CHAPTER TWO: HOW THE BRAIN WORKS

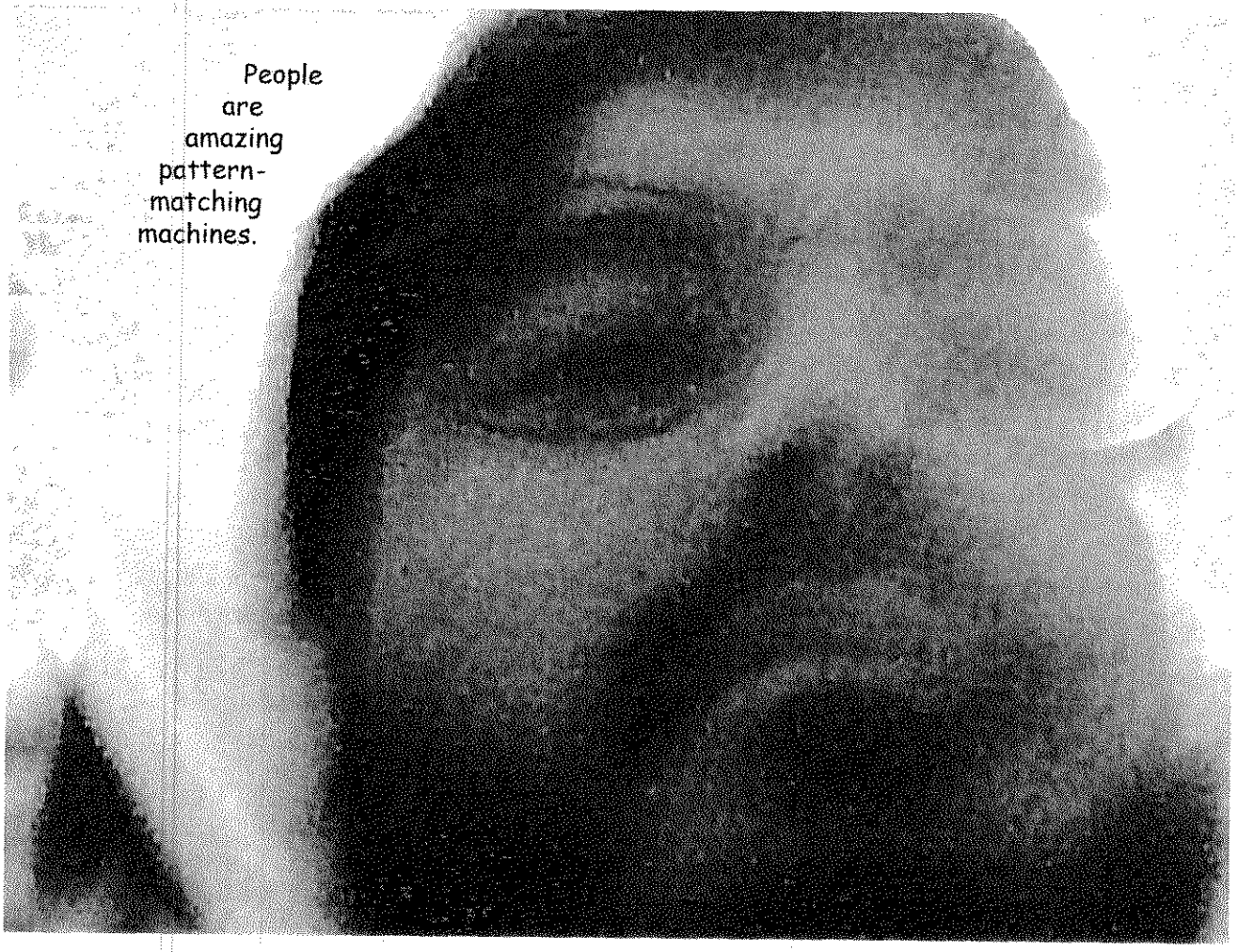
There are a lot of definitions of "game" out there.

There's a field called "game theory," which has something to do with games, a lot to do with psychology, even more to do with math, and not a lot to do with game design. Game theory is about how competitors make optimal choices, and it's mostly used in politics and economics, where it is frequently proven wrong.

Looking up "game" in the dictionary isn't that helpful. Once you leave out the definitions referring to hunting, they wander all over the place. Pastimes or amusements are lumped in with contests. Interestingly, none of the definitions tend to assume that fun is a requirement: amusement or entertainment at best is required.

