural patterns of friends are more aligned than those of strangers. In fact, in one study, the closer subjects were as friends, the more synchronous their brain activity while watching various videos (of baby sloths, an unknown couple's wedding, and a debate over whether to ban college football). It isn't just that people tend to gravitate toward those who have similar sensibilities. It's also that the more time people spend interacting with one another and the more coordinated their activities, the more synchronized their brain patterns become even when they are apart. When people are of like minds, as friend groups within three degrees of separation tend to be, they are more easily influenced by one another's thoughts and emotions.

Of course, you tend to be more susceptible to social contagion if you admire and trust the contact, regardless of degrees of separation or position in your social network. If you sit next to your crazy Uncle Larry at Thanksgiving, your risk of catching the flu from him is likely greater than being swayed by his conspiracy theories, no matter how much affection you

might have for him. Someone more distant, but more credible, might have more influence.

But you don't have to know the person at all. Social contagion can spread effectively among total strangers, particularly if it reaches critical mass, as demonstrated in 1968 by Stanley Milgram in his famous sidewalk experiment. On two cold winter afternoons in New York City, he observed 1,424 pedestrians react to a varying number of his research assistants looking up at a window on the sixth floor of a nearby building. When only one of his assistants stopped and looked up, 42 percent of passersby looked up. But when fifteen assistants stopped and looked up, 86 percent of pedestrians also looked up.

In general, the larger and denser the crowd, the more intense the signal, and the greater potential for social contagion. The synchronizing of emotions that leads to stampedes at music concerts and religious gatherings occurs in a flash because of both the numbers of people and the strength of the emotion—in this case, panic. Negative emotions are thought to spread more quickly and more widely than positive ones. Evolutionary psychologists and anthropologists theorize that it's a safety mechanism developed during more primitive times. If there was a tiger on the prowl, there wasn't time for group discussion or even waving or pointing. The fear was palpable and put you on edge. As soon as people started running, without hesitation, you ran, too.

Anyone who has been in a massive crowd—maybe at an outdoor festival, sporting event, or political demonstration—knows the power of group mood and how quickly sentiment can shift. Collective emotion vibrates in your solar plexus and buzzes in your brain. For many, the resonant vibe can be overwhelming. It's just too much. Surveys suggest it is one reason why drug use is so prevalent at concerts and other large events. It helps people relax and calms their nerves when buffeted by a tide of human energy.

Crowd contagion can arise organically or be conjured by a charismatic leader. Winston Churchill and Martin Luther King Jr. as well as Adolf Hitler and David Koresh were known for their ability to stir audiences to swells of emotion and subsequent action. Such charismatic figures tend to have a commanding presence, intense gaze, and rhythmic oratorical style—rich voices dramatically heightened by very practiced and intentional tempos, pauses, and crashing consonants.

Charismatic leaders also tend to engage their listeners' imaginations through the use of canny metaphors that get everyone on the same wavelength. For example, referring to the rise of Nazism in Europe, Churchill said: "A baboon in a forest is a matter of legitimate speculation; a baboon in a Zoo is an object of public curiosity; but a baboon in your wife's bed is a cause of the gravest concern."

Moreover, unlike viruses, the emotional effect of such language does not require an incubation period. The transfer of moods, in particular, can be immediate and can burn out in seconds or last for days, depending on the intensity of the feelings and how close, physically and emotionally, you are to the contact.

When it comes to the transmission of beliefs and behaviors, however, social psychology and marketing research indicates it may take more than one exposure to take hold, particularly if you are otherwise indifferent or indisposed. You might not buy a book based on one contact's recommendation, for example, but if three contacts tell you it's worth reading, you'll likely go ahead and get it.

Also unlike viruses, social contagion can occur through both in-person and online contact, often one reinforcing the other. This was demonstrated by a controversial experiment conducted in 2012 involving nearly seven hundred thousand Facebook users whose news feeds were filtered so that they saw either more positive or more negative emotional content. The resulting paper, published in the *Proceedings of the National Academy of Sciences*, was titled: "Experimental Evidence of Massive-Scale Emotional Contagion Through Social Networks."

Facebook users whose news feeds contained more positive content were in turn more positive in their own posts. The same thing happened on the negative side—more angry or dispiriting content provoked more angry or dispiriting posts. Interestingly, those who were exposed to fewer total posts (positive or negative) were less expressive overall, indicating withdrawal and detachment can also be catching.

The Cornell University researchers who collaborated with Facebook on the study were roundly criticized at the time for conducting the experiment without informed consent. Lawyers, ethicists, and politicians called it "scandalous," "spooky," and "disturbing." Fellow scientists found fault with the researchers' methods, as well as the data analysis. Facebook users themselves were apoplectic. But it's hard to tell whether the furor was

because Facebook users didn't know about the experiment or because they and their defenders didn't know, or didn't want to know, how easily they, and indeed all of us, could be played—a fact nation-states and political interest groups have since exploited repeatedly in their own subversive online manipulation campaigns.

And that's the rub of social contagion and interpersonal synchrony more generally. People resist any suggestion that they are susceptible. Other people, maybe—the uneducated, the unthinking, the unsophisticated—but not them. It calls into question the very nature of free will. It also suggests a disconcerting responsibility for other people's feelings and behavior. What we say and do, or don't say and don't do, has measurable ripple effects.

Friedrich Nietzsche wrote: "Madness is something rare in individuals—but in groups, parties, peoples, and ages, it is the rule." Where does that leave us when no one living in today's hyperconnected society is outside the influence of groups, parties, people, and ages? Every day and all the time, on- and offline, we tune in and, to a greater or lesser extent, synchronize physiologically, emotionally, and behaviorally with others in spite of ourselves. It's not good or bad. It's just what humans, as socially evolved creatures, do. And yet, because we internalize or embody other people, we insist that the motivations, ideas, attitudes, and emotions that drive our behavior come not from outside influences but arise from within. After all, it certainly feels that way.

The resistance to believe in the existence and power of social contagion is something Nicholas Christakis knows well. As a physician, professor, and researcher who studies social networks and biosocial science at Yale University, he has devoted much of his career to figuring out how we influence one another in order to develop population-level health interventions. His interest in the field began while caring for terminally ill patients and their families. He noticed the toll the illnesses took on his patients' loved ones, particularly how spouses often also fell seriously ill and died. It made him wonder how far-reaching this effect was.

As Christakis wrote in his book *Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives*: "A man's wife has a best friend who has a husband who has a coworker who has a sibling who has a friend, and so on and so forth. These chains branch like lightning bolts, forming intricate patterns throughout human society ... If we affect

our friends, and they affect their friends, then our actions can potentially affect people we have never met.”

For Christakis, it’s not just that our spouses’ health and happiness profoundly affects our own health and happiness, or that students with studious roommates become more studious, people dining with voracious eaters eat more food, or homeowners whose neighbors have nice landscaping wind up with tidier lawns (all true). It’s also the reverberation and magnification of these influences through social networks and how we can harness the human instinct to sync for our own and society’s good.

Christakis’s voluminous research is fascinating. He and his collaborator, James Fowler, a geneticist and social science researcher at the University of California San Diego, were the first to hit upon the three degrees of influence phenomenon mentioned above. Christakis’s group has also shown, both in large-scale controlled experiments, as well as analyses of massive publicly available datasets, the many ways we are not as independent or original in our moods, thinking, and behavior as we might suppose.

“I think people are willing to accept this idea of social contagion in some settings and not in others,” Christakis told me. “Most people would recognize that there is such a thing as fashion, that fashion spreads, or slang and mannerisms spread, but then we become a little more resistant to the claim when it comes to things that seem more personal—the classic example is suicide—or that we might be influenced by our friend’s friend’s friend, whom we have never even met.”

People are also more willing to accept that positive moods, attitudes, beliefs, and behaviors are contagious than more negative, or socially sensitive, ones. Christakis and Fowler got little, if any, flak when their research revealed altruism and happiness are by degrees contagious. But there was a firestorm when their data suggested the same might be true for obesity and depression. So much so that the duo was moved to publish a point-by-point rebuttal to critics. The matter became somewhat moot as a subsequent stream of studies by other researchers was published confirming their findings using other datasets and other kinds of analyses, as well as via controlled experiments.

The proof, too, has been in real-life applications. Christakis and colleagues, with funding from the Gates Foundation and the Indian multinational conglomerate Tata Group, tested a social contagion strategy

for promoting the adoption of iron-fortified salt in fifty residential buildings, known as *chawls*, in Mumbai, India, where iron-deficiency anemia is a serious health problem. They found that by targeting influential female friend pairs, identified via an algorithm that analyzed contact behaviors, they were able to, in effect, seed a cascade of iron-fortified salt use in the various chawls, more so than randomly targeting women singly.

Christakis and colleagues have also had success with a novel pay-it-forward strategy encouraging gonorrhea and chlamydia testing among men who have sex with men in China. Men who were told that someone who cared about them had covered their testing fees, and were given the option to pay for someone else's test, were significantly more likely to get tested than those who were told they could pay whatever they wanted for the test or who were quoted the standard price of the test.

"We showed that we could create artificial tipping points," said Christakis. "This is what I have devoted my life to—figuring out how to induce desirable behaviors at scale."

Of course, social contagion has been leveraged in addiction recovery and youth mentoring programs for decades. Participants are surrounded by people who share their goals and objectives and are encouraged to limit their exposure to people whose habits and lifestyles would tempt them to get off track. Dr. Nora Volkow, director for the National Institute on Drug Abuse, describes drug and alcohol use as "very much of a group dynamic." Alcoholics Anonymous advises its members to cut ties with friends, particularly old drinking buddies, who are triggers. As one AA member told me: "You hang around a barbershop long enough, you're going to get a haircut."

And then there are marketers and online influencers who attempt, with varying degrees of success, to use social contagion, or virality, to get us to buy stuff. Sports psychologists and business consultants, too, are often hired to help "infect" teams and organizations with enthusiasm, diligence, and grit or, perhaps, root out bad apples who might be contaminating coworkers with pessimism, lethargy, or indolence.

"If you look at a work team, or any group of people, say you go to someone's house, it's like, 'Who is the influencer here?' 'Who is the tuning fork?' 'Who sets the tone?'" said executive coach and business consultant Kristin Meek, whose clients include the New York Times Company, the World Health Organization, the Smithsonian Institution, Capital One, and

the International Monetary Fund. “Whoever that perceived leader is—sometimes it’s not the actual designated leader, sometimes it’s the social leader, the one who has the underbelly of social connections—that is the person we physiologically sync to and who shapes our behavior.”

But as both Christakis and Meek can attest, identifying the true leaders and influencers in networks is not always easy, nor is it easy to predict the resistance of individuals within networks who, in their defiance, might then become influencers themselves. While most social contagion research has focused on convergence of moods, attitudes, beliefs, and behaviors, there is also a phenomenon known as *counter-contagion*, where people, rather than getting swept up in a wave of sentiment, swing the other way.

These people might be called *contrarians*, *rebels*, *disrupters*, or *nonconformists* for going against the grain. But if you drill down, disrupters are often profoundly influenced by other disrupters in a smaller, highly contagious cluster, who stoke one another’s oppositional personalities and attitudes. Rather than breaking the mold, they fit the mold of the iconoclasts with whom they associate.

Some theorists propose that social contagion, like viral contagion, is cyclical. Things can only go so far one way before swinging back the other way. We’ve seen this play out in politics and culture, which have historically seesawed between conservatism and liberalism. To quote the former head of the UK’s armed forces General Sir Nick Patrick Carter: “History doesn’t repeat itself, but it has a rhythm.”

While revolutionary leaders are often credited with effecting change, it often has more to do with the oppositional wave they happened to ride. They might have had the same ideas and used the same tactics at other times and failed spectacularly. “Their success lay in their parallelism to the course of thought, which found in them an unobstructed channel; and the wonders of which they were the visible conductors seemed to the eye their deed,” wrote Ralph Waldo Emerson.

One of the most famous examples of counter-contagion occurred in the 1950s when Boston lawyer Joseph Welch called out US Senator Joseph McCarthy, then at the height of his power and notoriety due to his inflammatory rhetoric and prosecution of suspected communists. When during a televised hearing McCarthy charged that one of Welch’s colleagues was a communist, Welch responded: “Let us not assassinate this lad further, Senator. You have done enough. Have you no sense of decency?” As if

Welch had flipped a switch, Americans turned on McCarthy. His prestige evaporated overnight.

It's arguable that the pendulum at this point had swung too far in McCarthy's direction and Welch's pushback turned the tide at just the right time. After four years of McCarthy's fearmongering, Americans were tired. McCarthy had also picked an ill-advised fight with the US Army, accusing it of lax security and other un-American activity. Welch was representing the army.

Of course, today such dramatic shifts in public sentiment occur at warp speed on social media, often over matters of much less consequence. Users can be whipped into an emotional frenzy over an issue one minute only to drop it or swing the other way the next.

Indeed, the pay-it-forward phenomenon had its own counter-contagion moment in 2022 when a TikTok user recorded her reason for refusing to pay it forward at a Starbucks: "So you're telling me that these people were shamed and caught into this conga line of morality that they had to give the gesture back? I'm not that girl. I deserve to have a good day. I deserve to have this free sandwich." Her video got a quarter of a million likes. Starbucks employees have similarly spoken out against paying it forward, suggesting customers should be giving them larger tips instead.

Studies suggest that perceived similarity or identification with a person or group is a key determinant whether we catch other people's moods, attitudes, beliefs, and behaviors. The TikToker didn't identify with the other people paying it forward, because she felt she was somehow more worthy or deserving of a free meal. Welch likewise didn't identify with McCarthy and his supporters, although his reasoning appeared decidedly less self-serving. He was taking up for his colleague. He was also representing the army. Either way, the instinct to sync is so powerful, it almost takes a saint or sociopath to resist it. If the defiance is well timed, the result is another wave of social contagion as people follow the oppositional leader's example.

Which brings us back to the complexity of social contagion. As with viral contagion, the source and spread of social contagion are difficult to trace and precisely track. What is certain is that social contagion, and its driver, interpersonal synchrony, occurs in ripples and waves all around us, all the time. Within our families, at work, online, or out in the wider world, social contagion daily affects how we feel and what we do.

As much as you may consider yourself an individualist, unmoved by outside influences, if you are human, you are subject to social syncing and social contagion, which, depending on the situation, can be to your benefit or detriment. You can observe this in yourself by noticing your feelings and questioning where they came from. Are you feeling anxious or irritable because of something actually happening to you, or are you uneasy because of something someone else is feeling or doing on- or offline? Are you refusing a proffered cookie or having another glass of wine because you want to or because those around you are? Did you laugh at a joke because it was funny or because other people laughed? In other words, how second- or thirdhand are your feelings?

Also notice whether your mood or behavior is more changeable around certain people or in certain settings than in others. It's not an easy practice, because most people don't stop to check in with themselves even to recognize their own feelings, much less their origin. Or if they have a genuine feeling, good or bad, they may not realize someone near them may compound or diminish it.

Is there someone in your life who dampens your joy? Intensifies your distress? Fuels your outrage? What about people who, when you're with them, make you feel more confident, capable, or optimistic, or maybe just calm you down? Think about it. Are there certain individuals with whom you tend to feel things or do things you don't ordinarily? What do they stir up in you? Go through your contact list, look at who you follow online, and ask yourself: Does this individual make me a better or worse person? Awareness is key to breaking free of synchronies that aren't working for you.

At the same time, realize that your moods, attitudes, beliefs, and behaviors can affect others as subtly, or as profoundly, as they affect you. Honestly assess whether you bring out the best or worst in people with whom you interact or who may read your posts online. Think about what in you they may be syncing to. Also keep in mind that your energy, or your vibe, can radiate well beyond those with whom you interact. A sarcastic comment or kind word can echo in people you don't even know.

Like a tornado that results from the beat of a butterfly's wings, something as seemingly insignificant as smiling at a stranger or waving someone in ahead of you in traffic can trigger a chain reaction of goodwill, just as a stony stare or cutting comment can reverberate negativity in untold

directions. To downplay or dismiss this effect is to deny human nature and deny your power on a daily basis to leave the world better, or worse, than you found it.

Interoception

YOUR BODY'S SYNCING SENSE

It was the late 1960s, and it was standing room only in an auditorium at Massachusetts Mental Health Center, a.k.a. “Mass Mental,” in Boston. All eyes were on the dais, where two men sat, side by side, talking. The audience, comprised of psychiatry residents, social workers, and nurses, leaned forward in their seats so as not to miss a word that passed between the two men.

One of the men was psychotic, and the other was Dr. Elvin Semrad, Mass Mental’s storied clinical director. Only the psychotic man wasn’t ranting and raving as usual. He was rationally and reasonably conversing with Semrad, as if they were two old friends sitting on a park bench. And that was why the audience was riveted. Semrad had done it again.

Founded in 1912, Mass Mental was, until it was demolished in 2011, one of the oldest mental hospitals in the United States. For nearly one hundred years, its hulking brick edifice housed all manner of severely depressed, delusional, demented, and sometimes dangerous patients. Yet despite the difficult cases and the old hospital’s peeling paint and dingy feel, the best and the brightest in psychiatry competed to train there during Semrad’s twenty-year tenure, which ended in 1976. He was found dead in his office. His big heart had given out.

A roly-poly Santa Claus figure, Semrad today has mythic status in psychiatric and psychoanalytic circles, not because he discovered a disorder or developed a grand theoretical framework but because of his ability to connect with people thought too far gone; the craziest of the crazy. Semrad was, by all accounts, a master of interpersonal synchrony. And nowhere was his skill more evident than during so-called case conferences, when

residents would present their most intractable cases to Semrad as the rest of Mass Mental's clinical staff looked on.

Part scientific exposition, part performance art, and part religious experience, these case conferences awed a generation of psychiatry trainees, many of whom, now in their eighties, still marvel, misty-eyed, recalling how Semrad could drive demons from patients no one else could reach. While presenting someone struggling with mental illness before an assembly might seem sketchy by today's standards, Semrad was so unfailingly courteous, and the results were so profoundly positive, few questioned it at the time.

"Repeatedly, I watched him interview patients that I had been working with for several months, only to find the patient telling Dr. Semrad things that the patient had never told me," recalled Dr. Jerome Gans, who trained under Semrad from 1968 to 1971 and later taught at Harvard Medical School. "This caused me to wonder, 'What is it about me that keeps my patients from telling me this highly personal information?' 'What am I unwittingly doing to impede rather than enhance the progress of therapy?'"

And what was it about Semrad that made him able to so effortlessly connect? According to the recollections of former residents, Semrad was a kindly, yet firm, presence; an anchor in their tumultuous world. You not only felt an immediate connection with him but also a sense of grounding and safety. Maybe it had something to do with his earthy upbringing on a farm in Nebraska. He knew bullshit when he saw it. His disdain for medical jargon and psychobabble belied his board certifications in both neurology and psychiatry. He spoke plainly yet eloquently: "Pretending that it can be when it can't is how people break their hearts."

Leaning back in his chair, pipe in mustachioed mouth, palm planted meditatively on his jowly cheek, he had an extraordinary capacity for focusing intently and unhurriedly on whomever he was with. He telegraphed that he wasn't going anywhere, and his comments and questions revealed a startling insight into the person he was addressing, even if the person he was addressing was certifiably insane.

"Psychopharmacology and neuroimaging can do amazing things for people who need certain types of treatments, but it really doesn't pay attention to the kinds of things people are feeling," said Dr. Harvey Mazer, a psychiatrist who trained under Semrad from 1965 to 1969 and later coedited a collection of his mentor's wit and wisdom titled *Semrad: The*

Heart of a Therapist. “Someone can have schizophrenia and they can have delusions and hallucinations, but they are still a person who is trying to live with what they have and find meaning,” Mazer explained. “Semrad had this feeling, this instinct, this ability, that helped him to get to know the real person, whoever they were, and whatever they were going through, so they were not just the laboratory numbers the person happened to have.”

Semrad called psychotropic drugs “chemical straitjackets” that dissociated patients from their bodies and hence their feelings and ability to effectively cope and connect with others. To residents he thought were too quick to prescribe medications, he said, “How is it that you cannot sit with this patient?” Semrad would likely roll in his grave if he knew that today nearly a quarter of all Americans take prescriptions for mental health issues, many after a cursory evaluation on a mental health app.

While Semrad thought medications were no doubt indicated in some situations, and certainly he’d have a wider array of drugs to choose from today, he also knew that doctors often reached for them because sitting and syncing with a patient takes time and also courage, since, as discussed in the previous chapter, anxiety, depression, and despair can be contagious.

It’s an occupational hazard of anyone working in the helping professions and the chief cause of burnout. Today, there is also the issue of health insurance, which is more likely to cover psychotropic drugs than psychotherapy because the drugs are cheaper, despite questions about their safety and effectiveness.

Nevertheless, the very purpose of the psychotherapeutic relationship is to serve as a proxy or model for the functional, secure relationships the patient lacks, or their mental illness has upended. Semrad masterfully demonstrated, and subsequent research has established, that interpersonal synchrony between patient and therapist can effectively regulate the patient’s physiology and hence emotions. A widely cited discourse on the topic was published in 2020, titled “In Sync with Your Shrink.” Again, it’s that idea of co-regulation, or psychobiological balancing, discussed in chapter 2, where interacting partners can restore one another to a stable equilibrium.

During the spellbinding case conferences at Mass Mental, Semrad would have patients take him on a “tour of the body” to understand where physically they were putting their feelings. Did they feel a tightness in their shoulders? Heaviness in their chests? Butterflies in their stomachs? In

effect, Semrad was helping patients have better interoception, which is the ability to sense one's internal physiological state.

"This is what makes the difference, the tissues of the persons involved," Semrad said, "not the fancy thoughts upstairs." Another one of his students, Dr. Bessel van der Kolk, expounded upon this idea in his book *The Body Keeps the Score*. Your body's trillions of oscillatory cells falling into and out of synchrony with one another and with rhythms picked up from the outside world are what your brain construes as your feelings. And your feelings are the primary driver for everything you do, whether it's eating a sandwich, putting on a sweater, starting up a conversation, or having sex.

Semrad intuitively knew what a growing body of research now suggests: A disconnect between the body's signals and the brain, or the brain's faulty interpretation of those signals, underlies a range of mental health conditions, including anxiety, depression, panic disorder, eating disorders, addiction, post-traumatic stress disorder, obsessive-compulsive disorder, attention deficit hyperactivity disorder, and schizophrenia.

Our emotions are not like the cartoon characterizations manning the brain's control center in the Pixar film *Inside Out*; they are the result of bodily sensations that our brains then interpret as our emotions, and those interpretations, accurate or not, determine what we subsequently do. What does it feel like when you are afraid? Do you feel it in your face? Stomach? Knees? Chest? Genitals? Feet? Does it feel hot or cold? Prickly or numb? Emotions feel different for different people, just as people feel hunger differently. Some may feel it as a hollow ache in their stomachs, while others might feel tired or tetchy.

Problems arise when we become insensitive to, or misconstrue, those inner cues coming from our chests, stomachs, feet, genitals, or wherever. For example, we may mistake a gnawing emptiness or lethargy for hunger when boredom or loneliness is the true culprit. Worse, in terms of mental health and general social function, is when people are so disconnected from their bodies that they cannot synchronize physiologically with other people. Or if they do synchronize, their brains misread or mistrust the interoceptive signal.

People suffering from mental illness often avoid acknowledging what they feel, or they try to divorce themselves from their bodies because it's too scary or too painful to feel what they feel, often due to trauma. If someone's previous relationships were abusive, for example, syncing with

another person physiologically and emotionally might feel frightening rather than comforting.

“When did you decide to turn off your feelings?” Semrad once asked a Mass Mental patient. By reintroducing patients to their bodies, Semrad was helping them acknowledge and get beyond the discomfort that was alienating them from themselves. In the case of schizophrenics, he was also helping them keep what was going on inside and outside their bodies clearly defined.

When patients returned to their bodies and felt what they were feeling, they were then able to perceive and fall into comfortable synchrony with Semrad, whose kind and accepting presence calmed them and made them feel safe. That’s the neurophysiological explanation for what was going on, but according to those who witnessed it during the case conferences, it was more like magic. “Suddenly the patient did not seem odd or even sick as Semrad reached and shared the patient’s suffering of life and love,” recalled Dr. Leston Havens, now deceased, who was in charge of medical student teaching at Mass Mental. “Suddenly there were just two human beings groping toward some perspective on the human condition.” In Semrad’s words, “We’re just big messes trying to help bigger messes, and the only reason we can do it is that we’ve been through it before and have survived.”

Current therapies to improve interoception are an elaboration on Semrad’s tour of the body, where patients become more in tune with themselves by engaging in activities that make their internal signals more pronounced. Under the supervision of a physical therapist or psychologist, they may do jumping jacks to raise their heart rate so they can more easily count the beats. Then they receive feedback on their accuracy, even as their pulse returns to baseline, using devices similar to electrocardiograms or pulse oximeters hooked up to flashing lights or tones to give them visual or auditory cues.

“We divide our curriculum into fifteen different body parts, starting with outside body parts like hands on a stress ball, and then we work our way into how your stomach feels, how your bladder feels, how does your heart feel,” said Kelly Mahler, an occupational therapist in Hershey, Pennsylvania. The internal survey occurs both when the various body parts are at rest and when activated by, say, eating, drinking, or exercising.

Mahler’s specialty is helping neurodivergent adults and children improve their interoceptive attention and accuracy. People with autism and

other developmental disorders tend to be disconnected from, or overwhelmed by, their interoceptive signals, which impedes their ability to achieve and sustain interpersonal synchrony. By contrast, people who score higher on interoceptive accuracy tests like, say, counting their own heartbeats or precisely reporting when fluid they drank first hits their bladder, tend to more easily sync with others and, as a result, may more accurately interpret and empathize with other people's emotions.

So it's not surprising that research shows that people with good interoception tend to be more resilient when put in challenging social situations. They have also been shown, both in experiments and in real life, to make sounder financial decisions. One intriguing study recruited high-frequency traders of futures contracts at a London hedge fund and found that those who had better interoception (measured by how accurate they were at detecting their heart rate) made more money. It also predicted how long they stayed on the job.

Experts suspect that our modern culture of busyness and distraction is playing havoc with our powers of interoception. For many, it is a way of life, if not a badge of honor, to ignore bodily signals to rest, eat, or even to give and receive love: *I'll get to it after I close this deal, write that report, play another round of Fortnite, post on social media*. People often rely more on biometric apps on their phones or fitness trackers to tell them how they are doing than on surveying their internal landscape to discover how they actually feel, the potential causes, and what they should do about it.

Whereas interoception is a dynamically integrated whole-body surveillance system, wearable fitness trackers offer a reductionist, abstract, and fragmented view of the body, based on numbers, graphs, and statistical depictions, which may not be all that accurate or easy to interpret. Research indicates such a quant or numerical approach to body consciousness can diminish interoceptive ability and exacerbate neurotic, obsessive-compulsive, and hypochondriacal tendencies. Fitness trackers have also been shown to lead to feelings of disembodiment and body dissatisfaction. After first embracing fitness-tracking devices and apps, many elite athletes are now abandoning them because they say they are a distraction, disconnect them from their bodies, and psych them out, thereby degrading their performance.

"The challenge in the [scientific] literature is a lot of times people have focused on how accurately an individual perceives the state of their body

and less on how often they are actually paying attention to the status of their body,” said Dr. Sahib Khalsa, an associate professor and director of anxiety disorders research at UCLA. “It’s like trying to figure out if someone needs corrective lenses by asking, ‘Can you see what’s on the page?’ when you really should be asking, ‘Are you even looking at the book?’”

It’s essential because we can only read what’s going on with others to the degree we can read what’s going on within ourselves. Empathy arises from embodiment of another’s feelings. But it breaks down if you’re insensitive to the signals within your own body. Of course, it would be maladaptive for us to be aware of every whoosh, rush, tug, and tickle going on within us. Anechoic chambers, where it is so quiet all you can hear is your own bodily noises, tend to make people feel as if they are going mad. Only a very few people have been able to last more than an hour in one.

There’s some evidence that flotation therapy might also heighten interoceptive awareness only without making you feel like you are losing your mind. Flotation therapy—now available at a strip mall near you thanks to a proliferation of commercial flotation therapy spas—involves floating in a dark and very quiet ovoid chamber (imagine a giant egg), which is filled with salty water warmed to near body temperature. With external sensory inputs of hearing, touch, vision, and even the pull of gravity neutralized, people tend to become hyperconscious of their internal symphony, much like in an anechoic chamber, just not as acutely.

Sleep, too, may improve your interoceptive ability. As if you needed another reason to get a good night’s rest, researchers are now beginning to think that the function of REM sleep may be to help us better “learn” our bodies. They hypothesize that the muscular twitching and darting eye movements that characterize REM sleep, while the rest of the body is effectively paralyzed, may actually be discrete test signals meant to help us better perceive and interpret where sensations are coming from and give us better interoception during waking hours.

According to Mark Blumberg, chair of the Department of Psychological and Brain Sciences at the University of Iowa, our nightly twitching (and the twitching of other mammals he’s studied) is most important during infancy when we’re trying to build our “sense of self.” But it continues throughout our lives as our bodies grow and change, suffer injuries and illnesses, form new motor memories, and acquire new skills.

Richard Palumbo, a psychotherapist and pioneering researcher in the field of interpersonal synchrony, thinks improving your interoception could save your marriage. He and his collaborator, Oliver Saunders Wilder, a specialist in personal health informatics at the Massachusetts Institute of Technology, are currently testing a kind of biofeedback device that relies on electrodermal, or skin conductance, sensors to not only heighten individual interoceptive awareness but also show couples in real time the degree to which they are physiologically in sync, and whether that is a good or bad thing, depending on the circumstances.

“Part of couples therapy is interrupting the dynamics between couples and talking it through and pointing out what just happened and how that affected people,” Palumbo told me. Real-time biometrics takes him, as the therapist, out of the melee. “I don’t have to say, ‘Hey, you looked upset,’” Palumbo said. “I can point at the monitor and say, ‘Hey, you just had a big physiological reaction, and that affected your partner.’”

I was intrigued but skeptical. How much can electrodermal activity really tell you about a couple’s interpersonal dynamics? And wouldn’t the very fact that people were hooked up to a machine change their physiology, not to mention their behavior? To find out, I traveled to Hope Valley, Rhode Island, where Palumbo practices. Saunders Wilder drove down from Massachusetts to help with the demonstration.

Of course, there were all kinds of ethical and HIPAA reasons why I couldn’t observe the electrodermal activity of a couple whose relationship was on the rocks, not least because the technology is still in beta testing. Which is why, on a rainy Saturday in an office tucked deep in the woods, I found myself with an electrodermal sensor clipped to my index finger and an identical one clipped to Palumbo’s finger.

You have sweat glands all over your body but in particular concentration on your fingertips, making them ideal locations for electrodermal sensors. One of the things your sympathetic nervous system controls is sweat glands, which is apparent when you’re stressed and your armpits or palms perspire. Less obvious is the constant release and reabsorption of moisture on your fingertips due to subtle changes in physical and emotional demands.

Moisture, particularly salty water like sweat, is a good conductor of electricity. It’s why lifeguards at the beach order you out of the water when

a thunderstorm approaches.

What electrodermal sensors do is send repeated half-volt electric pulses that pass from one electrode to an adjacent electrode. The amount of resistance, depending on how much moisture is on your fingertip, indicates your sympathetic nervous system activity (i.e., your arousal).

Electrodermal sensors have been around for decades. What's unique is how Palumbo and Saunders Wilder analyze, interpret, and visualize the data the sensors capture in near real time to assess the level of synchrony between two or more people. It's not as simple as overlaying multiple signals because everyone's baseline electrodermal activity and reactivity is different. Plus, there are confounding factors like whether the person is wearing moisturizer and the thickness of their skin. You also need to consider how often synchrony might occur just by chance.

Basically, Palumbo and Saunders Wilder have figured out a way to statistically and algorithmically compute a kind of correlation coefficient between interacting parties. "If my data, what's happening in me, is predicting what's about to happen in you above and beyond what your own data would predict, that's what we're counting as how much I am affecting you and vice versa," said Saunders Wilder, who is bearded and burly and partial to plaid flannel shirts. In aggregate, over time, you see not only the degree to which people are in sync but also each person's interpersonal influence.

So, on that rainy Saturday in Hope Valley, as Palumbo's and my electrodermal activity traced across an enormous monitor, Saunders Wilder was able to easily see and provide running commentary on the extent to which his buddy and I were getting along. I know. Awkward.

But as our conversation progressed about both the technology and their intertwined professional and personal lives, I became less and less aware that my inner workings were on full and potentially embarrassing display. I was only reminded when Saunders Wilder periodically paused the biometric feed and pointed out something. It was kind of like when they stop and replay footage during a football game to analyze what happened.

Perhaps because I had met Palumbo—salt-and-pepper hair, athletic build, kind eyes—for coffee the previous day and we'd had two lengthy telephone conversations before that, our signals had significant overlap. It felt to me like we had on some level connected, which often happens when

I interview people in depth. But the monitor confirmed this, as our signals were remarkably in sync.

Even more interesting were the moments when our signals diverged, as when Palumbo and Saunders Wilder shared an inside joke. It wasn't at my expense or anything, but still, I was left out, and a blip in my electrodermal activity showed it. And later, about an hour into the demonstration, I got anxious that my phone might have stopped recording our conversation. But I was also worried that I'd appear rude if I checked my phone while they were talking.

At that point, my signal ran away from Palumbo's like a hare from a fox. Even though my posture and expression remained outwardly the same, Palumbo evidently picked up on my unease, and his arousal level increased. He had become more vigilant. During the replay, he said he felt something was off but he didn't know what.

A less self-aware person than Palumbo wouldn't have consciously clocked what was happening within his body. Moreover, were he an insecure and easily provoked type, a similar spike in arousal might have triggered default feelings of rejection, annoyance, irritability, or anger toward me, which might have tripped me into giving as good as I got, neither of us quite knowing where our feelings were coming from.

You can see how easily mixed or misunderstood interoceptive signals can change the whole tenor of an interaction. But after Saunders Wilder pointed out the irregularity and I explained what was going through my mind, Palumbo's and my signals came back together. The whole exercise was incredibly informative. To this day, I can't help imagining similar converging and diverging signals when I am with people.

"I wore sensors on myself for a couple of years almost continuously when I was developing this technology, and I can now tell you what my electrodermal activity is without needing sensors, because I know what it feels like," Saunders Wilder told me. "I know what my electrodermal activity going up feels like in my body, and I also know what synchrony feels like with other people."

After decades of studying interoception's role in interpersonal synchrony, Palumbo has likewise personally cultivated what he calls a "conscious, continuous self-monitoring" of his own physiological reactions. His self-surveillance, he said, allows him to more easily fall into synchrony and share his clients' emotions and also pull out of it at will to, in the

Semradian tradition, carry his clients with him to a better place. When he feels shifts in his physiology while interacting with others, it makes him curious rather than reactive.

Palumbo told me syncing with someone requires focusing your full attention on the other person, maintaining eye contact, and “letting go of yourself enough to begin to feel what the person is feeling.” He said it’s a matter of observing and listening with curiosity and without thinking about what you want to say next or what’s next on your schedule. You’re just taking in the other person. Palumbo described it as similar to when you get totally absorbed watching a film. “It’s your natural human tendency to sync with someone else,” he said. “What’s not so natural is being aware of it.”

According to Palumbo, the harder task is resisting the instinct to sync when another person’s emotions are steering you somewhere you don’t want to go. We’ll talk more about this in the next chapter, but fundamentally, it requires: 1) consciously registering that the feelings are not yours, and 2) intentionally changing your own internal rhythm by perhaps slowing your breathing, relaxing your muscles, and shifting your posture.

While it may seem simple and straightforward, in the moment, it can be extremely difficult. As previously mentioned, embodying another means that person’s tensions and emotions feel like they are coming from inside you. Often you don’t realize how much people are affecting you until they are absent.

A financial analyst in New York told me that whenever her very intense and high-strung boyfriend went out of town, her headaches and stomach problems suddenly disappeared. “I thought it was gluten,” she said. “But it was him.” They eventually broke up. Her regret is tempered by her now thorough enjoyment of gluten. “Lose a boyfriend, gain a bagel,” she said.

You may also notice people’s influence when someone in a group—say, a book club or work team—is absent for some reason and the atmosphere or overall dynamics of the group changes, making things noticeably more relaxed or noticeably more strained. Recall Will Felps’s description of his wife’s work experience in chapter 3.

Or maybe someone in a social network moves away or dies, and the network then dissolves without that one person’s galvanizing force. When my ebullient great-great-aunt died, for example, that whole side of the family dispersed and no longer regularly sees one another. She effectively

set the tempo and called the tune. Without her, no one was moved to dance. The party was over.

Much to the dismay of Mass Mental's clinical staff, once patients left Semrad's presence, they were often once again out of control. However, his colleague Leston Havens said it was a mistake to believe, as many did, that Semrad had a supernatural gift: "The world elevated him into a position of sacredness ... so that the world would not have to confront what he meant." Semrad's power resided in his willingness to sit and sync with the most forsaken among us.

Don't Over-Sync It

HOW TO RESIST GETTING SUCKED INTO SOMEONE ELSE'S EMOTIONAL VORTEX

Every time Hayden visits her mother, she tells herself, *I'm not going to absorb her vibe*. And yet, that is inevitably what happens. Otherwise calm and even tempered, Hayden finds herself overreacting to things her mom says and chastising herself afterward. Her mom is a nice person and very well meaning, if somewhat tightly wound and resolute in her rectitude. "I love my mom," Hayden said. "I'm just not always my best self around her."

Clay wanted to be a musician, but his band broke up and his attempt to run a music venue didn't work out either. He then got a law degree thinking he'd represent musicians, but he never passed the bar. He's been "between opportunities" for a few years now and spends most nights out drinking with his buddies. The more Clay slacks off, the more ambitious and assiduous his wife, Lydia, becomes. She is a superstar at the company where she works, and while Clay is nominally the stay-at-home parent, his laxity provoked her to take over making their two daughters' lunches, arranging their extracurricular activities, and attending parent-teacher conferences.

Eva and her son, Ethan, text and talk on the phone several times a day. "I'm his sounding board," Eva tells her ex-husband and Ethan's father, who worries his adult son is not sufficiently independent, particularly now that Ethan has landed his first job out of college and moved to another city. Eva is preoccupied with Ethan's feelings and interrupts work meetings and time with friends to respond to Ethan's streaming anxiety, which she monitors on her Apple watch. Likewise, Ethan excuses himself during dates or ducks out

of parties to answer urgent messages from Eva about her hot water heater or their aging family dog.

All the relationships described above are examples of over-syncing, which psychologists variously call *emotional fusion* or *enmeshment*. The terms refer to engulfing relationships where there is an unhealthy carrying or intertwining of one another's feelings, attitudes, and behaviors. Typically, it occurs in long-term relationships, but you can get sucked into similarly fused dynamics, albeit of shorter duration, with more casual friends, acquaintances, and even strangers. These are the people who, for whatever reason, just seem to get under your skin or have a strange hold over you.

Like oxygen, food, water, sunlight, and anything else essential to survival, an excess of interpersonal synchrony can be as hazardous to your health and well-being as an insufficiency. Too little and you suffer from feelings of isolation, loneliness, and disconnection. Too much is detrimental to your ability to identify and regulate your own emotions and maintain a healthy and separate sense of self.

Over-syncing can manifest in a number of ways, but the commonality is that the relationships are "reaction rich." The partners react immediately and reflexively to any perceived deviation, distance, or disconnect by either matching the other person's affective energy or trying to pull the other person into their affective energy. There is often a feeling of responsibility for the other's feelings because, in fact, that person's feelings feel like your own.

In the case of Hayden and her mom, their fusion results in classic co-dysregulation (see chapter 2), where Hayden subconsciously syncs with her mother's intensity and neuroticism and mirrors it back. Her mom is amped up, which amps up Hayden, which bounces back on her mom, and so forth and so on. Together, they climb a ladder of arousal and agitation until Hayden snaps over a comment that she would have shrugged off if anyone other than her mother had said it. Her mom snaps back, sometimes bursting into tears, and they both feel awful until they make up and the cycle starts all over again.

Clay and Lydia are likewise enmeshed, but in an anti-phase co-dysregulatory tango where Clay steps back and Lydia steps forward. He slackens and she revs to restore balance. As you might imagine, this kind of codependent, compensatory behavior can only lead to feelings of

resentment on both sides. Clay feels diminished, and Lydia feels like she's the only one toeing the line.

And then there's Eva and Ethan, who are so thoroughly fused that they are only as happy or sad as the other. There's certainly tremendous love there, but their extreme synchrony impinges on their autonomy. They share everything, leaving them incapable of dealing with anything on their own, least of all managing their emotions. Any perceived separation or distancing, even if just expressing an opposing point of view, is met with a kind of subversive pressure—often in the form of sulking or maybe an avalanche of emotionally charged texts—which keeps them in each other's thrall.

Of course, maternal-child fusion is normal and even essential pre- and postpartum (see chapter 1). But just as essential is encouraging separation and independence as the child matures. Repeated studies have shown differentiation of self is an important predictor of quality of romantic relationships, job satisfaction, and overall mental health. Indeed, family systems theory holds that parent-child emotional fusion can create an expectation that all relationships must be that way, which often leads to other fraught relationships or perhaps an avoidance of relationships altogether because the parental bond is so overwhelming.

It's not uncommon for couples in the first flush of romantic love to experience a kind of fusion similar to the maternal-child dynamic. You become totally absorbed and attuned to everything about the other person. You delight in, cater to, and accommodate each other's idiosyncrasies, syncing emotionally, physically, and behaviorally. Cue the Ronettes: "Be my, be my baby, be my little baby." Later on, the same quirks and characteristics that were initially enthralling may turn unbearably annoying. But in the beginning, you bend your being to fit that of your lover's and vice versa. It's delicious, delirious, and deceptive given that periods of asynchrony are inevitable as the relationship matures.

Feeling out of sync is uncomfortable in any social interaction, but in cases of enmeshment, it can feel intolerable. As we've learned in previous chapters, interpersonal synchrony is a whole-body phenomenon, involving your nervous, respiratory, hormonal, and musculoskeletal systems. As a result, any sense of disconnection felt by individuals caught up in fused relationships is as intensely physiological as it is emotional.

A telltale sign of being in a fused relationship is feeling off, to the point of distraction, when the other person is upset, distant, or there is disagreement or discord. It makes fused individuals quick to adjust their own feelings, behaviors, opinions, and/or attitudes—or insist or provoke the other person to do so—to restore synchrony and equanimity even if it's against their nature or interests, like Hayden and her mom getting caught up in reciprocating and escalating cycles of emotion, Lydia overcompensating and overachieving in response to Clay's idleness and passivity, and Ethan and Eva suffocating and undermining each other's emotions and outside relationships.

Of course, there are countless psychosocial factors that give rise to emotional fusion, including an anxious attachment style, a turbulent or insecure relationship history, conflict avoidance, or previous traumatic experiences. Whatever the cause, the effect is that your primal need to seek and maintain connection kicks into overdrive—kind of like overeating can be caused by a variety of psychosocial factors that exaggerate your very real and necessary craving for food. Over-syncing is in fact a form of ravenousness with both parties ending up feeling somewhat consumed. The irony is that autonomy and differentiation are the only ways to achieve true intimacy. Only when we are in touch with and can explore our own thoughts and emotions are we able to truly inhabit our personalities and freely express ourselves to others. You can't be real with people nor can they be real with you if you are always trying to sync to their reality or trying to get them to sync to yours.

An innovative study conducted by American and German researchers demonstrated how too much interpersonal synchrony can inhibit the ability to regulate one's emotions. They had subjects engage in something called the Body Conversation Task (essentially a five-minute conversation without words) meant to promote spontaneous social interaction. Using whole-body imaging, investigators were able to assess the simultaneous impact of interpersonal synchrony (coordination between two people's limb movements) and intrapersonal synchrony (coordination of a person's own limb movements) on affect and emotional regulation.

What the investigators found was an inverse relationship between interpersonal synchrony and emotional regulation. While the researchers confirmed that interpersonal synchrony predicts positive affect (we feel good when we are in sync), it also tends to make people feel less in control

of their feelings. Recall how synchronized activities like dancing and marching can lead to feelings of oneness and mergence. Moreover, the more subjects were able to synchronize intrapersonally while synchronizing interpersonally, the more they were able to regulate their emotions. In other words, the more in sync subjects were with themselves, within their own bodies, while simultaneously syncing with other bodies, the more they felt in control of their feelings. The researchers concluded that to “maintain a stable self, agents need to structure their entrainment in social interaction dynamics so as to also allow for moments of independence and disengagement.”

Synchrony researcher and psychotherapist Richard Palumbo, whom you met in the last chapter, told me that much of his counseling practice is helping people deal with enmeshed relationships they might have with romantic partners, family members, friends, or coworkers. While the biofeedback technique he and his colleague Oliver Saunders Wilder developed can help raise people’s awareness of what interpersonal synchrony and asynchrony feels like, Palumbo said a practical, everyday strategy for recognizing and resisting getting sucked into someone else’s emotional vortex is to imagine there is a Mute button during particularly fraught interactions. He counsels clients to focus less on the words used and more on the other person’s level of arousal and think about how they might be unwittingly matching that affective energy.

So, returning to Hayden and her mom, using this strategy, rather than reacting to what her mother is saying, or even trying to rationally tell herself not to get upset, Hayden would instead focus on how she might be subconsciously embodying her mother’s fluttery agitation and emotional intensity—effectively making her, Hayden, more coiled and reactive. Hayden might notice that her shoulders are tense, her brow is furrowed, and she is bobbing her crossed leg. She might also notice that her heart rate is elevated, her breathing is shallow, and a weird prickly sensation has started welling up from deep within.

“Once you realize what’s happening, you can pull yourself out of it,” Palumbo said. “It’s a matter of shifting your focus from the interaction to yourself.” Not in a self-centered or narcissistic way but rather to allow the other person to have and manage their own feelings while you hold on to your own. It’s a considerate yet deliberate disassociation. Slow yourself down. Take a tour of your body and progressively relax and reclaim

yourself. In your head, tell the other person, *I'm going to let you have your feelings.*

Palumbo explained that we can get so wrapped up in the words, context, and history leading up to an interaction or altercation that we can miss how we subconsciously mimic other people purely in terms of their level of arousal, up or down, positive or negative. Or we might reflexively fall into a kind of exhausting anti-phase dynamic by, say, becoming super positive when someone else is depressed to restore equilibrium.

Of course, empathy is important and essential to relating, understanding, and helping one another. But we can take it too far, particularly when it leads to a co-dysregulatory dynamic where, like Hayden and her mom, we end up reflecting one another's feelings to an ever-intensifying degree. Sometimes there's compassion, comfort, validation, and even generosity in a degree of detachment.

Have you ever been with someone who keeps apologizing for their emotions? Or maybe you have found yourself saying, "I'm sorry for being such a downer," or "I shouldn't be complaining," or "I shouldn't be unloading on you." People do this because some part of them knows others are embodying or syncing with their uneasy emotions and they feel bad about it. They don't want to distress or afflict others, particularly those closest to them. Not only do they feel bad, they also feel bad that their feeling bad is making someone else feel bad. How's that for over-syncing?

This is where asynchrony can sometimes be a relief. Rather than boomeranging despair or frantically trying to pull people out of despair ("Look on the bright side!"), you're meeting and accepting them where they are while honoring where you are and wish to remain. It takes the burden off everybody involved. Moreover, the magic is that once you pull back, often the other person does, too, which opens up the opportunity to establish a more comfortable dynamic where there's room for both connection and independence.

It's hard to do because synchrony diminishes your intrapersonal awareness and control. Research indicates that people often fail to realize or recognize when others are getting them into a relational bind. You have to put all your powers of interoception to work to notice how the other person is making you feel. Recall that all emotion has a physiological signature. Once you're in touch with those sensations, you can then take steps to manage them. Things as simple as breathing deeply, relaxing your muscles,

changing your posture, shifting your gaze, taking a sip of water, or even picking up and putting down an object like a pencil can help you resist getting drawn into someone else's negative or manic energy. Such actions effectively create asynchrony—disrupting any unwitting mirroring and matching as well as altering the tenor and tempo of the interaction.

We've so far been talking about over-syncing in longer-term relationships, but it can happen to some degree with anyone, even with people you hardly know. Think about when you are at parties or networking events, for example. On these occasions, people tend to become amped-up versions of themselves, anxious to make a favorable impression. In this supercharged atmosphere, it's all too easy to fall into a kind of flash-fused dynamic with others because you, too, want to be liked. Without realizing it, you may also get jacked up and start matching other people's wide-eyed urgency, exaggerated expressions, and louder, higher-pitched vocal range. Or if the person with whom you are conversing is extremely shy, you might absorb their social discomfort and inner turmoil and begin to feel somewhat rattled and awkward yourself. They call it *painfully* shy for a reason.

No wonder people often reach for a drink to get them through such gatherings. It's also why when you walk out into the night air or get into your car after a party, you may sometimes feel a sense of release and relief. *Whew!* But if you can recognize when this kind of flash fusion is happening, as it's happening, you can de-sync, defuse, and reclaim yourself. As Palumbo said, it starts with noticing how you may be subconsciously embodying the other person's energy and then consciously releasing it. Deepen your breathing. Relax any tension in your muscles. Adjust your posture. Slow the cadence of your speech. Not only will you feel less agitated and ultimately less drained by other people's anxious, manic, or performative company, but also, incredibly, the other person often starts to relax, too. They will sync to you.