Those few academics who tried to define "game" have offered up everything from Roger Caillois's "activity which is...voluntary...uncertain, unproductive, governed by rules, make-believe" to Johan Huizinga's "free activity...outside 'ordinary' life..." to Jesper Juul's more contemporary and precise take: "A game is a rule-based formal system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels attached to the outcome, and the consequences of the activity are optional and negotiable."

None of these help designers find "fun," though.


People are amazing pattern-matching machines.

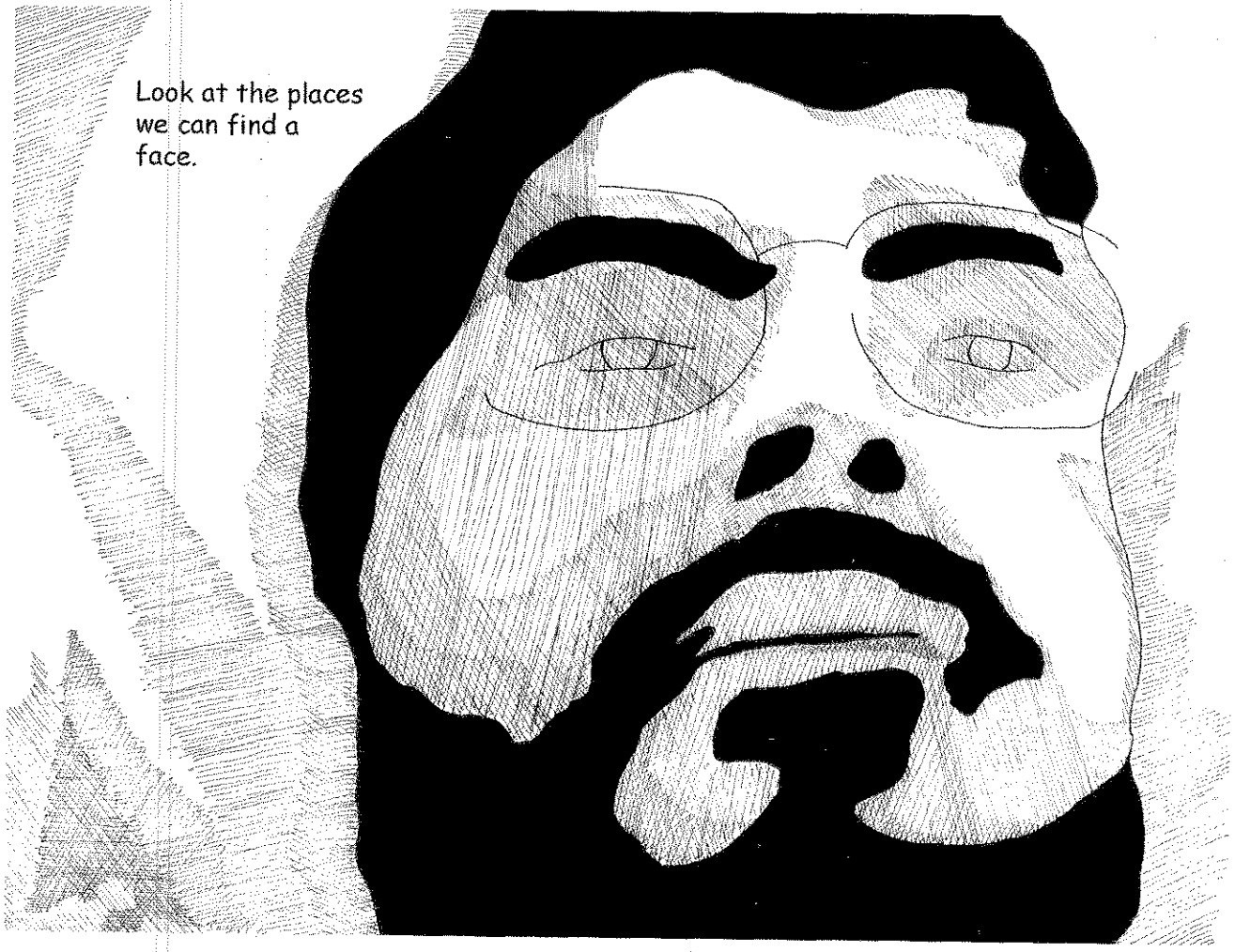
Game designers themselves offer a bewildering and often contradictory set of definitions.