Indeed, there are things you may already do subconsciously to stop the sync during more contentious or otherwise emotionally charged interactions—things like getting up and pacing around the room, closing your eyes or averting your gaze, sighing extravagantly, pinching the bridge of your nose, rubbing your face, putting your hand over your mouth, or clutching the sides of your head. All serve to inhibit mimicry and/or change the rhythm of the encounter. Some people lie on the floor to ground themselves. Think about athletes lying down on the pitch or playing field when overcome with

emotion. Nervous tics like cracking knuckles, looking at a phone, or yawning may also be an attempt to disconnect or reset, though the effect on others is likely more aggravating than neutralizing.

Resetting or reclaiming yourself can be as important in between interpersonal interactions as during them. As touched on in chapter 5, we tend to retain the physiological and emotional rhythms we establish with others. The person with whom we were syncing may depart, and yet we still carry the tune or tenor of the encounter. Executive coach Kristin Meek introduced me to the concept of “energy hygiene,” where you scrub yourself of the emotional residue of one interaction before entering another. She said maintaining good energy hygiene is critical to being an effective leader, whether as a C-suite executive or a parent: “It’s your role and your responsibility as leader to manage and regulate your energy because it’s contagious.” For her, it’s all about mindfulness of how you are showing up.

Leadership expert and author Ashley Goodall came to the same conclusion during his many years working as an executive first at Deloitte and later at Cisco Systems Inc. He told me he participated in ten to twelve meetings a day, five days a week, which meant a lot of switching content and whiplash in terms of emotions. For example, he might go from a highly confidential discussion about somebody the company planned to fire to a team call where he essentially high-fived employees for exceptional work and encouraged them to take it to the next level.

“I realized after a while that it would be unfair to give the people just joining the 10:30 a.m. call the vibe with which I had exited the previous 10:00 a.m. call,” he said. “They have the right to expect me to be fresh.” And so he developed some default energy hygiene practices. One was to lean into the obligatory three minutes of “Hey, how are you doing?” social chat at the beginning of meetings. Severely on-task types might be tempted to barrel ahead to what’s on the agenda, but Goodall observed that a brief chitchat interval is useful for adjusting one’s internal tuner to eliminate static from the previous encounter and syncing anew.

“What is happening during that time is the leader is resetting,” Goodall told me. “You are going to be telling me that story, and I’m going to be grateful for that story not just because it was funny and took me away from work for a few minutes but because now we can have a conversation about what you need as opposed to what I’m bringing with me from the last meeting.”

Another of Goodall's energy hygiene hacks is scheduling forty-five-minute meetings. If after half an hour you're done, no one is unhappy with fifteen minutes free to do as they please. If a pressing matter turns forty-five minutes into an hour, no one's schedule gets messed up, because no one ever fills in that last fifteen minutes. But most of the time, Goodall said, the meetings run the allotted forty-five minutes, which means you have lots of fifteen-minute breaks, which you can use to erase your emotional whiteboard before the next call: "I think so much of excellence in life and high level of competence is in the interstitials."

★ ★ ★

Energy hygiene is, in fact, the basis of many mental health therapies. From deep breathing to electroshock therapy, the idea is to reset, reboot, or refresh neural firing patterns. Neurons within the brain fire in time with one another as well as in time with the neurons in other people's brains. Just as people can over-sync interpersonally, neurons can over-sync intrapersonally, as can happen in the brains of people with psychoses. Neurons can also under-sync, as in the brains of people with depressive disorders.

Prescription psychotropic medications used to treat things like anxiety, depression, and ADHD typically alter levels of neurotransmitters, which are the chemical signals that control neural firing patterns. Of course, many people self-medicate with alcohol and recreational drugs to boost their mood and cope with stress, sadness, and anxiety, often related to syncing too much or not enough with other people. However, such substances alter brain activity by creating chemical imbalances in neurocircuits, which can be neurotoxic, ultimately inhibiting both intrapersonal and interpersonal synchrony. Interestingly, studies also show alcohol reduces interoceptive awareness and accuracy, both key to developing and regulating interpersonal synchrony.

Psilocybin, a naturally occurring psychedelic drug derived from mushrooms (a.k.a. magic mushrooms), has been shown to alter neural firing patterns three times as much as methylphenidate (a.k.a. Ritalin), a widely prescribed ADHD medication. Psilocybin doesn't disrupt firing patterns so much as scramble them, which proponents say helps people break out of destructive neural patterns, such as those associated with rumination, addiction, trauma, depression, and anxiety. Neuroscientist and psilocybin

researcher Dr. Joshua Siegel described neurons under the influence of psychedelics as like fans in a sports stadium who, rather than doing the wave in a coordinated, synchronistic pattern, just “randomly raise their hands.”

Transcranial electrical stimulation (tES) and transcranial magnetic stimulation (TMS) are likewise thought to reset or reboot neural activity, but by noninvasively directing mild electrical currents or magnetic fields at certain areas of the brain. TMS is FDA approved for the treatment of depression and obsessive-compulsive disorder. But tES has yet to receive the FDA’s go ahead.

Some research suggests tES could be helpful in treating a range of brain disorders, including migraines, Alzheimer’s disease, depression, and ADHD, as well as may improve memory and cognitive performance. But the sample sizes have been so small and the equipment and protocols so varied that it’s hard to reach any definitive conclusion. Nevertheless, tES devices are widely available and used by both clinicians and do-it-yourselfers alike without clear evidence of how to safely administer the electrical current, to what parts of the brain, and at what frequency.

Of course, many alternative and complementary therapies purport to redirect energy and reset neural patterns, including tai chi, acupuncture, yoga, meditation, breath work, music and drumming therapy, ice plunges, and eye movement desensitization and reprocessing therapy (EMDR). These are methods anyone can try, though most require a qualified practitioner to at least get you started. However, probably the simplest and most reliable way to reboot and refresh your brain activity is plain old aerobic exercise. Research indicates just thirty minutes of moderate-intensity exercise, such as brisk walking, three days a week, is sufficient. Moreover, your thirty-minute bouts need not be continuous. Three ten-minute walks—perhaps during the fifteen minutes of freed-up time between those forty-five-minute meetings Goodall recommended—are believed to be as beneficial as one thirty-minute walk. Research has shown that exercise not only resets neural rhythms but also improves neural connectivity and stimulates neural growth factor. Moreover, when done in synchrony with others, it promotes all sorts of prosocial outcomes, including altruism, affiliation, and cooperation (see chapter 4).

But back to emotional fusion. Avoiding it, by whatever means, is important because over-syncing, beyond robbing you of your emotional independence and sense of self, may also impede artistic and intellectual creativity. Individuation and differentiation allow for the incubation of ideas uncorrupted by outside pressure and influence. In the words of the great eighteenth-century historian and politician Edward Gibbon: “Conversation enriches the understanding, but solitude is the school of genius.”

Many of the great thinkers, writers, musicians, and scientists in history lived lives of remarkable remove and asynchrony with the rest of humanity. The English poet William Wordsworth famously described Isaac Newton’s mind as forever “voyaging through strange seas of thought, alone.” The index of solitary, reclusive, and even misanthropic geniuses includes Henry David Thoreau, Albert Einstein, Frédéric Chopin, Charles Darwin, Alice Neel, Ayn Rand, Marcel Proust, Nikola Tesla, and Beatrix Potter. It’s the rare person who is able to endure the discomfort and ostracism that can come from being on a different wavelength from one’s peers without giving in or going mad. The pressure to conform or sync with the status quo is enormous. But it’s the oddballs who inherit the earth when they are able to ultimately convert others, even if it’s a single patron or champion, to their way of thinking.

So it’s a balance. There’s no innovation without asynchrony. But there’s also no appreciation or implementation of innovation if no one else syncs with your ideas. To paraphrase the late Kurt Vonnegut: A genius working alone is invariably ignored as a lunatic. While we can’t all be geniuses, we can be exceptional unto ourselves by connecting with others to communicate, relate, learn, and love; but also disconnecting to the extent necessary to self-reflect, self-regulate, develop intellectually and creatively, and ultimately be our best selves.

Don't Sync So Close to Me

THE SPATIAL DIMENSION OF SOCIAL INFLUENCE

If there were a Last Supper of stand-up comedians, they'd huddle around the hallowed comedians' table at the Comedy Cellar in New York's Greenwich Village. The table is tucked in the back of the club's upstairs restaurant, a leather banquette on one side and chairs on the other, a low-hanging lamp setting the comedians and their amber drinks aglow.

Almost every successful stand-up comedian in the last four decades has had a seat at that table. The club's original owner, the late Manny Dworman, set it aside as a kind of greenroom shortly after opening the venue in 1981. But the table ended up becoming more like a salon for whip-smart comics to riff on one another and whatever else came to mind. "It was art and history and music and literature and arguments and the back table was just a great place to hang out and talk—not necessarily about comedy," said Jon Stewart.

With three shows nightly during the week and four on weekends, the Comedy Cellar is a hotbed of up-and-coming talent, and there's always the chance that alumni like Jon Stewart, Dave Chappelle, Chris Rock, Jerry Seinfeld, Louis C.K., and Amy Schumer might show up unannounced to perform a one-off set. Trailed by hoots and applause, they inevitably retire upstairs to their always-reserved table and its bubble of intimacy that outsiders intuitively know better than to breach.

So when the Comedy Cellar's current owner, Noam Dworman, Manny's son, decided to expand the restaurant's kitchen in 2016, he was at pains to preserve the table's exclusivity and mystique. He told the architect that the only thing he couldn't do was move the table. Yet the table was in fact

moved. And more banquette space was added. The stand-ups were not amused.

“More comics could sit there, but it wasn’t *the table*,” comedian Robert Kelly complained to *The New Yorker*. Another comedian, Bill Burr, fumed: “What did Noam do to the table down here? He literally fucked with the whole aura of this place!” Rachel Feinstein, who would sit at the table with her friends Nikki Glaser and Amy Schumer, said, “That is our home. You just want it to feel just like it’s supposed to.”

Dworman recalled Chris Rock accusing him of a kind of desecration: “This is not the table where Robin Williams sat, this is not where Ray Romano sat, this is not where Jon Stewart sat!” The table had been moved only thirty-three inches, but Dworman told me it was enough that “all of a sudden, you felt like you were now in the gravitational force field of the bar.” At a cost of \$20,000 on top of the \$300,000 Dworman had already spent on the renovation, he had the table moved back to where it was. The comedians’ feathers unruffled. Rock and Dworman sat down at the re-relocated table and made their peace. Dworman shudders recalling the fiasco. “It was painful,” he said.

The case of the comedians’ table reveals the power of proxemics, a term coined in the 1960s by anthropologist Edward T. Hall, which he defined as “the spatial dimension of nonverbal behavior.” In other words, proxemics is the study of how humans make use of space when interacting with others and how space determines the quality of those interactions. According to Hall, people manage their social distance as a way of regulating how much sensation or stimulation they receive from one another—and thus, we now know, modulating the strength of the signals to which they might sync. Moreover, Hall said, people’s feelings toward one another determine the distances they keep. Hall came up with four space zones for four different kinds of interpersonal interaction:

1. Intimate space (0–1.5 feet)—This zone is typically reserved for romantic partners and immediate family members. You are so close, the other person may appear blurry or distorted. But you can sense the heat and odors emanating from the other person’s body. You can hear and feel their breath and possibly also detect their heartbeat.
2. Personal space (1.5–4 feet)—This zone is reserved for friends. You are close enough to reach out and touch but not kiss. Your vision is

sharper, and you get a fuller, more holistic picture of the person's face and its expressions. But olfactory and temperature signals begin to fade.

3. Social space (4–10 feet)—The out-of-reach zone where you keep more casual and business acquaintances. Desks in the offices of important people keep visitors in this “at bay” zone. It's how far we stand from people at mixers and networking events. The finer details, such as the capillaries in the eyes and pores on the face, are lost. But you can also take in most of the head and torso, if not the entire body, without shifting your gaze too much.
4. Public space (12+ feet)—The stranger zone. At this distance, you can take evasive or defensive action if necessary. Applicable when addressing larger audiences, you have to project your voice to be heard. Fine details about the face, hair, and teeth are no longer visible. Eye color is imperceivable.

While the zones, particularly the personal space zone, may vary somewhat depending on the person's culture, personality, or background, research conducted over the years has repeatedly affirmed Hall's fundamental space ranges. And of course real-life examples abound, such as what happened at the Comedy Cellar. Dworman's intuition was spot-on. When the comedians' table was moved almost three feet, they were now effectively in the sensory splash zone of everyone at the bar. The comedians wanted personal space to sync among themselves but social or perhaps even public space between them and the rest of the club's patrons.

Hall's theory tracks with more recent findings regarding interpersonal synchrony in that the closer physically you are to another person, the more intense the signals you receive from them, thus enhancing your ability to sync, particularly neurally. At the same time, the more in sync you are with someone, the more comfortable you are having them in proximity. Actual touch, such as holding someone's hand or hugging, is like a robust hardwire connection. As distance increases, kind of like Wi-Fi, the signal attenuates. You gradually lose the ability to see, smell, or sense the many and varied vibes people transmit to which you might align. Research has also shown that synchrony is significantly weakened when people are not looking at each other, whether they have their backs to one another or are looking at their phones.

We adjust our space bubbles all the time to encourage or discourage reception of other people's signals. We subconsciously lean forward, lean back, reach out, turn away, and fix or avert our gaze to manage our reception of sensory data to which we will inevitably sync. Think of people on a subway with their eyes staring at nothing or fixed on a smartphone. They might put a tote or backpack between themselves and another person. During crowded rush hours, women may fold into themselves while men may spread out to keep others as far as possible from their person. It's less about territoriality than signal management. They don't want to be on anyone's wavelength. They just want to go home.

At a singles bar, it's a different story. People crave prolonged eye contact, they lean into one another, they put their hands on one another's shoulders and backs. People are there to connect. They are all about reception. It's synchrony squared at dance clubs, where strangers press their sweaty bodies against one another, moving to a common beat. But even at a tame dinner party, notice how people instinctively crowd into the kitchen or cluster together in hallways and alcoves. Only when more guests arrive do they migrate to more expansive living spaces or venture outdoors in order to maintain desired density and neurophysiological signal strength.

Back at the Comedy Cellar, Noam Dworman told me that while he had never heard of Hall or proxemics, he's a believer. Spacing is critical, he said, not only in the case of the comedians' table but also in the arrangement of seats around the club's subterranean stage. Down there, rather than maintaining people's personal space, Dworman said he purposely seeks to encroach upon it to "augment the reaction."

"I haven't unraveled it in a meaningful way, but there is such a thing as a vibe," he told me. "Somehow everybody magically perceives what's funny and what isn't at the same time." Crowding the audience, bunching them into one another's personal space, he said, "doesn't assure they will laugh, but it does seem to induce them to sync up more. It will go over bigger if people are sitting close together."

Dworman, a musician with a law degree and an all-around mensch, told me about another renovation fail at one of the other two comedy venues he owns in the Village. While Dworman was out of town, the contractor positioned the back row of seats against the wall so there was a gap of maybe three to four feet between that row and the next. The audience in the

last row would therefore be somewhat separated from the other people in the room.

When Dworman returned, he took one look and said, “This is no good. The energy is lost here.” It was not much of a gap, but the seats had lost what Dworman called their “claustrophobic feel.” They were like first-class seats on an airliner with more legroom and space around them. “That’s not good for comedy,” he told me. “Comedy needs to be like coach.”

Dworman told the contractor to build a false wall and move the seats up. “Everybody looked at me like I was crazy,” he said. But he wasn’t. French researchers have since found that the closer audience members are seated together, the more aligned they are in both their brain and electrodermal activity, as well as their reported enjoyment of concerts.*

A great show, Dworman told me, is when the comedian and the audience are “locked.” Some comedians consistently sync with audiences, like Dave Chappelle, whom Dworman first met when Chappelle was a teenager: “He just casts a spell.” That kind of talent, Dworman said, comes from not only an ability to come up with material that makes people feel like the comic had somehow read their minds (a.k.a. *neural syncing*) but also a special kind of “Spidey sense” that allows them to deftly read and respond to the energy in the room.

We’ll talk more about reading a room in the next chapter, but Dworman likens it to having good balance. “Balance is not something you strategize,” he told me. “Your body makes all these quick physics decisions so you don’t fall over.” Syncing with an audience, he believes, is similarly instinctual. It happens automatically. “I don’t think comedians are aware of what they are doing any more than a person with good balance can tell you what he does that the other guy doesn’t do that allows him not to fall over,” Dworman said.

Nevertheless, even the best comedians can get knocked off-balance by odd energy in the room. Comedian Mark Normand told me, “You can tell a joke five hundred times and it always kills, and one time, in one place, it won’t, and you’re like, ‘Oh, that’s weird.’ And you get angry: ‘Hey, crowd, I’ve tested this, and you guys didn’t laugh at it. That’s unfair.’”

Jerry Seinfeld on the *Honestly* podcast said: “I’m trying to get to a rhythm and a flow and feel and a mood. I seek this kind of feeling in the room. If you can get there 85 percent, that’s pretty good. There’s no 100. Nobody bats a thousand. Comedy, I mean, it’s a live show. It’s walking into

a room in Toronto. You've never seen it in your life. It's hard. I like the difficulty of it."

And perhaps that's why even the most successful comedians, who can fill enormous concert halls, still return to the tiny, cramped Comedy Cellar to test new material. The audience is so close that their reaction, their vibe, is palpable and unmistakable. Stand-ups performing at the Comedy Cellar can sense and surf every swell and dip in the ever-changing current of the audience's emotions. In that intimate space, audience members, too, get swept up in the tide of laughter and also collectively wince when comedians wipe out.



Chicago designer Josh Kassing is no stranger to proxemics. He wrote his master's thesis on it in design school and considers its effects daily when designing upscale restaurants, hotels, and luxury apartments. But he said he was sensitive to spacing even as a small child. "Now I understand the science, but when I was a kid, I just instinctively knew at my core when something was off," he said.

For example, the way his family positioned the Christmas tree in the living room felt wrong. His parents pushed all the furniture to the wall to fit the tree, but then no one went in the room anymore. Though he didn't know it at the time, the modification had turned what was cozy personal space into more expansive social or public space, like a doctor's office or train station.

"So one night, I floated the furniture in the middle of the room and anchored with some sofa tables, and suddenly, everyone was back in the room," he said, recalling one of his first design triumphs. "Proxemics is one of many parts of design that creates the vibe or what we might call *the user experience*."

Restaurants often get it wrong, Kassing told me, but he also sees poor proxemics in coffee shops, clothing boutiques, airports, and fitness facilities. "If you don't get spacing correct, people are not going to tell you they don't like it," he said. "They are not going to voice it, because they don't know it. What they will do is simply not use it. They just won't go." Like anthropologist Hall, Kassing holds that successful spaces encourage connection when you want it and discourage it when you don't.

Kassing recalled a luxury high-rise in downtown Chicago that had paid a fortune to another designer to create a large amenity space on one of the middle floors. It had gorgeous views of Lake Michigan and was meant to be a place where residents could have social gatherings, co-work, or maybe get together to watch the Super Bowl or *The Bachelor*. But it was crickets in there. No one was using it.

Kassing's firm was called in to figure out why. What Kassing and his colleagues found was a giant forty-foot sectional sofa positioned in front of four large-screen televisions. While the space was beautiful and the sectional itself was sleek and luxuriously upholstered, it didn't work. "Of course no one was using it," Kassing said. "The sectional was like one long bleacher where you could only see people immediately to your left and right" and even then only by craning your neck.

The original designer had essentially managed to create a space that was not personal or social or even public, but a violation of all three. Syncing was subverted among intimates and friends who were forced to sit in a row, while at the same time they'd be subjected to the unwanted neural/physiological/chemical signals of anyone else who happened to plop down near them on the couch—like, for example, the nosy neighbor in 16B. The solution? Get rid of the sectional that snaked through the room and create a bunch of small groupings of chairs and small sofas to allow discrete personal spaces within the larger social space.

Kassing explained that when people opt into a shared space, whether a communal room, fitness facility, or coffee shop, they want to have their personal space yet also be part of a "scene" (hello, comedians' table). It's why booth tables are typically the first to fill up in restaurants, Kassing said. Booths effectively define the boundaries of your personal space while buffering you from the hive of humanity in the surrounding social or public space. Big round tables are also more in demand at restaurants because their shape allows everyone to make easy eye contact and proximal distances are uniformly smaller. But the size of the table has to fit the size of the party. "If a restaurant seats three people at a round that could seat six, almost every time, people are like, 'Is there something else?'" said Kassing. "You've breached acceptable distance."

Careful attention to spacing and seating is likely one of the reasons hospitality magnate Danny Meyer's restaurants, including Union Square Cafe, Eleven Madison Park, the Modern, and Gramercy Tavern, rank

among the nation's best. "You know when you go to a restaurant and they have a table for two that is really long and really narrow so you are sitting farther away from who you came with and your elbows are practically touching the people you did not come with?" he asked. "We turn our tables around so that you are actually further from the people you did not come with and closer to the person you did come with."

He told me that, at any restaurant, you want to see people "leaning in, tucking into good food and good conversation." When people are engaged and syncing in that special way, everything else—the waitstaff, the other guests—should melt away. Unlike at a comedy club where everyone is focused on the same thing—the comedian—Meyer's restaurants offer each party their own virtual cocoon where they can focus on each other and not feel crowded or intruded upon. "The activity and noise level of the restaurant almost buffets them so that there is enough to enjoy the atmosphere but not so much that they can't enjoy who they are with," Meyer said.



To be sure, proxemics is as important at the negotiating table as at the dining table. According to former Ritz-Carlton executive Antonia Hock, impinging on people's personal space during business transactions, whether at a bank or a boutique, can be a costly mistake. Now an independent consultant advising companies on how to elevate customer and employee experience, she gave the example of a very high-end luxury auto dealership that was redesigning its sales associates' deal rooms, essentially where you go to do the paperwork before dropping six or seven figures on a car.

Relying on intuition built on decades of experience rather than any familiarity with the concept of proxemics, Hock recommended a four-foot table be placed between sales associate and customer. "The dealership wanted to go with a smaller table because they felt it would be more intimate and it would create a bit of pressure," Hock told me. "With people closer together, they thought they will do the contracts faster because they'll want to get out of there."

Hock was doubtful, but the dealership went ahead and got a smaller table, which was beautiful—burled walnut—but it was a foot smaller than Hock recommended. It wouldn't have been anthropologist Hall's recommendation either, because a three-foot table would constitute an

invasion of customers' personal space. And so it was. Hock said the customer feedback was horrible. "You wanted me to sit in this little tiny space with this person that I'm trying to do a contract with," one customer ranted. "I don't know them. I don't want to know them."

The car dealership was right that customers couldn't wait to get out of the deal rooms. The problem was they left without signing any contracts. The visceral signals were too intense for that situation. Management had no choice but to acknowledge its mistake and have another set of tables custom made the size Hock originally suggested. "It was close enough for customers and associates to interact but far enough away to respect the customer's status and authority," Hock said. "People keep only their partners within their sphere and don't want to be intimate, and are not tolerant, particularly in that environment, of being too close to strangers or sales associates."

Proxemics is something most people know without knowing they know it. We've all experienced the frisson of someone's proximity and how immensely pleasurable or immensely creepy it can be depending on who the person is. Space is like your volume control on other people's vibes. Whether it's riffing at the comedians' table, haggling in a deal room, chatting at a cocktail party, claiming a spot in a coworking space, or settling next to your date on a couch, we create or eliminate space to manage the intensity and intimacy of our interactions.

Emotional Aperture and Eye Fucking

MACRO- AND MICRO-LEVEL SYNCING

For a heady, hectic week every spring and fall, the art world's biggest players (or their proxies) converge on New York City to bid on some of the most coveted and expensive works of art available. Sales at the major auction houses—Christie's, Sotheby's, and Phillips—are prestige events showcasing a range of works from emerging artists to old masters.

While not named in the glossy sales catalogs, charismatic auctioneers like Jussi Pylkkänen at Christie's and Oliver Barker at Sotheby's as well as newcomer Henry Highley at Phillips nevertheless have celebrity status—at least in the art world's esoteric orbit. Through subtle showmanship and a particular kind of super syncing ability, top-tier auctioneers can boost hammer prices multiples above estimates, according to economists and gallerists.

The evening sales are typically the most exclusive and extravagant, with gavels crashing down on bids of tens and even hundreds of millions of dollars. Beefy security guards wave you past velvet ropes into stark, standing-room-only spaces where silk-scarfed patrons point meaningfully at one another across the expanse and exchange air kisses on closer approach.

Weaving through the crowd, you hear snatches of conversation in multiple languages, maybe or maybe not about the art, which hangs crisply lit on the walls or flashes in a looping video montage set to a swelling soundtrack. The room is bracketed by elevated enclosures, kind of like choir stalls, where immaculately groomed auction house employees are poised to take telephone bids.

Once the auction is underway, all eyes are on the auctioneer. Perched high on a rostrum and bobbing and weaving like a courting bird, the

auctioneer's body whips back and forth, up and down, with the rapid volley of bids. If there is a lull, a strategically raised eyebrow, a cocked head, and maybe a gentle jibe ("Make it an even ten million. It'll sound better when you tell your friends") coaxes another fusillade of bids. Finally, arms outstretched, palms up, the auctioneer gives holdouts fair warning, one last chance ("You're sure, then?"), before irrevocably bringing down the gavel. All this usually within ninety seconds.

Even if you have little interest in art, it's hard not to ride the roller coaster of emotion that the best auctioneers deftly build and release lot after lot. Research has documented so-called auction fever—a kind of emotional and physiological contagion that a savvy auctioneer knows how to play to the house's advantage. A hedge fund manager with an art collection worthy of the Metropolitan Museum of Art told me he never attends fine art auctions for fear of being "seduced." It's one reason many high-end art collectors send tightly reined art consultants to bid on their behalf.

Collectors may also phone in their bids or bid online, though it's still possible to catch auction fever remotely. Just ask the two collectors who got into a nineteen-minute telephone bidding war in 2017 over Leonardo da Vinci's *Salvator Mundi*. Their fervor, stoked by Christie's Pylkkänen, drove up the hammer price to \$400 million, more than four times the estimate, and still the record for the most money bid at auction for a work of art.*

Auctioneers at the top of their game seem to have heat maps inside their heads that direct them to who is inclined to bid, a valuable skill when many clients use just the slightest hand motion. When I developed a fiscally irresponsible infatuation with a painting at a Phillips evening auction titled *A second nice break* by Belgian contemporary artist Ben Sledsens, I sat on my hands and avoided auctioneer Highley's laser gaze, fearing I was one nose itch away from having to raid my IRA. The painting sold for \$279,400, impressive for a lesser-known artist but sofa cushion change compared to what other lots were going for. I still think about that painting.

"If someone wants to bid, you just feel that vibe," said Barbara Strongin, a former auctioneer at Christie's who has trained aspiring auctioneers, including Highley, at all three of the top auction houses. "Somehow your eye goes right to them." The rest of the crowd fades away as auctioneer and wavering bidder make eye contact and their minds align. "I know that they want to bid, and they know I know they want to bid,"

Strongin told me. “You make eye contact, and you keep eye contact until the person bids or they look away.”

Similarly, Pylkkänen, who stepped down as global president and lead auctioneer at Christie’s in 2024, said pure intuition draws his attention to particular people in the crowd: “It’s about the posture of the client, how they sit forward on the chair, how they make eye contact with you,” he told *The New York Times Magazine*. “As I look up, I know the four or five people that are definitely going to bid.”

But it’s not just about intuiting the desires and competitive fire of individual bidders; it’s also about reading and heeding the collective energy in the room. Highley at Phillips told me that when he senses building excitement in the audience, he makes a conscious effort to pull back. “I let the energy in the room do the work,” he said, rather than interfere with the organic momentum and suspense.

And when things get uncomfortably slow and awkward, he said, “Your reaction is to go into your shell a little bit and be quiet with the room, but I try to do the opposite and reengage people.” He does this subtly, by raising his own energy or maybe joking with colleagues in the phone bank and then making eye contact or flashing a winning smile at various individuals in the crowd, wordlessly inviting them to join in on the fun. He might address audience members directly by, say, mentioning something they bid on previously to try to bring them back into the game. “You have to kind of read who is more happy to engage,” he said. His tactic is supported by synchrony science in that a series of individual connections, and others observing those connections, can ignite a neural and emotional contagion of connection.

“The real aim is to make people feel we are on the same side,” Highley told me. “To show that we’re all in this sale together.” He disagrees with those who say auctions are theater. “With theater, there is this barrier, the fourth wall, between you and the audience,” he said. “I think the most successful auctioneers break down that barrier; break down that fourth wall.” His ability to find synchrony, or tune in to the general mood of the audience as well as the moods of specific individuals within the audience is what makes him and other auctioneers of his ilk effective. They have a special sensory talent that allows them to both zoom in and zoom out their perceptual focus so they don’t miss the forest for the trees.

In the psychological and business management literature, the ability to perceive collective emotions (i.e., read the room) is called *emotional aperture*, referring to the variable opening in a camera that allows in more or less light to increase depth of field. Adjusting a camera's aperture broadens the focus so you see not only who is in front of you but also others scattered across the broader landscape. Emotional aperture, then, is the ability to dial into the "affective tone" of the group as a whole. Think of it as macro-level syncing.

Most of the research on empathy and interpersonal sensitivity has been limited to more micro-level syncing. The focus has been on how we sense and viscerally experience emotions, thoughts, and intentions of individuals, such as Ruth Feldman's work measuring synchrony between parents and children and Richard Palumbo and Oliver Saunders Wilder's work measuring synchrony between romantic partners. Much less attention has been paid to how we perceive the prevailing mood or emotional valence of larger groups, or crowds, never mind a person's ability to seamlessly shift focus back and forth between individuals and groups like the best auctioneers do. Collective emotion, of course, owes much to emotional contagion, so someone with emotional aperture is more like an epidemiologist than a personal physician when it comes to detecting and tracking affective infection.

There is some evidence that people generally tend to have either a micro or macro, trees or forest, focus when it comes to syncing ability, and in fact, facility at one might impede accuracy of the other. Which camp you fall into may depend on your age, personality, and sociocultural background. Some studies indicate your emotional aperture diminishes with age, starting to decline in a person's late thirties, possibly because with maturity one may become more concerned with the depth and quality of individual relationships than generally "fitting in." However, those who score high in the personality trait of "agreeableness," meaning they are more we-centric than me-centric, tend to retain their emotional aperture even as they age.

Before the term *emotional aperture* was coined in 2008, psychology researchers talked about holistic versus analytic or communal versus agentic to describe social orientation and perception. Repeated studies have shown that Western cultures tend to have more of a tree or analytic orientation versus East Asian cultures, which tend to take a more forest or holistic view. One study had Japanese and American participants look at

cartoons depicting a central character with a happy, sad, angry, or neutral expression surrounded by other characters expressing the same or different emotion. The surrounding characters' emotions influenced Japanese but not the Americans' perceptions of the central character.

Another experiment, using eye-tracking technology, revealed that Japanese people looked at surrounding characters (also in cartoons) more than people who lived in the United States, Canada, the United Kingdom, Australia, and New Zealand. Previous studies on East–West differences in social sensitivity have similarly indicated that Westerners tend to see emotions as unique to individuals, whereas those living in more communal cultures in the Far East see them as inseparable from the feelings of the group.

Research using a metric known as the *emotional aperture measure* revealed that Chinese participants showed a higher level of accuracy in recognizing group emotions than did Americans, but they showed a lower level of accuracy in identifying the emotions of individuals. In other words, they were more likely to sync to group-level emotions than the emotions of individuals within the group. Developed in 2015 by a team of researchers led by behavioral scientist Jeffrey Sanchez-Burks at the University of Michigan in Ann Arbor, the emotional aperture measure involves looking at two-frame video clips flashed in rapid succession. In the first frame, a group of people, who appear to be in an office environment, have neutral expressions. In the second frame, a proportion of them have positive or negative expressions, purportedly in reaction to some unspecified announcement or event. Your emotional aperture is assessed by how well you identify the resulting prevailing mood.

Sanchez-Burks's interest in emotional aperture stems in part from his sideline playing guitar and bass in an R.E.M.-inflected band called Models and Architects, which plays in and around Ann Arbor. "You definitely want to be in tune with the room when performing," he told me. His research has shown that people who score "horribly" on the emotional aperture measure can get better with practice. Whereas at first people persist in trying to look at each face, Sanchez-Burks said eventually they learn to look at the clips more like pointillist paintings: "There's this aha moment when they realize 'I need to not count the number of points, but I need to see the bigger picture.'" However, he emphasized that group-level emotions are likely detected through many modalities beyond just facial expressions, such as

the overall sound of the crowd, its gestalt movement, and the funk of pheromones.

American and Spanish researchers have found that a socioecological concept known as *relational mobility* may also determine a person's breadth of sensory focus and consequent scope of syncing ability. Relational mobility is the ability to choose your relationships according to how people make you feel. It's essentially how stuck you are, or perceive yourself to be, in terms of the people you have in your life. People who have lifetime employment, live in small or exclusive communities, or are enmeshed in insular families, religions, or friend groups may have, or feel they have, fewer options when it comes to relationships. Therefore, it's adaptive and probably essential to their sanity to maintain a more forest-than-trees focus when it comes to their social network.

Focusing on the gestalt mood of the group rather than fixating on the vicissitudes of emotions of individuals within the group lessens the risk of breaking social connections that could not be easily repaired or replaced if damaged. Indeed, some studies indicate high interpersonal synchrony and emotional accuracy can sometimes be a drawback because you perceive more than others want you to know and perhaps more than you yourself want to know. Forest-focused people are more in tune with the vibe of the room and might miss individual dramas playing out inside it.

On the other hand, people who do not feel bound to remain in relationships that are not working for them, and feel confident in their ability to form new relationships, may be more sensitive to individuals and less responsive to group energy and group dynamics. It's largely subconscious, but people who fall into this category tend to be more focused or concerned with the quality and reciprocity of individual relationships than the general comity and bonhomie of their wider social network. They are the ones who notice someone off by themselves during an otherwise raucous party, or they might get distracted by a couple not getting along at a back table in a busy restaurant.

All this is significant in terms of interpersonal synchrony, of course, because we can only tune in to what we perceive and whether our focus is narrow or wide-angle makes a difference in the scale and specificity of our perceptions as well as our interpretations of those perceptions. You can imagine how emotional aperture would be vitally important to, say, an entertainer, army general, university lecturer, politician, or CEO of a

company. If they synced with only a few happy or angry individuals in the crowd, they might be misled about the broader appreciation or disapprobation of their performances, philosophies, strategies, or initiatives. The opposite might be true of a psychotherapist, salesman, or police detective whose jobs require a narrower focus capable of noticing even the slightest flicker of change in individuals' emotions regardless of any wider and possibly distorting group dynamic.

And then there are those like the best art auctioneers, whose success hinges on their ability to adjust their sensory focus back and forth between reading the room and the individuals within it. It's a talent notable among the best restaurateurs and restaurant managers as well. Take Danny Meyer, whom you met briefly in the last chapter. His restaurants have earned Michelin stars and are top rated by Zagat and restaurant critics alike not only because of the food but also because he and his staff know how to simultaneously gauge and manage the energy in the room—by, say, adjusting the lighting, temperature, sound level, or tempo of service—while at the same time sensing when anything might be amiss at any particular table. Maybe a guest is puzzling over the cocktail menu or has tickets to a Broadway show and is worried about getting to the theater on time. The heart and soul of hospitality, Meyer told me, is being so tuned in to customers that “you anticipate what they wanted or needed before they ever knew they wanted or needed it.”

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But in all my research, nowhere was the need for both macro- and micro-level syncing more central, nor potentially more consequential, than in the legal profession—specifically, trial work. To consistently win cases, trial lawyers have to not only sense atmospheric shifts in the courtroom but also pick up on the emotional tenor of individual jurors, witnesses, opposing counsel, and not least the judge. It starts during voir dire, or jury selection, which is kind of like speed dating in that lawyers have only a brief time window to determine the extent to which they sync with prospective jurors.

Lack of interpersonal synchrony is arguably why lawyers in most jurisdictions get a certain number of peremptory strikes, which essentially gives counsel the right to reject a prospective juror for no other reason than they didn't like the person's juju. Attorneys don't even need to talk to jurors before they send them packing. I sat in on multiple jury trials where

attorneys told me they rejected someone based solely on their belief that the would-be juror was “eye-fucking” opposing counsel.

“Eye fucking is real,” said Dick DeGuerin, a trial lawyer with offices in Houston and Marfa, Texas, who is known for successfully arguing what would seem unwinnable cases, including the acquittal of real estate scion Robert Durst in an infamous beheading case. Ever the gentleman, DeGuerin begged pardon for the earthy language but said “eye fucking” was when two people lock eyes in a way that “conveys not necessarily a sexual attraction but more a kind of unspoken meeting of the minds.” Indeed, as discussed in earlier chapters, mutual gaze and coordinated pupil dilation can be key indicators of neural synchrony.

DeGuerin told me that a good trial lawyer is always sensitive to subtle emotional shifts in jurors during trial, but especially during voir dire. “There have been many occasions where I’ve spotted somebody, even before the questioning started, that I felt an affinity with,” he said, describing it as connecting on a visceral and even a spiritual level. “Those are the ones who get on the jury and are on your side from the beginning.”

Some lawyers hire jury consultants to help them pick jurors likely to find in their clients’ favor. Jury consultants today do background checks and scrape social media to assess the suitability of prospective jurors using what can only be described as profiling algorithms. But regardless of what the data says, jury consultants will tell you that in the end, it comes down to the vibe. “The ones that are going to be really bad for us just have this aura,” kind of like a reflective warning sign, said Nick Seidule, a lawyer and jury consultant based in Winter Park, Florida, who specializes in personal injury cases.

Other lawyers and consultants described feeling a chill, getting queasy, or hearing an inner alarm when a juror is not a good fit. Maybe they sense the person has some kind of atavistic antipathy toward the lead attorney, is not sympathetic toward the client’s case, or simply has a low regard for the legal profession or justice system in general. By contrast, when a prospective juror is more agreeably inclined, trial lawyers told me they get a pleasant warm, vibratory, or humming sensation. “It sounds foo-foo, but if you feel it, you need to pay attention to it,” a medical malpractice lawyer in Baton Rouge, Louisiana, told me. “It could determine whether you win or lose.”

Astute judges are also alert to interpersonal synchrony in the courtroom, or lack thereof. I sat in on a product liability trial in Charleston, South Carolina, where, during a sidebar, the judge referred to three prospective jurors as “hangmen’s row” because the trio, sitting side by side in the front of the gallery, gave off an unmistakably contemptuous vibe. The judge agreed with the plaintiff’s lawyers that the threesome’s collective scorn was spreading like a contagion, so it was best to summarily eject them: “Thank you for your service, Jurors Four, Five, and Six. You are free to go.”

Anyone who has spent time in a courtroom knows the mood continually shifts and the swings are even more dramatic during high-stakes cases. Trial lawyers who are not adept at monitoring and managing these constant fluctuations in collective mood are at a serious disadvantage. You can have a great case and be an amazing orator and yet still fail to win over the jury. For example, in the Charleston case, hangmen’s row aside, there was a palpable anti-corporate vibe from the get-go. The defense was a large multinational consumer product manufacturer, and the moment the unlucky lawyer representing the company introduced himself, it was as if a dark cloud had descended over the one-hundred-person jury pool.

For whatever reason, the mood was antagonistic even before the defense lawyer laid out his case, which, objectively, the preponderance of evidence supported. The best way to defuse that kind of stacked sentiment is to first acknowledge it and then sympathize with why jurors might feel that way—in effect, syncing with the prevailing view before subtly chipping away at it. The corporate lawyer didn’t do that, soldiering on somewhat pedantically, seemingly oblivious to the negative energy in the room. Not surprisingly, his side lost. The jury awarded the plaintiff more than \$100 million. One juror told me afterward that others on the panel didn’t care about the evidence. “It was just the fact that it was a big company, and nobody felt bad about them paying out a lot of money.” An appeal is pending.

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Some lawyers put tremendous effort into micro-level syncing with their clients before they attempt macro-level syncing in the courtroom. The thinking is that the more aligned lawyers are with their clients’ thoughts, emotions, and motivations, the better they will be able to represent them and make them sympathetic to the jury. One way to do this, of course, is to spend a lot of one-on-one time with clients: meeting with them, dining with

them, visiting with them and their families in their homes. Some lawyers even shadow their clients for days on end.

Another approach gaining traction is called *psychodrama*. Some of the most effective and riveting lawyers I observed picking juries and trying cases were devotees of the technique. One of them called it his “secret sauce.” Sort of a cross between group therapy and improvisational theater, psychodrama was developed in the 1920s by a Romanian-born, Viennese-trained psychiatrist named Jacob Levy Moreno. Moreno conceived of psychodrama as a psychotherapeutic method where people, through spontaneous dramatization and role-playing, might explore and gain insight into their own and other people’s lives. Counterterrorism operatives, trauma teams, hostage negotiators, and many educators are also trained using elements of psychodrama.

In the trial preparation context, the method seeks to go beyond mere narration of the facts of the case by having client and legal team together act out significant moments in the client’s life, including the event in question. Think of psychodrama as a kind of retroactive interpersonal synchrony—rather than embodying someone in the current moment, you embody them through reenactment of something that occurred in the past.

I know this firsthand because, after making several inquiries and a few entreaties, I participated in two separate psychodramas—one in a law office in downtown Seattle, Washington, and another staged in a chandeliered hotel conference room in Atlanta, Georgia. Because of the vulnerability and sensitivity inherent in the psychodramatic method, I was not allowed to just observe as I had hoped. I had to actively take part—which I did with all the enthusiasm you might expect from someone known to writhe in agony during amateur and even some professional theater productions. I am allergic to anything that feels like forced or on-demand emoting.

At any rate, how psychodrama works is the client, and maybe also the client’s family, meet with their legal team for several hours in a quiet, device-free space, typically at a law office or hotel. A licensed psychotherapist who has undergone extensive additional training to become a certified psychodramatist serves as a kindly yet necessarily authoritarian “director.” For example, the first thing certified psychodramatist Michael Traynor tells lawyers is: “I don’t want you talking like lawyers.” Specifically, he doesn’t want them giving advice or their interpretation of

events portrayed in the psychodrama. “You’re going to relate,” he tells them firmly. “You’re going to relate to people as a person.”

Psychodrama is hard for lawyers, Traynor told me, because they are used to “bullshitting” and compartmentalizing their emotions. He can say that because he was one before he became a psychotherapist and psychodramatist. “But what I like about working with lawyers is they are risk-takers,” he said. “And once they experience on a sensory level what their client went through, there’s no need to interpret what happened, because there’s just that kind of mutual exchange of energy that they *know* what their client went through.”

Traynor and other directors of psychodrama usually begin with warm-up exercises, such as designating different spots around the room where you are instructed to stand if you are totally open emotionally, open only to certain people, or more closed off emotionally. Then you have to share why you stood where you stood, which obviously can be rather revealing. The director might then have everyone do a kind of vulnerability do-si-do where you continually change partners to discuss things like what emotion is the most difficult for you to manage and why.

“So you’re starting to create a culture right from the beginning, of ‘Okay, we’re not here to talk platitudes or about the weather or sports or anything else,’” Traynor told me. “We’re just going to talk about real stuff as human beings and also the client starts to build connections in the group.” It also levels the playing field in that it’s not only clients who have to open their emotional cupboards. After this preliminary sharing, the director gets down to the case—specifically, the people and events that led up to it.

Clients typically play themselves and get to choose who they want to play other people in the scene. I was chosen to variously play a nurse, a police detective, a romantic partner, a best friend, and a scuba instructor, but roles are constantly reversed and re-reversed so you hardly know who you are anymore, which is perhaps the point. You find yourself sympathizing and syncing with clients both by watching them and by *being* them while reenacting a scene. In one intense scene, I discussed sexual dysfunction arising from an accident, alternately from the point of view of the client and his girlfriend. Over and over, the director ordered us to switch seats and change roles. Again, I am someone made uncomfortable just watching, much less playing make-believe.

I should say at this point that the client in one of the psychodramas in which I actively took part had what can only be described as negative affective presence (see chapter 3). He was off-putting—a chronic complainer and prone to making passive-aggressive, backhanded comments. He also noticeably resisted reenacting his experiences, preferring to narratively spin them for us. In short, it was hard to be around him, much less develop sympathy for him. And yet, at the end of the daylong psychodrama, Traynor broke down his defenses, actually all our defenses. I won't say I ended up liking the client, but if called upon, I have no doubt I could faithfully and with true depth of feeling advocate on his behalf. Psychodrama is effective because it encourages neural, emotional, and behavioral synchrony through not only observing but also physically reenacting pivotal scenes from people's lives. And it is that connection that leads to insight and growth for everyone involved.

“This isn't about changing your mind about how you feel about somebody,” said Louise Lipman, another psychodramatist specializing in trial preparation, including for criminal cases where the client might be accused of something truly ghastly. “To step into the shoes of this person and see the world through their eyes and feel the world through their heart and their gut doesn't mean you end up sanctioning what they did, but you come to understand it, no matter how bad their behavior has been.”

Just because some trial lawyers swear by psychodrama doesn't mean they enjoy it. Florida trial lawyer Dave Paul told me he actually hates it: “I find it draining. I find it hard. I don't like what it does to me. I don't want to have to actually feel someone else's pain any more than I absolutely have to.” So why does he do it? “It works,” he said without missing a beat. “The jury senses it if you are not in sync with your client.”

In the course of acting out scenes, details surface that clients might have never thought to tell, or even remembered, about what happened to them. Physically performing what clients went through might likewise trigger memories of related events that occurred in the lives of members of the legal team, which helps them better connect with the common emotional through line that is at the heart of the case. Predating Semrad (see chapter 6), Moreno said, “The body remembers what the mind forgets.” Moreover, when clients are able to actively tell their stories in such an open and supportive environment, they become better witnesses when it comes time to take the stand.

“I don’t want to say *lying*, but in a courtroom, witnesses tend to be not quite as inclined to just say the truth and trust that the truth is enough,” Paul told me. “Maybe that’s everyone, by the way,” he added. “It’s so rare when people are not fearful. They’re not anxious. They’re not defensive. They’re just telling their story.”

And perhaps that’s the appeal of a more social form of psychodrama known as *playback* or *playback theater*. Playback groups are kind of like book clubs, only instead of regularly meeting to drink wine, have snacks, and discuss a book, they gather to drink wine, have snacks, and reenact an event in a member’s life. Some groups occasionally host public performances where attendees are invited to share stories that members of the playback group will then interpret. The scenes can be funny or sad, uplifting or troubling. The point is to develop a unique kind of micro- and macro-level synchrony where everyone in the group is totally committed to connecting through reenacting or embodying one another’s experiences.

Playback is different from psychodrama in that the people sharing their stories don’t play themselves or join in the reenactment but rather choose which playbackers from the group they wish to perform the scene. Guy Naamati, a bioinformatician in Cambridge, England, told me his playback group has interpreted struggles as well as funny moments in his life: “Just talking about it and then seeing it reflected back to you, something in the mind enjoys it.”

It’s not just his opinion. Brain scans of playback participants showed significant increased connectivity between the left amygdala and bilateral supramarginal gyri. “In generalized and social anxiety disorders, people have lower connectivity between those two regions,” said Ramiro Salas, a psychiatry researcher at Baylor College of Medicine in Houston, who published a paper in the journal *Chronic Stress* on how playback affects the brain. A veteran playbacker himself, Salas’s theory is that the brain-to-brain, or interpersonal, synchrony that develops through sharing and reenacting stories actuates the within-brain, or intrapersonal, synchrony between these two important cerebral regions, which can have lasting effects in terms of stress reduction.

“The self-report from subjects in the study was that they felt a lot better after playback, but as a scientist, I don’t care too much about self-report,” Salas said. “What I love about the study is that the data from the scans showed not only increased connectivity between the amygdala and the

supramarginal gyrus after the performances but the people whose connectivity increased the most were the ones who self-reported the most improvement in anxiety.”

Rather than a “director” as in psychodrama, playbacks have a “conductor” who interviews the storyteller and serves as the evening’s emcee. Typically, there is no huddle before the playback begins. It’s almost entirely improvisational, where playbackers trust in the unspoken synchrony that develops between them about the deeper meaning of the story. Also unlike in psychodrama, playbackers are free to take considerable artistic license. They can use music, verse, and metaphor to interpret somebody’s story. For example, they might pretend to be rowing a boat in a roiling sea when portraying someone’s foundering romantic relationship. “A good playbacker knows when to be edgy and when to tread lightly,” Naamati said. “As long as you capture the heart and the emotion of the story, it works.”



From the auction house to the courthouse to the playhouse, we all have the instinct to sync, but we also have different sensitivities, social sensibilities, and breadth of sensory focus that collectively impact how we perceive and interpret the signals transmitted by others. While syncing is our natural inclination, we can become more intentional about it. This is not to say you need to go as far as participating in a psychodrama or joining a playback group. It could be as simple as thinking about how you tell stories and how you listen to other people’s stories.

Studies indicate those who gesticulate and are more demonstrative in their storytelling are more effective communicators. They achieve greater emotional and neural synchrony with listeners, perhaps because their audiences’ mirroring systems have more to work with than just words. Indeed, before humans could speak, they communicated through gestures, so acting out is essentially our native language. Think again about stand-up comedians. The best among them have clever ways of reenacting scenes from their lives, actual or embellished. They mimic others’ voices, use the mic to create sound effects, and are uniquely expressive with their bodies. Look at any bit by Dave Chappelle to see how he syncs with both individual audience members and the vibe of the entire room.

While few can match Dave Chappelle's expressive genius, if you pay attention, you'll notice that many people perform a kind of modified psychodrama or stand-up routine during ordinary conversation. They re-create their expressions of confusion, surprise, or outrage when describing reactions to past events: "I was like, 'Oh my God!'" Women may tuck in their chins and deepen their voices when repeating something a man said. Likewise, men might raise their voices and purse their lips when repeating things women said. Sometimes it's done in a mocking way, but more often they are just replaying a scene: "And then he was like ... and then she was like..."