- To Chris Crawford, outspoken designer and theorist, games are a subset of entertainment limited to conflicts in which players work to foil each other's goals, just one of many leaves off a tree that includes playthings, toys, challenges, stories, competitions, and a lot more.
- Sid Meier, designer of the classic *Civilization* computer games, gave a classic definition of "a series of meaningful choices."
- Ernest Adams and Andrew Rollings, authors of *Andrew Rollings and Ernest Adams on Game Design,* narrow this further to "one or more causally linked series of challenges in a simulated environment."
- Katie Salen and Eric Zimmerman say in their book *Rules of Play* that a game is "a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome."

This feels like a quick way to get sucked into quibbling over the classification of individual games. Many simple things can be made complex when you dig into them, but having fun is something so fundamental that surely we can find a more basic concept?

I found my answer in reading about how the brain works. Based on my reading, the human brain is mostly a voracious consumer of patterns, a soft pudgy gray Pac-Man of concepts. Games are just exceptionally tasty patterns to eat up.

When you watch a kid learn, you see there's a recognizable pattern to what they do. They give it a try once—it seems that a kid can't learn by being taught. They have to make mistakes themselves. They push at boundaries to test them and see how far they will bend. They watch the same video over and over and over and over and over and over...


Look at the places
we can find a
face.

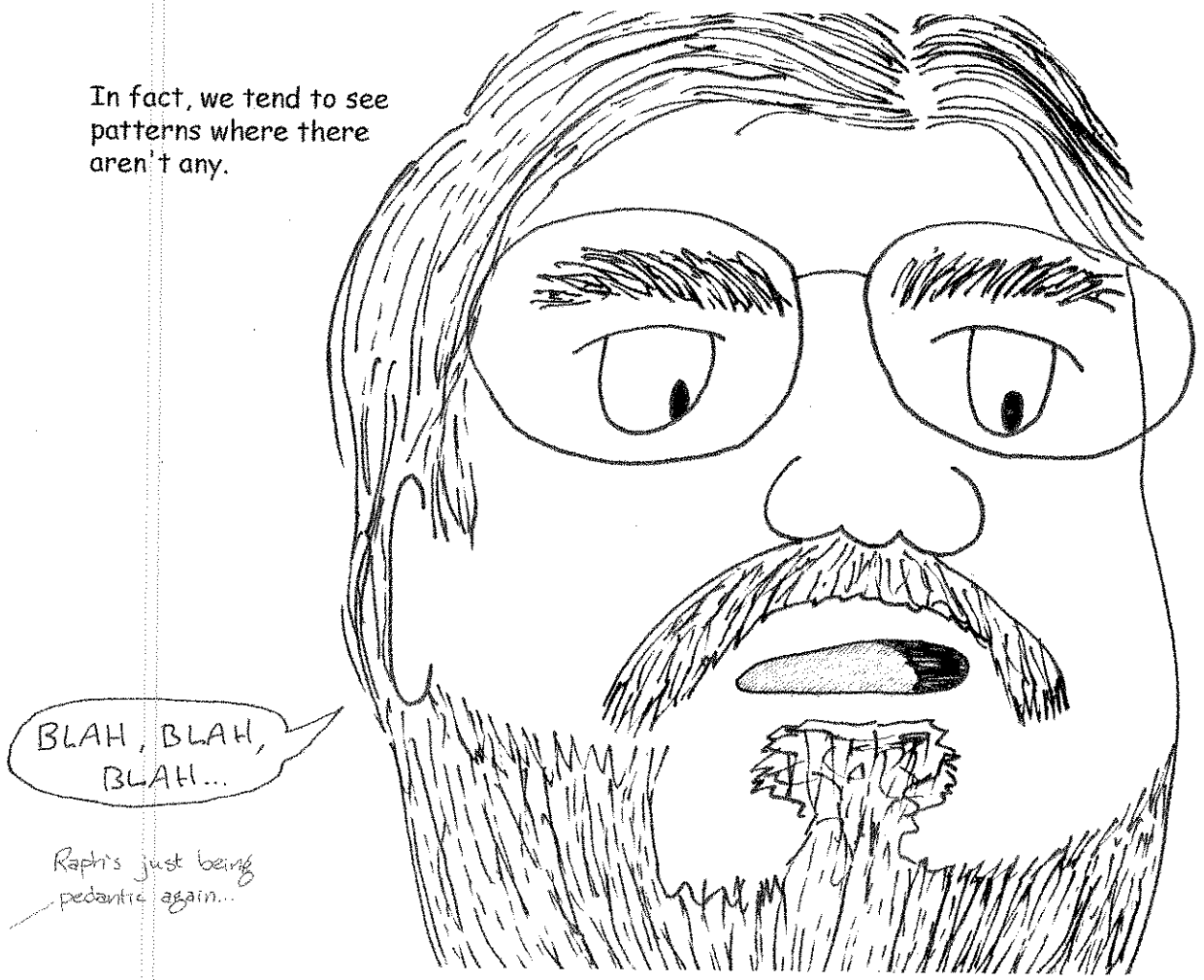
Seeing patterns in how kids learn is evidence of how pattern-driven our brains are. We pattern-seek the process of pattern-seeking! Faces may be the best example. How many times have you seen faces in wood grain, in the patterns in plaster walls, or in the smudges on the sidewalk? A surprisingly large part of the human brain is devoted to seeing faces—when we look at a person's face, a huge amount of brainpower is expended in interpreting it. When we're not looking at someone face-to-face, we often misinterpret what they mean because we lack all the information.