Think about how you might sometimes subtly or overtly take on the character of, say, your spouse, your mom or dad, or your boss while relating an interaction you had with them. Once you become alert to it, you realize how often you and others do it. I have a friend whose mom is Italian, and whenever my friend tells me about something her mom said or did, my friend perfectly assumes her mother's posture and accent. It is so spot-on that sometimes I later get confused whether she told me the story or I was actually there. Leaning into that kind of parlor playback tendency can enhance interpersonal synchrony because listeners more vividly experience and understand the stories people tell.

The most arresting and engaging people—whether auctioning fine art, arguing a legal case, or just spinning a yarn—are the most expressive verbally and nonverbally. British American socialite and diplomat Pamela Harriman, who beguiled an astonishing array of powerful men for the better part of the last century, was described by admirers as having a captivating "thespian's gift" to re-create the voices and manner of people when she told a story. Of course, Harriman was also known for her talents in the boudoir. But perhaps she used her "thespian's gift" there, too.

Interestingly, the so-called love hormone, oxytocin, which is associated with sexual arousal, trust, and attachment, is also linked to greater emotional expressivity. To be sure, we all have different comfort zones in terms of how expressive we are and with whom. My friend doesn't become her Italian mother in front of everybody. But we can all put more life and authentic feeling into the stories we tell one another, as well as how responsive and expressive we are when listening to others' stories. A poker face has its place, but not when you want to establish an emotional

connection. Like proximity, expressiveness effectively intensifies the signal. You can't sync to what you can't sense.

I Was Just Thinking About You

SYNCHRONY AND SYNCHRONICITY

A pivotal moment in the life of Hans Berger, and in the annals of neuroscience, occurred on a spring day in 1893. He was nineteen years old and serving in the German cavalry when, during a training exercise, his horse stumbled, and Berger and the horse went tumbling down an embankment and into the path of an oncoming artillery carriage drawn by six draft horses.

With thundering hooves and grinding wheels all around him, Berger thought he would surely die. Miraculously, he emerged, battered and dusty, but without serious injury. That evening, Berger received a telegram from his father, who had never sent a telegram in his life, inquiring about his son's welfare. Berger's older sister had insisted with uncharacteristic agitation that her father send the telegram because she just knew there had been an accident.

Almost fifty years later, Berger wrote: "It was a case of spontaneous telepathy in which at a time of mortal danger, and as I contemplated certain death, I transmitted my thoughts, while my sister, who was particularly close to me, acted as the receiver." When he completed his military service, he enrolled in medical school, obsessed with discovering the physiological basis for "psychic energy." It led him to invent a device to measure and record brain activity—the electroencephalogram, or EEG.

Not that anyone appreciated it at the time. Berger's EEG was met with unmitigated scorn from the scientific community. It didn't help that Berger, a psychiatrist, was hazy about the basic physics and technical aspects of his machine. It was a product of his intuition and trial and error. Berger was eventually vindicated in his finding that human brain activity was a kind of

measurable electrical energy, but he was never able to figure out just how one person's thoughts and feelings might be wordlessly transmitted to another person. It is still a mystery, but researchers are getting closer to mapping out some of the dynamics and the role synchrony might play.

The transmission of neural activity between individuals, or mind reading, is not about telepathy per se but rather about what psychologists call *theory of mind*, which is the capacity to intuit and interpret the mental states of other people. We begin to acquire this extraordinary ability around the age of four. It is thought to be a precursor or correlate of empathy because once you understand the perspectives, beliefs, and desires of other people, you can more easily put yourself in their shoes and feel what they feel.

To fully understand theory of mind, we must first talk about clocks—specifically, pendulum clocks, which were invented more than two centuries before Berger's EEG by a Dutch scientist named Christiaan Huygens. Lying in bed in 1665, Huygens observed an “odd kind of sympathy” between a couple of his clocks. The pendulums were swinging in near-perfect synchrony. Even weirder, Huygens wrote in his memoirs, “if the agreement was disturbed by some interference, it reestablished itself in a short time.”

Why swinging pendulums spontaneously synchronize has been a matter of considerable head-scratching among physicists ever since. Attempts to explain the phenomenon continue to be published in scientific journals to this day. Hypotheses range from imperceptible movements in the structures, such as walls or tables, on which the clocks are placed, to sound pulses transmitted through those structures.

The phenomenon is of ongoing and intense interest and debate because the more we understand the synchrony between simple oscillators, such as pendulums, the better we will be able to understand more complicated synchronistic processes that underlie such phenomena as insect swarms, earthquakes, laser technology, power grids, communication networks, transportation systems, and perhaps even the creation of the universe itself. And, of course, the more we understand the “odd kind of sympathy” Huygens observed between his clocks, the better we will understand the odd kind of sympathy that develops between human beings.

“There is something magical and deeply satisfying to think that synchrony ties us, not just to other humans but to the universe as a whole,” said Alexandra Paxton, an associate professor of psychological sciences at

the University of Connecticut, who studies synchrony in interpersonal and other nonlinear (i.e., complicated) systems. She was also a blocker, or defense player, on a roller derby team, which informs her research. How well skaters synchronize with teammates and competitors, she told me, “determines who wins.” Rarely does one find a scientist whose research bona fides include roller-skating around a circular track in fishnet stockings, hip-checking and shoving other skaters.

According to Paxton, synchrony within and between humans, as with anything else synchronizing in the universe, all comes down to coupling or coordination of oscillatory activity. To achieve synchrony, all parties involved—whether subatomic particles or planets moving in an orbital waltz—influence the other via a shared medium or environment until they fall into a common rhythm.

When you are conversing with someone, for example, if true understanding, or a fundamental *sympathy*, develops, the firing patterns, or neural oscillations, in your brain will begin to synchronize with the neural oscillations in the other person’s brain. Simply put, if you two were clocks, your pendulums would be swinging in sync. Ticktock. Ticktock.

As discussed in earlier chapters, the scientific literature is now replete with studies demonstrating interpersonal synchrony occurring on many different physiological, biochemical, neural, and emotional levels. But the mechanics of just how it occurs, and the cumulative effect, is something biology, physics, and applied math cannot entirely predict or account for. What’s certain is there has to be a common channel or medium for us to transfer signals and sync up. The most obvious are the auditory or visual channels—the sound and light waves by which we perceive and process one another’s verbal and nonverbal communication.

However, as Paxton pointed out, “We have multiple sensory channels from which we simultaneously get our information about other people.” Plus, things like our previous experiences and triggered memories introduce still more neural rhythms from which we form impressions and construe meaning. In other words, we swim in a sea of undulating wavelengths and rhythmic pulses both inside and outside our brains and bodies, and the synchronies created between and among them form our realities.

The mode, or channel, of communication involved in the synchronization of two or more people’s cardiac, respiratory, and hormonal rhythms is more of a mystery since we can’t readily perceive one another’s

autonomic activity. It's not like we can hear or see it, at least not consciously. Some studies hint that we detect gradations of change in people's skin tone caused by changes in blood flow. Others suggest we discern barely detectable pulsations of blood vessels beneath the skin, or electrical fields emanating from the conductivity of the skin. Olfactory signals might also serve as stimuli, which some research indicates may cause women in frequent close contact to synchronize their menstrual cycles.

There's no end of possible ways in which we might pick up one another's varied vibes. It's like you are a walking symphony orchestra with countless instruments playing at different frequencies and amplitudes to produce an affecting and arresting musical composition. Some may have greater awareness and appreciation of your tune and tempo, and their inner orchestras will play in harmony. Some may join in for only a few bars or detect only a few instruments and miss the rest. Others might be so distracted by their own internal melody and driving beat that they are oblivious. Still, to be alive is to play your tune, the notes and rhythms of which are constantly changing with your every mood, behavior, and interaction.

This isn't entirely a metaphor. Research suggests that as children begin to eat, crawl, and walk, they begin to develop their own cadence, or motor rhythm, that remains fairly consistent throughout life. The tempo of spontaneous body movements may reflect other, inner timing mechanisms. You probably know people who are like Energizer Bunnies while others plod along in what seems like slow motion. Some people naturally walk fast, talk fast, and chew fast. Others take what feels like forever to walk down the street, tell a story, or finish their dinner.

We all have an inner metronome called the *suprachiasmatic nucleus* located in the brain's hypothalamus that sets the tempo for almost every bodily system and function. Of course, you may rev or downshift depending on emotion, illness, injury, age, and, significantly, time of day because the suprachiasmatic nucleus is light sensitive and runs in time with the rising and setting sun.

But you also change gears to match the cadences, observable or not, of the people you are with. The more divergent people's timing, the more difficult it is to synchronize with them and the more onerous you may find

their company. If you don't believe me, check out the rants on slow eaters and slow walkers on Reddit.

It's well documented that people in different cities on average walk (and also talk) at different speeds. For example, worldwide, Singaporeans walk the fastest at 10.55 seconds per sixty feet. By contrast, residents of New York take about 12 seconds. Madrid clocks in at 10.89 seconds, just ahead of Guangzhou where it's 10.94 seconds and Dublin at 11.03 seconds. You might have heard someone say they moved out of a big city to a more rural area or vice versa because they "couldn't stand the pace." What they really meant was the pace didn't suit their internal rhythm. The daily effort of trying to sync to the town's pace, whether too fast or too slow, wore them down.

Interestingly, people debilitated by neuromuscular diseases retain their ability to synchronize or entrain to external rhythms. Michael Thaut, a collaborating scientist at the Rehabilitation Sciences Institute at the University of Toronto, told me people whose motor movements have become locked or halting due to stroke or Parkinson's disease begin to move with surprising ease and fluidity when they listen to music.

"The auditory system is extremely closely connected to the motor system," said Thaut, a native German who played violin professionally throughout Europe before becoming a neuroscience researcher. "If music has a strong beat, almost everyone taps their foot. It's a reflex."

Entrainment to musical rhythms also helps people with speech impediments to talk without halting, stammering, or stuttering, as shown dramatically in the film *The King's Speech*. King George VI's breakthrough came when his speech therapist, Lionel Logue, had him read pages of text while listening to music.

Keeping a beat, or the inability to do so, has also emerged as a way to diagnose and treat children with learning difficulties. Several studies by Thaut and others have shown that children with language and reading problems often have deficits in music and rhythm perception. They can't tap along to a beat or distinguish musical notes. Likewise, researchers have discovered that children who can keep a beat tend to have better social skills. The same is true for adults.

There is some evidence that music therapy and recreational dance activities can improve both reading and social skills, but more research is needed to figure out which interventions work for which populations.

Neurotypical children and adults would likely benefit from a different regime than children and adults with dyslexia or who are on the autism spectrum, for example. Of course, as discussed in chapter 3, there is abundant scientific and historical evidence that communal music and synchronized dance experiences improve general mood and promote prosocial behavior.

* * *

We should pause here to talk about mirror neurons, which are thought to respond more to visual than auditory stimuli. Italian researchers discovered mirror neurons by chance in the 1980s while studying the brain activity of pig-tailed macaques, so named for their short, curly tails. Using electrodes implanted in the monkeys' brains (similar to the ones Berger briefly implanted in a neurosurgery patient's brain to test his early EEG), the Italian researchers had intended to study neurons involved in goal-directed hand movements, such as grasping a peanut. Funny thing was, the researchers noticed the monkeys' neurons fired not only when they were grasping peanuts but also when the monkeys saw the experimenters or other monkeys grasping peanuts.

The researchers called these neurons *mirror neurons* because they seemed to mirror, or synchronize with, what others were doing even if the monkey wasn't doing the thing itself. In other words, mirror neurons seemed not to differentiate between actions performed by others and actions performed by the self. The discovery made a big splash when the research was published in the 1990s and led to an avalanche of studies using both noninvasive (neuroimaging of the brain) and invasive (electrodes implanted in the brain) techniques to see if the same might be true of humans.

The findings suggested that indeed humans, too, may have mirror networks in their brains. Mirror networks are thought responsible for such phenomenon as flinching when you see somebody else get hit, yawning when someone else yawns, or feeling nauseous when you see another person vomit. However, it is not clear whether mirror neurons are actually a distinct class of neurons or represent a latent ability in all neurons given the right conditions.

Nor is it entirely clear whether mirror neuron activity may rather be a precursor or artifact of embodied interpersonal synchrony. Nevertheless, some researchers have suggested that networks of mirror neurons, or the

mirroring ability of neurons, may be at least partly responsible for “mind-reading,” or theory of mind, as well as social contagion and empathy.

Interestingly, mirror neurons remain dormant when subjects observe non-goal-oriented actions, such as pantomiming. In other words, mirror neurons seem to have an aversion to fakery. This may partly explain why it is such a turnoff when someone intentionally tries to copy you in an effort to ingratiate themselves or exert influence over you. Mirroring, or syncing, only promotes affiliation and builds rapport if it is a sincere and spontaneous response.

Research also indicates that mirroring might be influenced by mindsets or general mental states. For example, the happier and more social you are, the more likely your brain activity mirrors observed behaviors, whereas people who are depressed and socially anxious are less likely to do so. This could be because affective disorders somehow inhibit mirror neuron activity. It’s also true that people who are sad or socially isolated may self-protectively avoid eye contact and hence might be less openly observant. Mirror neurons are also thought to make it harder to perform a task while perceiving an incongruent behavior, such as shaking your head “no” while watching another person nod “yes.”

Intriguingly, there is good evidence that, when your brain mirrors, or synchronizes, with someone else’s, it produces a kind of “social memory,” meaning that the mutually adopted rhythm persists even when you and the other person are separated. For example, French and American researchers had pairs of subjects tap their fingers when the subjects could and could not see each other. Not only did the subjects spontaneously and subconsciously sync their finger movements when they could see each other, but also, rather than relaxing back into their initial finger-tapping frequency when their partner was out of sight, the subjects continued tapping at the rate they had adopted as a result of the interaction.

Social contagion research tells us that people similarly retain socially acquired behaviors, thoughts, and emotions, and the associated neural patterns, even in the absence of the person or people who inspired them. Others literally shape our thinking, which influences our subsequent feelings and behaviors. Former astronaut Brewster Shaw told me that the feeling of synchrony and coordination he developed with fellow crew members on each of the three space shuttle missions he flew in the 1980s endures to this day. “You’re assigned maybe a year ahead of time, and you

train day in and day out to do a very complicated mission with a series of complicated tasks on a very tight deadline,” he said. The joint effort and intense desire to succeed fostered a kind of unity and teamwork that Shaw said made their performance exceed the sum of each of their individual talents. “That comfort, synergy, and shared understanding maybe fades a little in clarity over time, but it doesn’t go away,” Shaw said. “That sense of resonance is there every time we get together.”

The lasting effect of interpersonal synchrony is where humans part ways with pendulums because, according to classical physics, when two oscillators are decoupled by removing their common medium, such as hanging clocks on different walls, the synchrony immediately begins to disappear. But persistent synchrony between oscillators is not at odds with quantum mechanics. Quanta are tiny subatomic particles that are thought to follow a different set of rules than observed in larger objects. When quanta fall into synchrony, or coherence, they can retain their coordinated rhythm even when the particles are later separated by time and space.

The phenomenon, known as *quantum entanglement*, is thought to take place throughout nature between subatomic particles spinning within living species and within metals and other materials. As the pioneering quantum physicist and Nobel Prize winner Niels Bohr once said, “Those who are not shocked when they first come across quantum theory cannot possibly have understood it.”

Some of Bohr’s colleagues and intellectual heirs—including Eugene Wigner, David Bohm, Roger Penrose, John von Neumann, and Hiroomi Umezawa—sought to apply quantum theory to the workings of the human mind. These theories posit that quantum-mechanical phenomena, such as entanglement, may play a role in human consciousness—how we think, form memories, and know we exist. If true, quantum mechanics might explain why the synchronies we develop with other people persist long after the encounter.

“People have been proposing these ideas of quantum entanglement operating between humans, but so far, there is no concrete evidence for it,” California Institute of Technology physics professor Xie Chen told me. “Of course, you don’t want to put a human into a vacuum to test it.” Xie has bright eyes, long dark hair, and an engaging sense of humor for someone whose work covers both the field of condensed matter physics and quantum information. Her focus is many-body quantum mechanical systems with

unconventional emergent phenomena. I won't delve into what that means. Rest assured, it's not something you tackle for grins and giggles.

"Fundamentally, we believe that everything is quantum, so the whole universe should obey quantum mechanics," Xie explained. "But of course, quantum mechanics was discovered as a theory for microscopic particles, so if you go to big systems like a human or a cat, it's hard to experimentally observe the same effects because big systems interact with the environment, the particles collide, which causes decoherence," or a loss of coordination or synchrony between particles.

Decoherence is why quantum computing is progressing at such a slow pace. It's hard to keep the entangled particles perfectly isolated from outside environmental influences. Even the act of measuring quantum entanglement can cause decoherence. Apparently, quanta, like humans, behave differently when they are being watched and evaluated.

Nevertheless, Xie and other experts in quantum theory say that it's not beyond the realm of possibility that the brain may, in fact, function like a quantum computer where neurons become entangled on a quantum level to function. Indeed, researchers at Trinity College Dublin published a paper in the *Journal of Physics Communications* that provided evidence of quantum entanglement in the brains of human subjects that occurred in conjunction with conscious awareness.

The physics community is sharply divided over the validity and meaning of such research. But if you're in the camp that believes quanta in one person's brain can become entangled, then that entanglement could conceivably extend to quanta within the brain of anyone who mirrors that person on a neural level. The highly speculative and somewhat trippy implication is that interpersonal synchrony could be a blown-up version of quantum entanglement that might, even across time and space, maintain its coherence in surprising ways.

It might begin to explain how Berger and his sister could remain emotionally in sync despite the miles that separated them. Something similar happened to me when I was attending college in North Carolina. I was knocked unconscious in a biking accident and awoke bleeding all over the car of a good Samaritan who drove me to the emergency room. He left before I was clearheaded enough to thank him or pay to have his car cleaned (please contact me if this was you).

The doctors stitched my wounds, gave me a shoulder brace for my broken clavicle, and released me to return to my dorm. The minute I got there, my phone rang. It was my mother, which was unexpected because she was traveling mostly off the grid in China at the time. My mom and I have always been close, and she said she just “knew in her bones” that something was wrong.

And then there was the “odd sympathy” of the identical “Jim twins,” who were separated soon after they were born in 1940. Identical twins’ brains and bodies develop in near-perfect synchrony in the womb, and thereafter their interests, personalities, and behavior tend to be remarkably similar, even when raised apart. But the parallel lives led by the Jim twins, who reunited at age thirty-nine, were startling and far exceeded what could be explained by genetics.

Given up for adoption when a month old, both were named James and called “Jim” by their adoptive parents, the Lewises and the Springers, who lived unknown to one another forty miles apart in Ohio. Both Jims had beloved childhood dogs named Toy and adopted brothers named Larry. As students, they both enjoyed mathematics and woodworking and had a strong dislike for spelling.

When the Jims grew up, they both stayed in Ohio, living just seventy miles apart. Both married, divorced, and remarried. Their first wives were both named Linda, and their second wives were both named Betty. They named their sons James Alan, or James Allan in Jim Springer’s case. Both Jims were heavy smokers, suffered from migraines, drove Chevrolets, worked as deputy sheriffs, and vacationed at the same three-block-long beachside community outside St. Petersburg, Florida. They were both interested in mechanical drawing and block lettering, and both bit their fingernails to the quick. To quote the Scottish mathematical biologist J. B. S. Haldane, “The universe is not only queerer than we suppose, but queerer than we *can* suppose.”

Quantum entanglement has similarly been invoked to explain why humans often retain strong feelings of attachment and emotional resonance with loved ones who have died. They no longer exist materially, and yet we can’t entirely shake the rhythm of our relationships. In our minds, we still feel, see, and hear them. They are with us even when they are not.

In his book *Picnic Comma Lightning*, writer Laurence Scott described his simultaneous sense of loss and enduring synchrony with his parents,

who died in quick succession when he was in his thirties: “Those who are precious migrate, as fast as the flick of a light, from the outside to the inside of life. They don’t trip your senses by hugging you, or by swinging into view over the crest of the road ... Instead they live, at least part-time, in your mind’s electro-charged darkness.” Our synchronies survive us, residing in the neural throbbing of those we leave behind.

This kind of stubborn or “sticky” synchrony may also explain synchronicity, or meaningful coincidences, such as running into someone who had just crossed your mind: “I was just thinking about you!” Jungians, physicists, prophets, poets, philosophers, and phonies all have claims about what such strange simultaneities mean. Others call bullshit on any notion that they mean anything at all.

One inveterate yet endearing skeptic is Sir David Spiegelhalter, professor of statistics at the Center for Mathematical Sciences at the University of Cambridge in the UK. “I am a complete unbeliever about anything else beyond sheer, random luck and chance,” he said. “I don’t believe in any underlying force that creates these things.”

Even so, he continued, “I do believe that people communicate in ways that they are really not aware of and that people who spend a lot of time together know each other’s thoughts and, on some level, can tell what the other is going to do.” I asked if he himself had ever felt totally in sync with someone. He said he hadn’t. “I’m sure you guessed that,” he added, reading my mind.

But even if he did develop that kind of close, unshakable connection with someone, Spiegelhalter said he didn’t think there would be anything mystical or magical about it: “That’s just how humans and animals work.” As far as a possible relationship between interpersonal synchrony and quantum entanglement, he hedged. “It would be absurd to say it’s completely impossible,” he said, “but I would rule out anyone being able to prove it.”

So it appears we’ve arrived at the crossroads of absolute knowledge and unshakable belief. The things you know in your bones are not always available to your intellect.

Environmental and Interspecies Synchrony

WHEN YOUR PLANTS AND YOUR PETS KNOW HOW YOU FEEL

A horse and rider appeared in the entrance to a cavernous indoor riding arena in Longmont, Colorado. Backlit by a blinding summer sun, the pair created a kind of equestrian solar eclipse, their combined silhouette as black and featureless as the shadow they threw on the dusty ground. Everyone inside the arena, including the up-until-then snorting and whinnying horses, fell silent. Then the music started: “Martha Divine” by Ashley McBryde.

Horse and rider trotted into the arena in perfect time to the thundering beat of the music: “*I’ve got this feeling ... And I’ve got this shovel...*” The rider wore fringed chaps and an uncreased Stetson. His mount was a fawn-colored quarter horse with a black braided mane. But at that moment, they were more Fred-and-Ginger dance team than horse and rider. Together they twirled, backstepped, cross-stepped, hop-stepped, skip-stepped, and, at times, even seemed to soft-shoe. They galloped, trotted, and cantered this way and that, stopping on a dime when the beat dropped and picking it back up when the rhythm resumed. There was no sense of leading or following, commanding or obeying, cajoling or indulging. They were a synchronous herd of two.

The rider was Buck Brannaman, and such displays are how he starts all his horsemanship clinics. When he’s not working cattle on his ranch in Wyoming, Buck travels the country helping people with their horse problems. Or, as he puts it, “helping horses with their people problems.” Buck was the inspiration for the main character in Nicholas Evans’s book *The Horse Whisperer* and later consulted on the film adaptation. He was Robert Redford’s riding double. As someone who was born and raised in Texas, I have seen my share of expert riders and ropers at rodeos, not to

mention dressage competitions and polo matches. But I have never seen anything like the synchrony between Buck and his horse.

I was watching from aluminum bleachers overlooking the arena's riding ring. Next to me were a couple of weatherworn cowboys, who, like me, had signed up to observe Buck's horsemanship clinic. They smelled of soil, leather, and tobacco and weren't given to outward expressions of emotion. If space aliens landed in the arena, you could imagine these ol' boys doing little more than shifting their chaw from one cheek to the other. But when Buck and his horse started dancing, my cowboy companions tilted back their hats and muttered expletives in sheer awe as the crisp choreography ran through a playlist that included Keith Urban's "I Told You So," John Denver's "Take Me Home, Country Roads," and Waylon Jennings's "Honky Tonk Heroes."

"When you're not in tune with your horse, it's like dancing with a drunk," Buck said after he'd dismounted and fastened on his mic. "You want your horse to be hooked onto you like when you are on the dance floor with someone you are totally in love with and not aware of anyone else." There were about a dozen people standing beside their horses inside the riding ring. Over three long and dusty days, Buck was going to help these riders sync with their steeds. For those of us watching from the stands, it would be like watching a reality TV show where interspecies relationships played out in surprisingly raw and weird ways.

"You'll get some people who may be a little bit neurotic or emotional, or maybe kind of callous or insensitive, and you know damn good and well how their horse is going to be," Buck told me. "I don't mean some of the time, I mean every time." This was after a mustang broke free from its owner and ran headlong into the metal gate at the far end of the arena in its frenzy to escape. You can guess what the owner was like—high-strung, socially anxious, and impulsive.

Another student was the class contrarian. When all the other riders and their horses were in a circle facing Buck, she and her horse were facing outward. When everyone else was practicing a technique, she was doing something entirely different. Buck be damned, she was going to do it her way. Predictably, so was her horse, a beautiful copper-colored gelding that seemed to hold his mistress in contempt.

"A riding crop is about as useless as boobs on a fish," Buck admonished his students. "Using a crop means your horse isn't dialed into you." Crops

weren't allowed in the class, but some riders repeatedly kicked their horses' flanks to get them going and pulled and pulled and *puuuullllled* on the reins to get them to turn or stop. Their horses looked long-suffering, sullen, or just plain pissed. "Anytime you kick a horse without directing him mentally, it's like lighting a fuse," Buck said to no one in particular, but those of us in the stands, in the privileged position of remove, knew exactly who he was talking about.

Most of the clinic focused on getting horses and riders to, in Buck's parlance, "dial into" one another. It's not anthropomorphizing to think that you could develop a kind of mutual sympathy, or synchrony, with a horse or any other social species. They are driven to connect and are made up of oscillating cells and systems just like we are. Animals can certainly dial into one another. Lightning bugs fire, birds fly, fish swim, and herd and pack animals migrate, forage, and hunt in synchrony. Studies involving primates, horses, elephants, dogs, wolves, dolphins, marmosets, octopuses, butterflies, bees, and birds have shown that the strongest and most enduring bonds and alliances within species are between pairs and groups that consistently sync up their activity and locomotion.

"Horses are rhythmic animals," Buck called out to the riders as they rode their horses in circles around the ring. "If you are not in time with your horse's feet when you give commands, you throw them off." Buck repeatedly told his students to "make the horse a part of you," meaning that, as they rode, they should let their entire body—head, neck, shoulders, arms, hips, legs, feet—relax into the rhythm of the horse's movement, so they feel everything "all the way through the horse to the ground." When a rider achieves that kind of fluidity, even the slightest shift of the hip or thigh is enough to redirect a horse. "A horse can feel a mosquito land on its butt in a rainstorm," Buck said, so riders must have command over their own bodies, "so you're not misfiring and confusing the horse."

Buck told me later that the hardest thing to teach is "feel" for the horse and the associated emotional control. Similar to syncing with another human, you can't connect with a horse if you're distracted or self-absorbed. And just like some people have an amazing ability to tune in to other people, some people are naturals at tuning in to horses. "I wasn't a natural," Buck said, "but one thing I had was I was a hard worker." He rode dawn to dusk to develop his feel and took on horses others said were lost causes. He has particular empathy for scared and skittish horses because as a child he

was scared and skittish himself; his father beat Buck and his brother so severely, they were put in foster care.

“A lot of people approach a horse like a gladiator,” Buck said. “Like they are angry with him.” The idea of “breaking” a horse is a losing game when you consider the average horse weighs 800–1,200 pounds. It’s also counterproductive. “For what the horse does under compulsion ... is done without understanding,” wrote Xenophon, an ancient Greek military leader and philosopher. “And there is no beauty in it either, any more than if one should whip and spur a dancer.” Far better, he continued, that the horse “should show off all his finest and most brilliant performances willingly and at a mere sign.”

For Buck, it isn’t about just changing the horse; the human has to change, too. Like any relationship (emphasis on *relation*), both have to become attuned to the other. Synchrony, whether with a horse or another person, isn’t about imposing a rhythm but rather settling into a mutual rhythm. And when you finally achieve that synchronized state, “You feel it deep inside you,” Buck said. “It feels like you’ve arrived; like your horse is saying, ‘Welcome home.’”

Buck’s approach to training horses is similar to bond-based or relationship-based training for dogs, particularly service dogs, whose job is to sync with their disabled owners, or patients, if the dogs work in health care facilities. An example is Professor, a goldendoodle pediatric therapy dog who has worked at New York’s Mount Sinai Hospital Blau Center for Children’s Cancer and Blood Disease since 2017. Professor’s handler, Ali Spikestein, a child life specialist at Mount Sinai, told me that Professor helps clinicians meet treatment goals, whether it’s getting a child energized and out of bed for physical therapy, or calmed down to have blood taken. “I cannot overstate the impact Professor makes,” she said.

Professor is a graduate of Canine Assistants, a nonprofit organization in Alpharetta, Georgia, that breeds and trains service dogs. But don’t say the word *train* around Canine Assistants’ founder, Jennifer Arnold. She prefers *teach*. Warm, talkative, and tireless as she traipses about her eighteen-acre farm, you’d never know Arnold, now in her sixties, was in a wheelchair much of her young adult life due to relapsing polychondritis, an inflammatory disease affecting her cartilage. Her disease is now under control, but the experience made her especially committed to providing

competent and companionable service dogs to people coping with illness or any kind of disability.

Arnold told me that Canine Assistants' approach to *teaching* dogs has evolved. In the beginning, back in the '90s, staff used traditional obedience training, correcting dogs with quick jerks on choke chains. Then they experimented with various positive reinforcement techniques using treats and clickers. "But what we realized over the years was that if the dog doesn't have the ability to form a secure bond, and really sync with people, things were going to go wrong no matter how they were trained," Arnold said. "It's why the graduation rate at most service dog programs is so incredibly low." According to research by the American Kennel Club, only about 35–50 percent of dogs successfully complete service dog training programs.

Arnold's bond-based technique relies on a dog's cooperation rather than coercion to comply with cues and commands. The process initially involves almost continuous syncing with young dogs; shadowing their movements and even sharing food and sleeping with them. The synchronized activity creates an intense bond, or secure attachment, with the handler, Arnold told me, which makes the dog incredibly attuned and eager to please. Only at that point are dogs taught things like how to turn on and off light switches or how to detect and signal when a diabetic's blood glucose is out of range.

It's a rigorous curriculum that also involves teaching the dogs a broad vocabulary and exposing them to all kinds of environments (airports, hospitals, shopping malls, amusement parks, high-rise buildings, bridges, tunnels, etc.) as well as things that might potentially disconcert a dog (jack-in-the-box toys, remote control cars, men with beards, elevators, escalators, vacuum cleaners, power tools, etc.).

On the day I visited Arnold's farm, young dogs were exposed one at a time to a volunteer in a giant plush Scooby-Doo mask to gauge their startle response. Their reactions ranged from totally freaked out to totally oblivious, which Arnold said helps her determine what kind of placements are best for the dog's physiology and personality, or if they are even suited for a placement at all.

Instead of commands, Arnold talked to her dogs in full sentences. She'd say something like, "Don't drink that because it will give you giardia," and the dogs would back away from a muddy puddle. Or she'd say, "I know you want to stay outside and play, but we need to go inside now," and the dogs

would run for the back door. I imagined the dog trainers I knew back in Texas with their e-collars and dog whistles losing their minds. But while her technique is unorthodox, Arnold boasts a staggering 95 percent graduation rate.

When a Canine Assistants dog graduates and receives its placement, the dog's new handler, or "handler for life," must spend one to two weeks at Arnold's farm bonding with the dog and forming a working relationship. Arnold describes the dog's transition from its primary handler to its handler for life as sort of like leaving your mom and going off with a spouse or BFF (best friend forever).

His nails clicking on the polished floors at Mount Sinai, Professor walks close beside his handler for life, Spikestein, as they make their rounds. He jumps up on distressed young patients' beds and puts his head on their bellies, effecting an almost instantaneous calm. Wagging his tail and prancing a bit, he gets children's flagging energy up to try to walk after surgery.

Several small-scale studies have shown that animal-assisted therapy, or AAT, is beneficial to patients with a variety of diseases and disorders. Interacting with trained therapy animals has been found to decrease pain, improve mood and sociability, reduce stress, increase physical ability, lower blood pressure, and reduce fatigue.

Spikestein published a study in the *Journal of Pediatric Hematology/Oncology* that showed pediatric patients who had needlesticks in Mount Sinai's Hematology Oncology Clinic reported significantly less pain when a facility dog and a child life specialist were present compared to patients in a control group who were jabbed when only a child life specialist was there to provide support.

Adult patients and staff at Mount Sinai also benefit from visits from the hospital's facility dogs. There are two other goldendoodle employees at Mount Sinai besides Professor—Moby and Summer—who are also from Canine Assistants. "Hospitals are scary, lonely, and dark, and you're not in control," said Moby's handler for life, Jaclyn Craig, a creative arts therapist who oversees a staff support program at Mount Sinai in addition to working with adult patients.

Except maybe in a maternity ward, hospitals are not happy places, and no one looks happy. Since you sync to the expressions and emotions around you, hospitals can really get you down. Which is why the transformation

that occurs when a happy-go-lucky dog shows up is so striking. When I accompanied Craig and Moby to the adult oncology unit, for example, the desk nurse's strained and serious expression immediately brightened upon seeing the dog. "Moby is on the floor!" she announced over the intercom like he was a visiting rock star.

Staff crowded around to pet him, their eyes lit up above their face masks. Doctors and residents jumped on elevators just as the doors were closing to ride with Moby. They followed the dog down hallways. Patients pleaded for a visit, and social workers pulled Craig aside to tell her about someone who urgently needed some Moby time. "I have had to get good at setting boundaries," Craig told me. "We'd like to see everyone, but I have to manage the dog's energy."

Even when the dogs are hidden from view, you know instantly when they are "on the floor" because of the effervescent atmosphere. "I can tell you from my personal experience as Professor's handler, I definitely feed off his energy," Spikestein told me. When she is dragging on Monday mornings and Professor charges into the hospital ready to go to work, it amps her up. Conversely, if she's feeling stressed and overwhelmed, it can drag Professor down. "He might stall in the hallway and not want to walk through a door," Spikestein said. "Part of my responsibility as a handler is making sure he is comfortable and getting the breaks he needs and also taking care of myself, because it affects him."

"Dogs are highly social animals," Arnold explained. "That means they are affected by our emotions and get anxious they might do something wrong, just like people." To her way of thinking, training in the traditional sense, whether using positive or negative reinforcement, is a form of bullying because if the dog makes a mistake, it either gets punished, or affection or a treat is withheld. "Scared dogs can be trained to robotically respond to cues, but they can't truly learn," she said, echoing what the Greek philosopher Xenophon wrote about intimidated horses. "Scared dogs don't have the confidence necessary to handle the unforeseen situations in which service dogs can find themselves."

While some in the dog training community question Arnold's approach, which they consider coddling—if not chaos, particularly in the early stages—there is no doubt that graduates of Canine Assistants, like Professor, Moby, and Summer at Mount Sinai, are amazingly socially adept and confident regardless of their sometimes difficult and emotionally wrought

working conditions. The sympathy the dogs have for not only their handlers but also patients is remarkable.

Moreover, there is an interesting parallel between the way Arnold teaches dogs and how neuroscientist Ruth Feldman, whom you met in chapter 1, described the process of tuning the social brains of infants. The dog's primary handlers are like engaged parents, bonding and building social skills through synchronized behavior.

Of course, many people swear that their pets sympathize with them when they are upset or sick. Their dog or cat might show concern by bringing them toys, licking them, or sticking close by their sides. I like to think my dog and I share a bond, but we're not so synchronized that he'd forgo a good wallow in something disgusting no matter how upset I got. Nevertheless, studies show that pet dogs, like mine, generally sync up their movements with those of the adults, as well as the children, with whom they live.

For example, unleashed dogs put in an unfamiliar open space with their owners invariably move when their family member moves, stop when the family member stops, and gaze where the family member gazes. Interestingly, the duration and consistency of a dog's gaze toward a given person relates to the strength of its relationship with that person.

Moreover, dogs are the most behaviorally and temperamentally in sync with the family member with whom they are most bonded. If you have ever shared a pet with others in the same household, you know animals play favorites. There is always one person with whom the pet is most in tune, following them around and showing a high degree of sympathy. Research on dogs in shelters indicates that they likewise mimic the actions and emotions of their favorite caregivers, but to a lesser extent than family dogs, indicating weaker bonds.

Pet dogs also demonstrate a high degree of sensitivity to human stress. For example, studies have shown that dogs exhibit behavioral signs of distress and higher stress hormone levels when listening to the sound of babies crying compared to the sounds of babies babbling or white noise. One study tested dogs' ability to sync and respond to human emotional states by placing individual dogs in a room in their own home with their owner and a stranger. Each person hummed or quietly cried in turn, and the dogs consistently approached the person who was crying, even if it was the stranger, which suggests that their approaches were motivated by empathy

rather than familiarity. Another study showed that dogs' stress response, as measured by heart rate variability, spiked when the dogs perceived their owners were in trouble and they were unable to help, suggesting all dogs have the potential, or at least the instinct, to be service dogs.

Researchers have also analyzed the level of the stress hormone cortisol in hair samples from fifty-eight dogs and their owners and found significant synchrony. If the owner was stressed, the dog was stressed. But it can also work the other way around. Children with and without special needs who received twice-weekly sessions with a therapy dog were shown to have significantly lower levels of salivary cortisol compared to peers who received twice-weekly guided relaxation sessions or no treatment.

Just like between humans, there can be a co-regulatory or biobehavioral balancing dynamic going on between humans and their pets, whereby each party mutually influences the other until they reach equilibrium. The emotional and physiological impact of the interaction, then, is likely related to how stressed or how chill pet and person were in the beginning and also how long the two interacted.

While cats are thought to be independent and even contemptuous of people, it seems they tend to sync with their owners, too. One study showed that, like dogs, cats were influenced by their owners' personalities. People with neuroses were more likely to have cats that had stress-related ailments, such as stomach and skin issues, and behavioral problems like aggression and fear. People who were more well adjusted were more likely to have cats with good health and temperament. In other words, more open, sociable people were more likely to have cats that behaved the same way.

Another study, titled "The Purrfect Match: The Influence of Personality on Owner Satisfaction with Their Domestic Cat (*Felis silvestris catus*)," showed that owners who had dark traits like narcissism, Machiavellianism, and psychopathy were more likely to have cats who were more dominant and impulsive, which didn't seem to bother the owner, because the cat was just like they were. "Dominant cats are greedy, defiant, and aggressive and bullying towards people / other cats, which could be attractive to potential owners who have similar tendencies in their own social interactions," the researchers wrote in their conclusion. "Impulsive cats are excitable and erratic, which could be pleasing to impulsive owners."

It's also possible for pets and their owners to fall into co-dysregulatory patterns. Recall that co-dysregulation occurs when there is significant

synchrony but away from stability. This happens when a dog might be fearful of strangers, which makes the owner tense up whenever they encounter strangers, which makes the pet even more anxious, and so on. But just as your best human friend is not going to be on your wavelength all the time and in all things, your furry friend likely won't either. To wit, my dog and his penchant for rolling in all things revolting. Overall, though, because of proximity and dependency, pets and their owners have significant physiological, emotional, and behavioral influence over one another.

And that is why it is so devastating when a pet dies. Bereft of the animal with whom you've established a daily rhythm for years, you can feel utterly heartbroken. The author of *My Dog Tulip*, J. R. Ackerley, said that when his beloved Alsatian died after their fifteen years together, he felt so despondent that he would have immolated himself on a pyre given the opportunity: "For no human would I ever have done such a thing."

The reason he and others grieving a pet might experience such extreme despair is that pets, lacking the complicated emotions and thoughts of humans, are able to sync with us so completely and consistently. "They are just like, 'You're the one who feeds me, I'm totally following you around!'" Danish animal behaviorist Rikke Brogaard told me. "But that does not take away the genuine love that we can have for our pets and they can have for us."

We've been talking mainly about domesticated animals, but there are plenty of examples of interspecies synchrony occurring between humans and wild animals. People have developed strikingly simpatico relationships with raccoons, dolphins, bears, birds, squirrels, apes, deer, and elephants. Perhaps you've had the experience of locking eyes with an animal in the wild or perhaps behind bars at a zoo and felt an odd connection. It might not have been your imagination.

Charles Darwin recognized that among social animals, there are just as many examples of peaceful coordination and cooperation between species as there are instances of aggression and violence. But even in the latter case, synchrony comes into play, as when we're told to remain calm when in the presence of an aggressive animal because the animal will mirror your emotion. No shrieking, running, or flapping hands in fear. Your stress will heighten the animal's stress and provoke an attack whether it's a bear or a bumblebee.

There also appears to be something to the idea of being “in tune with nature” in the aggregate. It’s that feeling of inner peace and harmony many people experience when walking in nature, be it through a forest, across plains or moors, or on a beach. Myriad studies have indicated that spending time in nature leads to marked improvements in cognitive ability, blood pressure, mental health, immune function, and sleep.

Marcus Maeder, a Swiss acoustic ecology researcher, believes it might have something to do with the inherent rhythms you hear, consciously and subconsciously, when in natural settings. Using microphones and amplifiers plunged into soil, Maeder has revealed that animals, insects, and microorganisms are keeping a beat under your feet. Indeed, he said you can measure biodiversity by monitoring the varied yet strangely harmonious rhythms thrumming in dirt.

“The acoustic complexity of soil soundscapes changes with the course of the sun and the seasons,” Maeder told me. “It’s the same for the rhythmic patterns of nature you hear aboveground, such as birdcalls or any other animal sounds.” For example, you tend to hear tentative, emergent melodies of birds and insects at dawn that reach a crescendo as the sun rises before quieting back down again only to let loose with another boisterous burst toward sundown. Winter and autumnal rhythms are more muted and measured than those of spring and summer.

The rhythms of nature occur and blend at different time scales. “If you listen to the rhythm of trees, for instance, their processes are much slower,” Maeder said. “You have to speed up things for humans to perceive growth or water uptake.” Plus, there are what Maeder calls rhythmic “geophones,” which include meteorological and geological sounds, such as those produced by wind, rain, ocean tides, volcanoes, and faint tectonic shifts.

Evidence from the emerging field of environmental neuroscience suggests that perhaps we feel better in nature because we sync to those acoustic rhythms physiologically, neurally, and biologically to salubrious effect. The inherently rhythmic things you see in nature are also thought to contribute to what biologist and author E. O. Wilson called our “biophilia.” Examples include the repeating fractal, spiraling, tessellating, and wavelike patterns in vegetation, rock formations, mountain ranges, river currents, sand dunes, and sea foam. The writer and comparative religion scholar Joseph Campbell wrote: “The goal of life is to make your heartbeat match the beat of the universe; to match your nature with Nature.”

In a 2013 study, British economics and environment researchers created a smartphone app called Mappiness to track the perceived happiness and well-being of almost twenty-two thousand participants in the United Kingdom. When people downloaded the free app and agreed to participate in the study, they received pings at random times throughout the day asking how happy they were at that moment, where they were, who they were with, and what they were doing. The app then used GPS to pinpoint participants' exact locations. Over 1.1 million responses revealed participants were significantly and substantially happier outdoors in nature than they were in urban environments. Several subsequent studies have confirmed the findings.

“Maybe our brains are optimized to sync to and process rhythmic stimulation more easily, and maybe that’s why interacting with nature is beneficial,” said Marc Berman, an associate professor of psychology at the University of Chicago, who studies the impact of nature on health. As discussed earlier, our brains are soothed by predictable patterns.

Studies have shown patients recovering from gallbladder surgery who had a view of trees from their hospital rooms had shorter postoperative stays, fewer negative evaluations from nurses, and required less pain medication than patients who had a view of a brick wall. Prisoners whose cells faced a barren interior courtyard were 25 percent more likely to visit health care facilities than those who had a view of farmland. No wonder real estate agents estimate that homes with unobstructed views of water, woods, mountain ranges, or parks can go for as much as 60–200 percent more than comparable homes with views of, say, walls, fences, buildings, or roads.

Other research indicates pictures of ponds, streams, and trees and other vegetation produce lower levels of arousal and higher alpha brain waves (a brain state associated with wakeful relaxation) than pictures of treeless urban streets. The finding has led many dentists to install video monitors with looping slideshows of nature photography for their patients to look at during dental procedures. Looking at pictures of nature is also thought to improve cognitive function. But, Berman said, “the real thing has a bigger effect, we think because actual nature is multimodal with sights, sounds, smells, and tactile sensation, whereas pictures only provide the visual.”

Perhaps this explains the popularity of so-called forest bathing, known as *shinrin-yoku* in Japan, *sanlimyok* in Korea, and *senlinyu* in China and

Taiwan. Forest bathing is essentially taking device-free walks in the woods and soaking up all the visual, auditory, tactile, and also olfactory stimuli. Several studies indicate that forest bathing lowers pulse rate, blood pressure, and the concentration of cortisol in the blood, as well as improves immune function. A 2023 meta-analysis of forest bathing suggested it can significantly reduce symptoms of depression and anxiety.

A stroll through a city park and even houseplants have also been shown, by degrees, to decrease stress, sharpen concentration, and improve long-term mental health outcomes. Your ficus may not have the same effect as a full-on forest bath, but it's something.

Synchrony with nature is a leitmotif that runs through many world religions, notably Taoism and Buddhism, as well as some schools of philosophy, such as classical Neo-Platonism and nineteenth-century Naturphilosophie. The common thread is a belief that we are part of, rather than separate from, the great throbbing web of life.

To be sure, our bodies are inexorably ruled by the daily cycle of light and darkness caused by the earth's rotation, and the seasonal changes resulting from the earth traveling around the sun. Our inner metronome, the suprachiasmatic nucleus, paces itself according to the rising and setting sun. Located in the forefront of the hypothalamus, the suprachiasmatic nucleus is the central timekeeper to which a litany of other clocks distributed throughout the body synchronize, such as those located within organs and even within individual cells.

Many of us throw ourselves into so-called circadian confusion by frequently traveling across time zones, skipping meals, eating late at night, exposing ourselves to artificial light (including from our screens), getting up before dawn, and sleeping in on weekends, known in the scientific literature as *social jet lag*. Circadian researchers have repeatedly shown that disrupting our nature-bound periodicities increases the risk of obesity, diabetes, cancer, and heart disease; it also disrupts cognitive function and makes people more susceptible to mood disorders and drug addiction.

All this suggests that getting back to nature is really getting back to ourselves. Syncing with nature's cycles and its creatures is as much reunion as communion. "As long as I myself am identical with nature," wrote Friedrich Wilhelm Joseph von Schelling, a founding father of Naturphilosophie, "I understand what living nature is as well as I understand myself."

Back in Longmont, Colorado, at the end of the horsemanship clinic, when all the students were leading their horses to their trailers, I spied Buck, stiff after so many hours in the saddle, walking in his distinctive bowlegged gait toward his horse. Buck's assistant had put the horse in an open-air enclosure away from the general commotion. The horse trotted over to Buck and nuzzled his face. When Buck saw me, he smiled and said, "Goddamn, I love this horse."

Syncing with Shakespeare

CONNECTING WITH CHARACTERS AND CREATORS

When I was in college, I had a summer job summarizing depositions at a white-shoe law firm in Houston, Texas. One of the partners was a colorful litigator who had a carefully coiffed helmet of hair, an East Texas twang, and a corner office dominated by an imposing bust of Alexander the Great. The bust was a replica of a second-century-BC artifact with chipped nose, wavy curls, and sightless, empty eyes. New hires were warned specifically not to touch it.

On evenings before this particular partner was to argue a big case, you could hear him behind his closed office door quoting, you could say *channeling*, Alexander the Great: “Through every generation of the human race there has been a constant war, a war with fear.” Only in the litigator’s backwoods accent, “war with fear” became “wore with fire.” His stirring recitation could be heard even over the roar of the night janitor’s jet pack vacuum. “Those who have the courage to conquer fear are made free!” the partner would boom. “And those who are conquered by it are made to suffer until they have the courage to defeat it, or death takes them!”

Several floors below, another lawyer, just out of law school and therefore a lowly associate, had a light saber and several Luke Skywalker figurines in his windowless interior office. He told me he’d seen every *Star Wars* movie at least twenty times. The light saber and action figures were collector’s items, which he said he kept in his office to prevent his young children from playing with them. Also, he said in a half-joking way, the collectibles reminded him not to get lured to “the Dark Side.” I heard he later left the white-shoe firm to start his own environmental law practice. May the Force be with him.

The partner's affinity for Alexander the Great and the associate's for Luke Skywalker are examples of parasocial relationships, where people develop imagined interpersonal synchronies with fictional characters, historical figures, celebrities, or online personalities. They feel a deep sense of connection and identification even though they have never met these people, some of whom don't even exist. It's not pathological or even unusual. In fact, the power of a narrative work is typically measured by the degree to which we develop parasocial relationships with the characters and how long the feelings stay with us after we put down the book, turn off the TV, or leave the theater. The experience of entering characters' psyches and situations has been variously called *transportation*, *absorption*, *narrative engagement*, and *immersion*.

Telltale signs of being in a parasocial relationship are eagerly seeking out favorite characters or personalities through whatever medium they happen to be available, such as devouring every book in a series featuring them, seeing every one of their films, or closely following them online. Whether it's Elizabeth Bennet's travails and triumphs in Jane Austen's *Pride and Prejudice* or Elon Musk's coups and contretemps on social media, you become somewhat absorbed and invested in their worlds.

It's not always a conscious process, but you may find yourself thinking, feeling, behaving, and maybe even dressing like the character, such as wearing the team number and jersey of a beloved sports figure. You may feel outrage or joy on their behalf. Some may imagine having conversations with parasocial pals or having romantic liaisons with parasocial paramours. Or, like the law partner, you may identify so strongly, you feel almost as if you were the embodiment of the character.

There are several possible explanations for why we do this. One school of thought holds that so-called symbolic communication in the form of artistic or media representations of humans and human interactions is relatively new in evolutionary terms, and therefore we process these portrayals much the same way we would if the characters were in the room with us—that is, our syncing, mirroring, and matching mechanisms kick in. “The same neural structures underlie both media and real-life interactions,” said Rebecca Tukachinsky Forster, an associate professor of communication who studies parasocial relationships at Chapman University in Orange, California.

Brain imaging studies indicate that when we read about, see video, or even look at a painting or sculpture of someone, say, lifting something heavy or sobbing, our mirror neurons fire as if we were physically exerting ourselves or feeling sad, just like our neural patterns synchronize with those of a real-life person doing such things. Perhaps the most glaring example of this phenomenon is sexual arousal brought on by sexually explicit material. You're not having sex, but reading about it or watching a theatrical portrayal of others doing it jolts your body into feeling almost as if you were. "It's not that we need to suspend our disbelief to become immersed in books and films but rather the other way around," Forster told me. "It's by default we take the fictional experience as real, and we have to remind ourselves it is not real."

The intensity of the signal may be what helps us make the distinction. Research suggests that the neural syncing or mirroring activity that occurs when we observe others doing or feeling something is less intense than the neural fireworks that occur when we actually do or feel something ourselves. And the intensity diminishes the more removed we are from the action or emotion. For example, our neural firing might be strongest when we unwrap a present, somewhat less so when we see someone else unwrap a present, and still less when we read about or watch a video of someone unwrapping a present. Nevertheless, every instance gives us, by degrees, a similar sense of gratification, as evidenced by the popularity of so-called unboxing videos on YouTube, which get more than a billion views per year.

Vittorio Gallese, one of the Italian researchers who coauthored the landmark macaque peanut-grasping study (see chapter 10) and who coined the term *mirror neuron*, told me it's also likely that there is a difference in how the activation of mirroring mechanisms in the brain reverberates through adjacent neural networks. "The dynamic connectivities that occur within your brain may be different when the thing you see is happening to me versus when it's happening to you versus when it's happening to a character in a film," he said. However, Gallese hastened to add that it's possible to sometimes be more profoundly moved by an artistic rendering of something than experiencing it in real life. "Certain conditions enhance embodied simulation," he said.

For example, when you are watching a film in a movie theater, reading a book at home, or even contemplating a painting in a quiet museum, you are usually still and thus able to focus in a way that is not possible when you

are in the midst of a busy day. Moreover, you are in a relatively safe place, so you can let down your guard. “If you think about it, the only other time when you are relaxed and almost entirely still, except for eye movement, is when you dream and your consciousness is really vivid,” Gallese said. “So that might explain why in some instances you might weep watching a movie or reading a novel—because there are these contextual conditions that modulate intensity of this embodied mechanism.”

The type and intensity of our parasocial relationships also evolve as we mature. According to the late pediatrician and psychoanalyst Dr. Donald Winnicott, we form our earliest parasocial relationships with so-called transitional objects, such as teddy bears and blankets, which soothe us in the absence of our parents or primary caregivers. Teens and tweens tend to develop romantic parasocial relationships or crushes on celebrities or fictional characters, which allows them to have trial love objects who won't wound or reject them. Adults' parasocial relationships can be compensatory, making up for relationships they don't have or that they wish were better or more interesting. Parasocial relationships can also be aspirational, giving people role models or imagined kindly mentors. The more in sync we feel with them in our imaginations, the more we will try to emulate them. Some experts characterize people's relationships with God as parasocial—maintained through prayer and reading, reciting, and reenacting religious texts (a.k.a. God's word).

We develop parasocial relationships because, at a certain neural and psychological level, they feel real to us. Of course, some personality types are more prone to have intense and involved parasocial relationships than others. For example, research suggests those who score higher in empathy and who have more vivid imaginations are more likely to report a sense of deep connection to fictional characters. But it's unclear whether people who enjoy fiction are inherently more empathetic and imaginative, or if consuming fiction makes people more empathetic and imaginative.

Other research indicates that parasocial relationships may reflect our attachment styles. If we are anxious or avoidant in our real-life attachments, that's how we will be in our parasocial relationships. For example, people who have an avoidant attachment style are less likely to identify with, or care for, fictional characters or celebrities. They might eschew character-driven books and movies, preferring “just the facts” nonfiction. Some research also suggests people with avoidant attachment styles are more

likely to have parasocial relationships with flawed or negative characters, whom they can hold in contempt.

Someone with an anxious attachment style, on the other hand, might obsessively follow a celebrity on social media or read or watch everything available featuring them, or even camp out hoping to catch a glimpse of them. People with anxious attachment tendencies are more likely to feel every slight and success of the admired figure as if it were their own. They are apt to reach out to celebrities via letter, email, or direct message on social media. They are also more inclined to join fan communities, which may have the happy result of providing opportunities for real relationships based on parasocial ones.

Some studies have indicated that first-person narratives and cinematography techniques, such as using a Steadicam, which simulates a first-person view, are more likely to make people identify with characters than third-person accounts and wide-view camera angles. Other studies have shown it makes no difference, which suggests narrative perspective perhaps matters less than the talent of the artist, writer, or filmmaker to convey the inner worlds of the characters. If that's true, then our parasocial relationships and imagined interpersonal synchronies may, in fact, be with the creator of the work, rather than the characters created, because it was the creator's emotions and ideations that moved us.

Fiction writers themselves report having intense parasocial relationships with their characters. Ann Patchett, Elizabeth Strout, Anthony Doerr, Alice Walker, and David Nicholls are among many authors who report engaging in conversations with their characters—struggling with them over their actions, bargaining with them, and feeling for them. On his deathbed, Honoré de Balzac was said to have called out for Horace Bianchon, a recurring character in his work, insisting the fictional physician was the only one who could save him.

In partnership with *The Guardian* newspaper, researchers at Durham University in the United Kingdom surveyed 181 professional writers who attended the Edinburgh International Book Festival in 2014 or 2018. More than 60 percent of the authors said they heard their characters' voices, and about the same proportion said their characters acted of their own accord. Fifteen percent said they entered into dialogue with their characters and that their characters sometimes "talked back" or argued with them.

Another study of fiction writers, conducted by researchers at the University of Oregon, found that 92 percent of the authors reported some experience of their characters having independent agency, meaning their characters had a will of their own in determining their feelings and fate. The researchers also found that the more successful fiction writers (those who were published) had more frequent and more intense parasocial relationships with their characters.

Literary scholar and Scripps College professor Suzanne Keen has spent much of her career looking at how reading influences empathy and vice versa, and she warned that the interpersonal synchronies we feel with characters may not always be what the author experienced or intended. “Readers bring a lot to the imagining,” she told me. “You know this when you talk to someone about a character in a book you both read and you have totally different reactions.” In this way, our affinities—or lack thereof—for characters and their creators are as idiosyncratic as those we develop, or fail to develop, with actual people. Just as not every person will be on your wavelength, neither will every character or its creator. “Our reactions are rooted in identity, experience, memories, dreams, situation, personal history, age, and gender, but also how conscious we were of those factors when we were reading,” Keen said. A truly great work, however, is one that makes us forget ourselves.

Keen’s view parallels what the late literary critic and author Harold Bloom had to say about syncing with William Shakespeare and his characters: “We read to reflect and to be reflected,” he said. “You can make of the play *Hamlet* and the protagonist pretty much what you will, whether you are playgoer or reader, critic or director, actor or ideologue; push any stance or quest into it and the drama will illuminate what you have brought with you.”*

Social media and the heated twenty-four-hour news cycle mean we can also find ourselves immersed in the seeming Shakespearean dramas attendant on entertainment, sports, political, royal, and business figures. Celebrity posts and breaking news updates are comingled with those of our friends and family, making us all the more prone to develop parasocial relationships. We are constantly bombarded with the breathless unfolding narratives of famous figures, even down to what they ate for breakfast. Many find themselves “living inside the news” and developing very strong and very personal feelings (positive or negative) for the likes of, say, Selena

Gomez, Drake, Donald Trump, Kim Kardashian, Virat Kohli, Volodymyr Zelenskyy, Taylor Swift, or Lionel Messi.

To be sure, the stock-in-trade of online influencers is to encourage people to form parasocial relationships with them. Those who feel in sync with an influencer become followers and hence are more persuadable when it comes to buying items that the influencer recommends, whether shapewear, steak knives, skin care products, or outdoor grilling accessories. French fashion influencer Camille Charrière is admirably frank about encouraging a perceived sense of synchrony with her 1.4 million followers on Instagram through a dependable drip feed of personal disclosures: “Sharing your children, your boyfriend, the inside of your home, perhaps about your mental health or other illness struggles, family stuff—all of that performs better on social media. Anything that is very intimate and relatable, and that other people can identify with.”

Her followers have the illusion of interaction because they can “like” or comment on posts and sometimes even feel a sense of reciprocity if there is a vague acknowledgment on a subsequent post or even a direct response, further blurring the line between actual and parasocial relationships. Indeed, this blurring of real and imagined interpersonal synchronies is built into the DNA of sites like X, Instagram, and YouTube. We might even begin to feel like we are in sync with the platforms themselves, as when TikTok presents its “For You” recommendations. Synchrony begets intimacy, and what is more intimate than someone (or thing) appearing to anticipate your needs and desires?

Moreover, parasocial relationships offer a kind of relief to those suffering from feelings of loneliness and social isolation. Surveys have revealed a dramatic increase in the number and intensity of reported parasocial relationships during and since the pandemic.

Loneliness and social anxiety may have also fueled the rise of so-called fictosexuals, which describes people who are sexually attracted to fictional characters. An example is Akihiko Kondo, a self-described socially anxious man in Japan who married his favorite anime character and “communicated” with her through a holographic chatbot technology. When the company supporting the technology discontinued it, Mr. Kondo said it was a blow, but his commitment to his marriage remained strong.

He and other fictosexuals (there are legions, judging from the number and popularity of online forums and message boards devoted to

fictosexuality) say the advantage of their parasocial partners is that they will always be there for them, they will never betray them, and they'll never get ill or die. "Of course, there are tough parts," Mr. Kondo told *The New York Times*, such as the inability to have a meaningful conversation, much less have sex, and the thorny issue of copyright, which prevents him from making a life-size doll of the character he married. "But the love is real," he insisted.

David Giles, a psychologist who studies parasocial relationships at the University of Winchester in the United Kingdom, points out that there is usually an element of imagination and fiction in every relationship. "We tell stories to ourselves about people we are in love with, the people we care about, and people we don't care about; clear stories about how we fell in love, how we met, how we broke up, or fell out with one another," he said. "It doesn't take much to do the same thing with someone you have never met."

Syncing with others is so essential to our well-being, we may try to project it, or will it, onto celebrities and even onto fictional characters. Imagined synchronies with the likes of Alexander the Great, Luke Skywalker, Elon Musk, or Taylor Swift are not as psychologically, physiologically, or neurally deeply felt, which ultimately renders them less satisfying than actual interpersonal synchrony. And yet, while we cannot fool ourselves completely, parasocial relationships can still be a comfort, inspiration, or perhaps a bridge until the real thing comes along.

Synchrony and Flow

WHAT FIGHTER PILOTS, RACE CAR DRIVERS, AND GAMERS HAVE IN COMMON

Pilots can burn through a lot of flight instructors—first to get their basic and advanced certifications, and later to get additional ratings and fulfill ongoing currency and proficiency requirements. I myself flew with at least a half dozen instructors before I got my commercial license. They were a motley crew. One was mean as a yard dog. Another, alarmingly, suffered from what appeared to be narcolepsy. Then there was the guy who vaped something during night flights that made me feel higher than our indicated altitude. I could go on ...

But then fate introduced me to Debby Rihn-Harvey, a world aerobatic champion and former Southwest Airlines pilot based in La Porte, Texas. If you have ever been fortunate enough to fly with her or watch one of her aerobatic routines, you know her smooth and light touch on the controls as she loops and spins and reels and whirls in the sky. Her aerial tracings are as playful and agile as a swallow's—if that swallow had a billowing contrail.

To be a good pilot, Debby told me, you have to “sync,” or become “one,” with the airplane. “You have to feel what the airplane is experiencing, listen to what it is telling you, and intuitively know what it is going to do,” she said, otherwise, you are just a “machine operator.” You can pilot an airplane by flipping switches, turning dials, pulling levers, and pushing pedals at more or less the right time. But if you want to *fly*, Debby said, the airplane has to become a part of you.

Military pilots will tell you the same thing. During pilot training, they are told to strap *on* the aircraft rather than strap *into* it. Single-pilot fighter

jets are, in fact, intentionally designed to encourage a sense of synchrony, or “oneness.” The F-16, the military’s workhorse fighter jet since the 1970s, makes pilots feel as if it is an extension of their bodies. “It fits you like a glove,” said Colonel Zach “Size” Counts, an F-16 pilot who has flown missions in Iraq and Afghanistan for the United States Air Force and Air National Guard. (If Colonel Counts’s bawdy call sign offends, aviation is perhaps not the career for you.)

The F-16’s cockpit is not only a snug fit but also has a seamless bubble canopy that Colonel Counts said gives pilots a sense of “floating in the air.” Moreover, the jet’s digital, fly-by-wire flight controls, in lieu of traditional cables and linkage controls, allow for almost instantaneous execution of pilot inputs. Rather than having to grip a stick or yoke in front of you, the pilot maneuvers via an armrest-mounted side-stick controller with various switches and function controls incorporated into it. “Everything is at your fingertips,” Colonel Counts told me. “You maneuver the plane in a way that feels telepathic.” The F-16’s successor, the F-35, has fingertip controls plus voice recognition and flight displays built into pilots’ helmets so they are essentially plugged into the brain of the plane.

While design and technology can encourage oneness with high-performance aircraft, it still demands serious dedication, combined with natural ability, to achieve it. Very few pilots have the grit, fortitude, and feel to win world aerobatic championships or fly fighter jets. It takes thousands of hours of practice and learning from mistakes that hopefully don’t kill you. The same is true for competitive race car drivers and sailors, who develop similarly hard-earned synchrony with their modes of transport.

“Anyone can technically get around a racetrack, but unless you put in the time to really get in tune and feel what the car needs, and how it moves, and how it’s doing, then you’re never going to be naturally fast,” said Michael Mills, a Grand Prix champion racer who is now a private race coach. “I call it developing the language so you understand what the car is telling you.” The signals include visual cues, the sound of the air rushing past, responsiveness of the controls, the vibrating of the chassis, g-forces on your behind, and the torque felt from the changing location of your hands and feet in relation to your core.

What distinguishes just-okay drivers from great drivers, Mills told me, is the great ones, over time, stop interpreting the car and start *being* the car. “When you develop that kind of synchrony, you’re able to gain time, speed,

and advantage because you are not reacting,” he said. “You just know, kind of like you have telepathy.” Again, this idea of mind reading even though the vehicle doesn’t have a mind to read. The late newspaper columnist and sailing enthusiast George Matthew Adams went further, saying boats had not just minds of their own but “hearts and souls.”

So in addition to other people, animals, nature, and famous or fictional characters, we can now add inanimate (though not necessarily unresponsive) objects to the list of things subject to our instinct to sync. People develop what feels like personal connections with their airplanes, boats, and race cars. They name them. Their hearts swell when they see them chocked on a ramp, docked in a marina, or parked at a track. They grieve when they are damaged or sold. “If I sell an airplane and watch it fly away, it’s like a breakup,” Debby said. “It tugs at your heart.” The wife of a retired F-16 pilot told me the fighter jet had been her husband’s “mistress.”

While you may have some anthropomorphic affection for your blender, lawn mower, or coffee maker, it probably falls short of the kind of deep emotional attachments people can feel for their airplanes, race cars, and boats. The difference likely has to do with the mental challenge, whole-body engagement, and near constant sensory feedback. Before Colonel Counts takes off on a mission, he walks around his F-16 running his hands along its fuselage like the flanks of a horse and whispers, “Okay, sweetheart, let’s go do our job.”

His relationship with his F-16 is similar to a parasocial relationship, except it is not one-sided. There is an actual back-and-forth going on when you maneuver an F-16 or other high-performance vehicle. They respond to your inputs. They literally move you. Unlike with a fictional, historical, or famous character, you physically get to know your aircraft, race car, or boat and understand its quirks—what it can and cannot handle, what makes it pliant and what makes it balk. You begin to sync in a way that optimizes both the vehicle’s performance and your own. Some call it being “in the zone” or achieving “flow.”

In his bestselling book, *Flow: The Psychology of Optimal Experience*, the Hungarian American psychologist Mihaly Csikszentmihalyi* theorized that when a person invests all his or her psychic energy in an interaction—whether it is with another human being, an airplane, a mountain, or a musical instrument—that person becomes part of a system of action greater than what that individual had been before. “This system takes its form from

the rules of the activity; its energy comes from the person's attention," he wrote. "But it is a real system—subjectively as real as being part of a family, a corporation, or a team—and the self that is part of it expands its boundaries and becomes more complex than what it had been."

The flow phenomenon is characterized by: a) feeling challenged yet capable; b) a sense of time distortion or losing track of time; c) lack of self-consciousness and awareness of mundane concerns; and d) a feeling of transcendence where the person becomes completely engrossed and enthralled by the activity. Note how flow checks all the boxes of falling truly, deeply in love. Indeed, we become passionate about the people and things that put us in a flow state.

While Csikszentmihalyi identified, described, and celebrated flow as the "secret to happiness," he didn't propose an underlying neurophysiological mechanism. Researchers have since floated various theories, but the one that has gained the most traction is the so-called synchronization theory of flow (STF). First advanced in 2009 and supported by subsequent empirical evidence, STF holds that attention and reward networks in the brain are active during flow states and that these networks operate in sync with one another.

This makes sense given flow experiences typically require a series of learned, specialized response patterns, often in synchrony with a stimulus (could be your romantic partner, could be an F-16) developed over many hours of focused attention and practice. Learning in the brain, or skill acquisition, moreover, is characterized by synchronized firing of neurons. As the saying goes, "neurons that fire together, wire together," thus creating reflexive responses that preserve cognitive resources. Recall how metabolically expensive thinking is.

The neural signature of flow, then, is rhythmic, precise synchronization of high-frequency brain waves, not only in areas of the brain related to practiced, or learned, behaviors but also in those areas of the brain responsible for attention and reward. It's likely a reciprocating process, with attention networks in the brain goosing the learning networks, which then trigger the release of feel-good neurotransmitters like dopamine, which maintains attention and spurs more learning.

It is also thought that the neural synchrony and hence automaticity of synced responses during flow frees up other areas of the brain to develop even more connections, which amplifies pattern recognition, creativity, and

motivation during the pursuit. It explains why after thousands of hours flying an airplane, cultivating a personal relationship, or scaling the side of a mountain, you're able to stop thinking so much about the individual steps and procedures and start developing what Debby Rihn-Harvey calls *aha moments* that allow you to fine-tune and develop your expertise. "Once you develop that comfort and begin to really know what you are looking for," she said, "it's like you go from tunnel vision to a broader view, and can perceive more and make use of it."

We can synchronize and experience flow while interacting with anyone or anything, provided our interacting partner is sufficiently engaging and responsive in terms of giving us clear and consistent feedback. Flow experiences are so rewarding and satisfying, they can stir a kind of attachment, love, or passion for your interacting partner—human or otherwise. And that feeling can be addictive.

All well and good if you're interacting with someone, or something, that enlivens and expands you, like your best friend, an airplane, a race car, or even the tidal currents at a beach where you regularly surf. But it's worrisome in an era when we are increasingly interacting with technologies that in many ways dull, diminish, and depress us.

When Csikszentmihalyi's book was published at the turn of the twenty-first century, TV watching was the most popular leisure activity in the United States. He lamented that the majority of the population would devote so many hours to a pastime unlikely to generate a flow experience (i.e., deep concentration, a sense of challenge, feeling of control, transcendence, and satisfaction). "Surrounded by an astounding panoply of recreational gadgets and leisure choices," he wrote, "most of us go on being bored and vaguely frustrated."

Today, TV watching still ranks highest on the list of popular leisure pursuits, but it's rivaled by social media activity and online gaming, which are more interactive, and thus can potentially put you in a flow state. In fact, they are intentionally designed to do just that. But unlike the F-16, which was designed to help the pilot sync to the aircraft, these technologies are designed to sync to you.

Around 2018, I began noticing an unsettling trend while working on stories about social interaction, friendship, and attachment for *The New York Times*. Many of the leading psychology and neuroscience researchers I wanted to interview had left their jobs in academia, or were taking

sabbaticals, to work for Google, Amazon, Facebook, Twitter, Apple, or other tech concerns.

The trend has only accelerated in the intervening years as Silicon Valley continues to raid university neuroscience and psychology labs, hiring away esteemed research scientists to help develop commercial applications that synchronize with us neurally, emotionally, and physiologically. The goal is basically to get us to stay on their platforms longer and/or buy more stuff. The holy grail is to put users into a kind of flow state where they lose themselves in their online pursuits.

A recent PhD graduate can expect to earn about \$60,000–\$90,000 a year at a typical university, whereas tech companies are offering well into the six figures plus stock options. A former vice president of engineering at then Twitter, now X, was reportedly earning \$10.3 million annually after leaving a neuroscience lab at the University of California Berkeley, where he was doing postdoctoral work on socially learned behavior, or social contagion.

Tech companies are also offering \$25,000–\$100,000 research grants to scholars specializing in such areas as computational and social neuroscience, artificial intelligence, emotional contagion, and human–computer interfaces. While the payouts may be smaller than some government grants, they are typically far easier to apply for, running just a few pages versus the dissertation-length proposals often required for public or nonprofit funding.

Even more alluring is the fact that tech companies usually prohibit universities from taking a cut, so all the money goes to the researcher. The caveat is that researchers might not always be free to share their findings publicly, or there may be a required delay in publishing the findings. The company also may have some proprietary interest in the findings.

A psychology researcher who coauthored a widely cited study on interpersonal synchrony told me she felt she had to leave academia. “There are so many people getting PhDs, and there are so few tenure track roles available,” she said. “Even if you were lucky enough to get one of those tenure track roles, the work-life balance is terrible, the pay is terrible, and you spend most of your time grant writing.” Now she works for a so-called people analytics consulting firm that develops apps to help corporate human resource departments digitally monitor, profile, and motivate employees. “I see on LinkedIn, more and more people with my background joining companies, and companies are finding uses for us.”

Beyond the higher pay and reprieve from grant writing, many neuroscientists and psychologists are drawn to the private sector because it often gives them the opportunity to do more exciting, edgier work. They don't have to worry about getting published or submit to the scrutiny of a university's institutional review board about the ethics of their activities. The result has been a colossal brain drain. Leading researchers in the emerging fields of interpersonal synchrony and social neuroscience are increasingly not working to improve the science and find ways to apply what's known for the benefit of individuals and society but are rather working to help companies increase profits by exploiting the human instinct to sync.

Neuroscientists and psychologists working for big tech companies have contributed to the development of more addictive video games and social media apps, as well as more engaging artificial intelligence apps, such as virtual assistants, and chatbots that are close to passing the Turing test, which means they can fool you into thinking they are a real person. Former academicians are also behind so-called neuromarketing strategies that use physiological and behavioral data gleaned from our devices to create applications and virtual influencers that more effectively sync with us. All in the name of getting us to click "follow," "subscribe," or "buy now."

Currently under development at companies like Intel, Synchron, and Neuralink are "neuromorphic" chips and implantable micron-scale "threads," or tiny electrodes, that mimic, modulate, or otherwise alter the synchronistic workings of the human brain. Neuroscientists in collaboration with virtual reality developers are using specialized headsets that collect biometric data to gauge when video games put players into a flow-like state. Microsoft received a patent in 2020 to develop an artificial intelligence app that allows people to, in effect, sync with the dead, using inputs from "images, voice data, social media posts, electronic messages, written letters, etc." to "create or modify a special index in the theme of the specific person's personality."

In addition to the dystopian mind control aspect of all this, there is a real danger of unintended consequences when simulating something science has yet to fully comprehend. While there have been amazing advances in the study of interpersonal synchrony and flow, much remains a mystery, and some wonder if it wouldn't be better if it stayed that way. "I sometimes feel like I don't want to see what happens when people start really

understanding these kinds of dynamics,” said interpersonal synchrony researcher and psychotherapist Richard Palumbo (see chapters 6 and 7). “I start getting petrified thinking about how people might be manipulated by technologies that surreptitiously monitor when we are, and are not, in sync and use that information to sell you a used car or political ideology.”

In 2024, Colorado lawmakers passed the first measure in the US to protect people’s neural data. State Representative Cathy Kipp, a sponsor of the legislation, said in a statement that the aim was to “provide a clear framework to protect Coloradans’ personal data from being used without their consent while still allowing these new technologies to develop.” Supporters, including the Neurorights Foundation, a nonprofit promoting the ethical development of neurotechnologies, said the law was necessary as advances in neurotechnology make scanning, analyzing, and selling neural data increasingly available—and profitable.

The UK’s Information Commissioner’s Office released a report in 2023 that warned about the potential for companies to use brain-monitoring technology to make hiring decisions and monitor worker engagement as well as manipulate customers and consumers. The authors discussed concerns about the abuse of so-called neurodata to create apps that exert a kind of mind control as well as to discriminate against people whose neural activity may be atypical, asynchronous, or otherwise considered undesirable.

If the prospect of robots, chatbots, virtual influencers, and various AI apps inveigling their way into your brain space makes you recoil, your discomfort might be your salvation. Humans are subject to something called the *uncanny valley effect*, which is a reflexive unease triggered by something that is sort of human, in appearance or behavior, but not quite. Corpses, clowns, humanlike droids, and seemingly sentient artificial intelligence akin to HAL in *2001: A Space Odyssey* fall into this category. Rather than reflexively syncing with them, and thereby developing an affinity for them, people tend to be atavistically spooked by them.

Pixar learned this the hard way in 1988 when it test-screened the animated short film *Tin Toy*. Audiences were creeped out by the film’s humanoid baby created using photorealistic 3D software. It repulsed adults and made small children cry. The reaction was so strong, Pixar was persuaded to avoid creating characters that were too humanlike and focus instead on more cartoonish talking toys, fish, bugs, and cars. *Tin Toy* is still

available on YouTube, where horrified viewers leave comments such as “HOLY FUCKING SHIT THAT THING IS FREAKY.”

A Japanese roboticist named Masahiro Mori is credited with first recognizing and labeling *bukimi no tani genshō*, translated as “uncanny valley.” A paper he wrote in 1970 is by far the most widely cited paper about the phenomenon. But Charles Darwin hinted at the uncanny valley back in 1839 when he wrote about his unease and disgust while observing a trigonocephalous viper’s face: “I imagine this repulsive aspect originates from the features being placed in positions, with respect to each other, somewhat proportional to those of the human face; and thus, we obtain a scale of hideousness.”

Moreover, the German psychiatrist Ernst Jentsch published a 1906 essay titled “On the Psychology of the Uncanny,” which his Austrian colleague Sigmund Freud elaborated on a decade later in another essay, titled “The Uncanny.” They focused more on humanlike dolls and wax figures, such as those found in Madame Tussauds, whereas the uncanny valley today is more often associated with the Mori conception of humanlike robots, AI chatbots, and computer-generated images.

There are various explanations for this peculiar human revulsion. Some say it has to do with our brains’ exquisite sensitivity to social cues, which makes us subconsciously alert and wary of even the slightest abnormality. Others ascribe it to a fear of contamination. When someone, or something, seems weirdly off or out of sync, the more primitive part of our brains may associate it with illness. Either way, the brain’s expectation or prediction of what a human is supposed to do and/or look like is not met. We experience this as discomfort because our brains are essentially spinning their wheels trying to regain traction.

“It’s visceral and very hard to control,” said Karl MacDorman, associate professor in the Human-Computer Interaction program of the Luddy School of Informatics, Computing, and Engineering at Indiana University. Therefore, it’s likely a perceptual rather than a cognitive phenomenon. “It’s something that occurs before you know what’s going on,” he said. “Before you even decide what’s human, there is something disturbing about it.”

MacDorman’s research indicates that when people experience that strange eeriness, it tends to suppress feelings of warmth and empathy. In other words, it quashes interpersonal synchrony. You don’t get the warm fuzzies or develop a connection with something your subconscious is telling

you is off or creepy. It might have to do with the fact that mirroring mechanisms, as mentioned earlier, remain dormant when the brain, consciously or subconsciously, perceives an interacting partner is faking it or pretending. It seems that on some deep level, we are put off, even disgusted by, inauthenticity.

Some roboticists and AI experts argue the aversion is not deep-seated at all but rather we're just not used to bots that are human-ish in appearance and/or conversation. They claim generations raised interacting with them will readily sync with them. But research indicates that even babies recoil at the uncanny, suggesting the revulsion is hardwired. The aversion seems to develop between six and twelve months—the age at which babies develop proficiency at mirroring and processing facial expressions.

While there hasn't been research to determine whether mood or personality might make someone more or less prone to fall for AI impostors, it is not a stretch to imagine people who are lonely may be more credulous, lacking any better alternative. It also stands to reason that more sensitive and secure people might be more attuned to the kinds of social discrepancies that may trigger the uncanny valley effect. Indeed, some research suggests more empathetic people may feel uncanniness more acutely.

Context may also potentially play a role. A study coauthored by MacDorman and Italian colleagues suggests that when people believe their leaders or governments are untrustworthy, disappointing, or immoral, they may more willingly accept automated or artificial agents as decision-makers in politics and security. Put another way, we may be more willing to leap into the uncanny valley if the all-too-human alternative seems more repugnant.

Another study showed that subjects synchronized more with computerized avatars in integrative negotiations (win-win) versus distributive negotiations (win-lose). The human participants also reported a greater feeling of affiliation with the cooperative avatar. This suggests that if it clearly benefits us, we may temporarily get over any eeriness we might feel interacting with the almost human. But then, the avatar's speech and expressions in this study were controlled in real time by a human experimenter, which may disqualify the avatar as being truly uncanny.

Nevertheless, there is something hopeful in the thought that we might be hardwired to save ourselves from our own overreaching technology.

Users of ChatGPT-powered chatbots report that the conversations quickly veer into the creepy, with one *New York Times* journalist reporting that the experience unsettled him so deeply, he couldn't sleep afterward. The uncanny valley may also partly explain why so many virtual reality projects—including those at Meta Platforms Inc. (formerly Facebook), the Walt Disney Company, and Microsoft Corporation—have been scaled back or scrapped altogether. As one *Wall Street Journal* headline proclaimed: THE METAVERSE IS QUICKLY TURNING INTO THE MEH-TAVERSE. It seems virtual relationships and virtual worlds have so far been virtual flops.

This is not to say all human-machine interfaces that use biometric and social-signaling data to simulate interpersonal synchrony and/or flow are necessarily bad. They might provide some semblance of company to people who are shut in and lonely. Machines could potentially help the disabled accomplish tasks more easily if equipped with AI that could manage and modulate their neural and physiological activity. But in terms of satisfying our deepest need to feel connected, loved, and understood, such technologies, so far at least, fall short. Humans sync on more levels than we can as yet conceive, quantify, or calculate, much less simulate.

Sherry Turkle, a psychologist and professor at the Massachusetts Institute of Technology, said today's wave of socially engineered technologies "push us along a road where we're encouraged to forget what makes people special." Despite the hype, she said, "The performance of empathy is not empathy." While machines might sync with your inputs, they cannot sync with your feelings. As much as you may come to love them, they will never love you back.

A final note on flow: I asked dozens of private, professional, and military pilots how long it took to become "one" with an aircraft. The standard answer was about fifty to one hundred hours of flight time in a propeller airplane and five hundred to one thousand hours in a super-agile, high-performance jet like an F-16. Then I asked the same pilots how long it took them to develop a similar synchrony with their romantic partners. Their answers, without exception, echoed that of Colonel Counts: "I have been with my wife for ten years and I'm still trying to figure her out."

Stealing Your Sync

LOST CONNECTIONS IN MODERN LIFE

For years now, we have been warned of a “quiet catastrophe” of loneliness and isolation gripping individuals and communities worldwide. Despite several ambitious public health initiatives to address the problem in the US and elsewhere, what is widely considered a loneliness epidemic continues unabated, causing alarming rates of mental illness across all age groups, as well as decreased life expectancy, due to so-called deaths of despair (drug overdose, alcoholism, and suicide).

To call it an *epidemic* is apt insofar as surveys indicate that more than half of the US population—about 180 million—and a full third of the world’s population—2.7 billion—feel disconnected and lonely. But loneliness is not a disease. It is rather a biological signal like thirst and hunger, telling you a critical need is not being met. Loneliness is an inner alert that you’re out of sync with society, either because you’ve spent too much time alone or do not feel connected to those in your social sphere.

And just like not eating when you’re starved or not drinking when you’re dehydrated, failing to connect, or synchronize, with others when you are feeling lonely leads to negative cognitive, emotional, and physiological effects. Indeed, syncing in the ways discussed throughout this book is as essential to your well-being as food and water. In evolutionary terms, isolation makes us vulnerable to extinction, so it’s not surprising that our bodies and minds react strongly against it. We feel happy, safe, and satisfied when we achieve interpersonal synchrony, and depressed, insecure, and empty when we do not.

According to a US Department of Health and Human Services advisory report, in addition to feeling sad and anxious, people who are socially

disconnected are at greater risk of heart disease (29 percent), dementia (50 percent), and stroke (32 percent). It causes inflammation and lowers immune response, which increases susceptibility to chronic pain and viral and bacterial infections. Moreover, when people are isolated and alienated from one another, they tend to be more polarized, less cooperative, and less productive, which brings a whole raft of societal, economic, and cultural challenges.

So how did we get here? Who stole our sync? Obviously, our devices and obsessive online activity are significant contributors. Tech companies, collaborating with neuroscientists and psychologists, intentionally create devices and apps that take advantage of our instinct to sync. Evidence of their success is everywhere. Go to any public setting and you will likely be invisible to most passersby. Heads down and thumbs ceaselessly scrolling, people today are held captive by their phones, oblivious to the similarly enslaved masses moving all around them. Ubiquitous earbuds telegraph “Do not disturb” if not “You don’t exist.”

In his 1952 novel *Invisible Man*, Ralph Ellison describes the odd asynchrony one feels when unnoticed or ignored. “Invisibility ... gives one a slightly different sense of time, you’re never quite on the beat,” he wrote. “Sometimes you’re ahead and sometimes behind ... And you slip into the breaks.” We find our rhythm within the rhythm of humanity, and when we’re out of sync, our sense of self disintegrates. The Nobel Prize-winning playwright and social critic George Bernard Shaw wrote: “The worst sin towards our fellow creatures is not to hate them, but to be indifferent to them: that’s the essence of inhumanity.”

But it would be misleading and reductive to say that technology is solely responsible for endemic loneliness in our society. Larger economic, social, and political trends have conspired with technology to prevent interpersonal synchrony. Consider the so-called frictionless economy. “Friction” is corporate-speak for any physical or psychological barrier that might prevent a consumer from buying or using a good or service. Eliminating that friction, or “pain point,” often by way of technology, has therefore become the vaunted business model, if not the *raison d’être*, of start-ups and legacy companies alike.

But friction is precisely what makes socialization and interpersonal synchrony possible. “I think the real danger of the frictionless economy is that at any moment it’s easier often to do the nonsocial thing,” said

Nicholas Epley, professor of behavioral science and director of the Roman Family Center for Decision Research at the University of Chicago Booth School of Business.

Take your morning cup of coffee. The friction of making it is removed by having a barista at your local coffee shop make it for you. Ordering ahead on an app takes care of the potential pain points of waiting in line and interacting with the barista. Instructing an AI-powered virtual assistant to order your coffee eliminates the burden of tapping on your phone. And if leaving your house seems like too much exertion, your virtual assistant can prompt a coffee machine in your kitchen to brew you a steaming cup, which, being a smart machine, will subsequently make your coffee when and how you want without you having to disturb your morning reverie at all.

It's hard to think of any human activity today that has not been subject to the same diminishing degrees of friction and consequent diminishing opportunities for human contact and connection. Smart executives and entrepreneurs have striven to eliminate the perceived pain points from grocery shopping, stock trading, clothes buying, bike riding, banking, vacation planning, dining, moviegoing, and even finding true love. Removing friction is undoubtedly a sound business strategy. It goes back to how we humans are wired to preserve our cognitive, physical, and biological resources, not to mention our time, all of which are woefully limited.

No question—socializing and syncing take time, attention, and energy. Recall that synchrony between individuals, just like syncing pendulums on clocks, requires mutual accommodation. Even if you're not always aware of it, it's neurophysiological work to find your flow with another person, particularly initially. That's why first encounters and first dates can be so awkward and may leave you feeling worn out. You're both trying hard to first get a read and then to establish a coordinated rhythm. While you may click with some people more easily than others, it nevertheless takes effort to initiate and maintain.

Moreover, failure to sync despite your best efforts is incredibly aversive. Brain-imaging studies have shown that the pain of alienation and rejection rivals and can even intensify the perception of physical pain. Emotional contagion, fusion, and enmeshment can also be onerous and exhausting, as when you get sucked into someone else's defeatism, anxiety,

anger, cynicism, mania, or despondency. It's why apps that obviate, or preclude, human interaction can seem so attractive.

Even so, abundant research indicates, and the pandemic lockdowns demonstrated, that we eliminate social friction at our peril. Without friction, there is no warmth. Sure, it opens you up to rebuff and perhaps unwanted drama and interpersonal annoyances, but it's also the only way to experience kindness, love, loyalty and intellectual, emotional, and physical intimacy—the very things that make life worth living.

While proponents of the frictionless economy argue that it gives you more time to spend with people you truly care about, limiting yourself to syncing only with those in your innermost circle is not healthy, just like eating only one kind of food would be unhealthy. You need a balanced diet of social contacts, not only to improve your interpersonal sensitivity and social versatility but also to shore up your social network. You will not sync with everyone. Moreover, synchrony ebbs and flows even between the best of friends. So it's important to have a wide range of social interactions, including those with strangers or loose acquaintances (such as a barista who knows how you like your coffee).

“Little interactions with people add up and make a difference in how you perceive people who are different from you and how you perceive yourself as integrated and secure in the world,” said Katherine Fiori, a professor of psychology at Adelphi University. For decades, research has shown that chance encounters even during the most mundane, albeit now increasingly rare, activities, such as grocery shopping or going to the bank or post office, sharpen social skills, reduce anxiety, introduce novelty, spark creativity, and create new opportunities. Virtual interactions, on the other hand, tend to do the opposite.

Which brings us to the diminution of social contacts resulting from remote work. The pandemic brought a dramatic shift in our work habits—namely, we're synchronizing our efforts with others less and less. While it's hard to get good numbers, most business management scholars agree with a Stanford University finding that more than a quarter of paid full-time workdays in the United States are now accomplished remotely, compared to 4.7 percent before the pandemic. The percentage exceeds 60 percent globally in some white-collar professions.

We're working on our own schedules, on our own terms, and in our own homes, which gives us greater flexibility and control and frees us from

uncomfortable work clothes, maddening commutes, and perhaps the revolting smell of our coworkers' microwaved meals. It's undeniably a boon to working parents and others juggling work and home responsibilities.

However, there is a cost. Management experts talk about the "power of proximity," but it's really the power of interpersonal synchrony that only occurs when we are in close contact. The physiological, neural, and emotional linkages that develop during in-person interactions lead to enhanced teamwork, cooperation, loyalty, creativity, and rapport. Collaboration is harder when we are apart, as is mentorship. And good luck getting clear and contemporaneous feedback.

Even CEOs of Silicon Valley companies are coming to realize that wired workers are not the same as synced workers. Marc Benioff, the chief executive of Salesforce, told employees (ironically, in a Slack message) in 2022 that staff hired since the pandemic and who worked remotely were less productive than long-standing employees. He suggested lack of face time had led to a weaker culture, less collegiality, and poor communication. Mark Zuckerberg, the chief executive of Meta, made a similar observation in a 2023 memo to his staff: "In-person time helps build relationships and get more done." And in a 2024 edict ordering Amazon employees to return to the office five days a week, CEO Andy Jassy wrote: "You need to be joined at the hip with your teammates when inventing and solving hard problems." Even Zoom is now requiring its employees to show up at the office.

Zoom, Salesforce, Amazon, and Meta have lost significant market share and laid off thousands of workers in the years since they instituted company-wide remote and hybrid work policies. It's not the only reason for their declines, but it didn't help. Remote work also didn't help employees who took advantage of it. "Those who want remote work—those who will likely take advantage of remote work—are likely those who will lose jobs or at least lose out on opportunities because of remote work," said Kweilin Ellingrud, a director of the McKinsey Global Institute, who has studied how remote work affects career development.

Not that creating and maintaining connections is easy even when we are with others. Our culture of busyness encourages us to be whirlwinds of activity and laser focused on achievement, which limits not only the number but also the quality of our interactions. Ask people how they are

doing these days, and the stock answer is “super busy,” “crazy busy,” or “insanely busy.” To not be busy is seen as almost shameful. You’re not in demand, or you’re falling behind. Also, when you’re not super busy, your mind tends to drift to the things that are wrong in your life. Better to keep things a bit manic. Slowing down to sync with someone in a way that might reveal your true self may feel threatening.

In an opinion piece published in *The New York Times*, former US Surgeon General Vivek Murthy described how falling into the busyness trap contributed to his own loneliness. He recalled how in 2017, after his first stint as surgeon general ended, he was suddenly disconnected from his colleagues. “It might not have been so bad had I not made a critical mistake: I had largely neglected my friendships during my tenure, convincing myself that I had to focus on work and I couldn’t do both,” he wrote. “Even when I was physically with the people I loved, I wasn’t present—I was often checking the news and responding to messages in my inbox.”

After his job ended, he felt too embarrassed to reach out to friends to whom he had so long been indifferent. He felt out of sync, isolated, and lonely. Worse, he felt like he was the only one who felt that way. “Loneliness—like depression, with which it can be associated—can chip away at your self-esteem and erode your sense of who you are,” Murthy wrote. Rebuilding his connections with friends and family was how he clawed his way back, and when he again served as surgeon general, for a four-year term ending in 2025, he said he made an earnest effort to find and maintain interpersonal synchrony with others.

Another obstacle to syncing with others is the fact that today we have fewer common societal, political, and cultural points of reference. Before the internet and the twenty-four-hour news cycle, most people understood the world by watching a trusted network news anchor deliver one version of the day’s events. Now you can get your news from all manner of sources, some more reliable than others, and changing minute to minute. Likewise, before streaming video, a large proportion of the nation would watch popular television programming at the same time and talk about it the next day around the watercooler. Similarly, audiences contemporaneously saw what was playing in movie theaters and, good or bad, it would drive conversation.

Since the turn of the twenty-first century, there's also been an explosion of book titles, not to mention the advent of all sorts of new media, including podcasts, online videos, digital newsletters, social media feeds, and discussion boards. Today you can find on-demand content to satisfy almost every conceivable taste and niche interest. People often rely more on what algorithms tell them they might like than friends' recommendations.

Of course, choice is a wonderful thing, and a variety of voices and ideas is enriching. But it nevertheless puts everyone quite literally on different wavelengths. Princeton University neuroscientist Uri Hasson and his colleagues have demonstrated how individuals' neural patterns will be distinctly different while hearing the very same story depending on how the story is framed before the narration begins. And these neural patterns affect how subsequent information is processed and interpreted. In other words, if you bring two people together whose neurons have wildly different oscillatory patterns, it's more difficult to get them in sync. Think of a brain full of Fox News versus one steeped in CNN. Or a person who consumes content almost exclusively related to knitting, anime, and vegan cooking versus someone whose news and "For You" feeds tend to push stories about duck hunting, economic trends, and Cuban cigars.

Most of us have had the experience of meeting a stranger who happened to have grown up in the same neighborhood, competed in the same sport, attended the same university, had the same summer job, or perhaps experienced the same life event such as getting divorced or having twins. A bond and sense of affiliation can develop instantly based solely on learning your shared frame of reference.

The Quaker educator and author Parker Palmer calls such commonalities "third things" through which we establish connection. He writes that third things can be as seemingly insignificant as reading the same book, or seeing the same play, or following the same sports team. Nevertheless, the rapport that results from being on the same wavelength about that third thing, whatever it happens to be, opens the door to additional disclosures that reveal what else you may have in common.

Synchrony of experience is one of the reasons why astronomical phenomena such as solar and lunar eclipses generate so much excitement and enthusiasm. Such events are among the few opportunities left where people gather en masse, in common cause and common awe. An analysis of social media posts during the 2017 solar eclipse revealed that people

residing inside the eclipse's path not only expressed more collective awe, they also used more prosocial, affiliative, and humble language. They used more words expressing social connection like *care* and *love*. They used *I* less and *we* more than people outside the path.

The same is true after severe weather events, such as ice storms, hurricanes, floods, and tornadoes. As difficult and scary as such events can be, when the skies clear, there tends to be a sudden swell of sociability. Neighbors who have never even waved at one another act as if they are fast friends. Strangers warmly greet one another in the streets and offer unsolicited help. Nobody lacks for a topic of conversation or point of connection, because you all went through the same thing at the same time. "Did you make it through okay?" "Do you have power?"

It's not that people with divergent experiences, interests, and influences can't sync; it's just that they have fewer common exposures and shared sources of information, and thus they have very dissimilar neural firing patterns. Achieving synchrony, therefore, will take more time and energy, kind of like when two pendulums are totally out of phase—it takes longer for them to swing in unison than a pair that is only slightly out of phase. And since human beings like to preserve their brain's firepower, they may not make the effort.

Several studies have shown that when subjects are led to believe their interacting partner is similar or dissimilar, they are respectively more or less likely to sync neurally, emotionally, behaviorally, and physiologically. Because syncing fosters feelings of rapport and not syncing results in disaffection, it then becomes somewhat of a virtuous or vicious cycle depending on whether one is perceived as an insider or outsider.

However, it's also true that sometimes perceived dissimilarity can heighten arousal so members of opposing groups might fall into a co-dysregulatory dynamic of hypervigilance and oversensitivity. Both sides become poised to take offense. This seems in part responsible for the tribalism that has historically beset diverse societies and why so many shut out or shut down those from whom they feel intellectually, politically, religiously, culturally, morally, or socioeconomically distant.

While such divisions allow people to remain fixed and comfortable in their thinking, it prevents them from developing what is known in the scientific literature as *neural plasticity*, which is the ability of the brain to change its neural firing patterns to learn new things. Neural plasticity is

essential to interpersonal synchrony, because it involves adapting your neural impulses to the rhythms of another. This oscillatory accommodation is how we learn about one another and therefore achieve greater understanding, empathy, and connection. Neural rigidity, by contrast, leads to misconceptions, missed connections, alienation, and loneliness.

The early-twentieth-century legal scholar and Supreme Court Justice Oliver Wendell Holmes Jr. believed that an agile mind—one that can easily sync with other minds—is an open and just mind. “When you know that you know,” he wrote to a friend, “persecution comes easy.” For him, inflexible thinking, prejudice, and dogmatism were essentially giving in to intellectual laziness. His contemporary and friend the philosopher and psychologist William James wrote in “The Energies of Men” that people get over their neural inertia only when “some unusual stimulus fills us with emotional excitement, or some unusual idea of necessity induces us to make an extra effort of will.”

Public health initiatives to combat loneliness and alienation typically include rethinking how technology is designed, and supporting communities and organizations that encourage social interaction. But in the end, it’s up to individuals to exercise “an extra effort of will” to banish indifference and sync with others. You don’t have to be as effervescent as my neighbor Joan (few people are) but we can all take a page out of her playbook and try to leave people better than we found them—even if it’s just to look them in the eye and smile. Acknowledgment is a form of kindness, and kindness is catching.

We have a profound instinct to sync, but there’s a lot interrupting, intercepting, or degrading the signals we send and receive from one another at present. Turning things around requires a firm realization that daily moments of interpersonal synchrony with a range of people, no matter how brief, are as important to our health as eating a balanced diet, exercising, and sleeping. At the same time, it’s important to recognize when we’re over-syncing and give ourselves and others the space and grace to pull back and recalibrate.

Everything from the tiniest quantum particle to supermassive quasars manifests synchronistic properties. Human beings are no exception. Our bodies are symphonies of synchronized activity, with the coordinated rhythmic firing of cells allowing our brains to think, our hearts to beat, our muscles to move, our alimentary canals to digest, and our sexual organs to

give us pleasure. Similarly, and just as critical to our health, is the synchronization of our bodies and brains with the bodies and brains of other people.

Interpersonal synchrony is how we sense the atmospheric shift in a courtroom, the dissembling of a salesperson, the unspoken distress of a friend, the trustworthiness of a colleague, and the romantic interest of someone across a crowded room. Social resonance and dissonance are often internalized and acted upon before consciously perceived. But cultivating an awareness of how people make you feel will not only give you insight into others' feelings but will also prevent you from confusing others' feelings for your own. Energizing and sometimes exhausting, interpersonal synchrony is essential to social success and perhaps also to your very survival. As the research clearly shows, isolation and loneliness can be mortally wounding.

Finally, you can only synchronize with someone else to the degree that there is synchrony within yourself. When your behavior is at odds with your true feelings, your neural patterns are at cross purposes and out of sync. Such disharmony is psychologically and physiologically wearing and prevents you from tuning in to others and keeps them from tuning in to you. In other words, inauthenticity is a connection killer. The writer James Baldwin put it best when he said: "You have to go the way your blood beats. If you don't live the only life you have, you won't live some other life, you won't live any life at all."

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Notes

INTRODUCTION

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