The brain is hardwired for facial recognition, just as it is hardwired for language, because faces are incredibly important to how human society works. The capability to see a face in a collection of cartoony lines and interpret remarkably subtle emotions from them is indicative of what the brain does best.

Simply put, the brain is made to fill in blanks. We do this so much we don't even realize we're doing it.

Experts have been telling us for a while now that we're not really "conscious" in the way that we think we are; we do most things on autopilot. But autopilot only works when we have a reasonably accurate picture of the world around us. Our noses really ought to be blocking a lot of our view, but when we cross our eyes, our brains have magically made our nose invisible. What the heck has the brain managed to put in its place? The answer, oddly, is an *assumption*—a reasonable construct based on the input from both eyes and what we have seen before.

Assumptions are what the brain is best at. Some days, I suspect that makes us despair.


In fact, we tend to see patterns where there aren't any.
BLAH, BLAH, BLAH...
Raph's just being pedantic again...

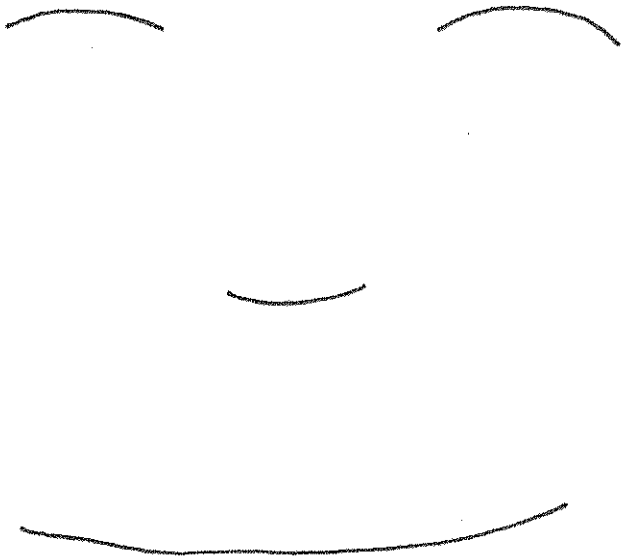
There's a whole branch of science dedicated to figuring out how the brain knows what it does. It's already led to a wonderful set of discoveries.

We've learned that if you show someone a movie with a lot of jugglers in it and tell them in advance to count the jugglers, they will probably miss the large pink gorilla in the background, even though it's a somewhat noticeable object. *The brain is good at cutting out the irrelevant.*

We've also found that if you get someone into a hypnotic trance and ask them to describe something, they will often describe much more than if they were asked on the street. *The brain notices a lot more than we think it does.*

We now know that when you ask someone to draw something, they are far more likely to draw the generalized iconic version of the object that they keep in their head than they are to draw the actual object in front of them. In fact, seeing what is actually there with our conscious mind is really hard to do, and most people never learn how to do it! *The brain is actively hiding the real world from us.*

These things fall under the rubric of "cognitive theory," a fancy way of saying "how we think we know what we think we know." Most of them are examples of a concept called "chunking."



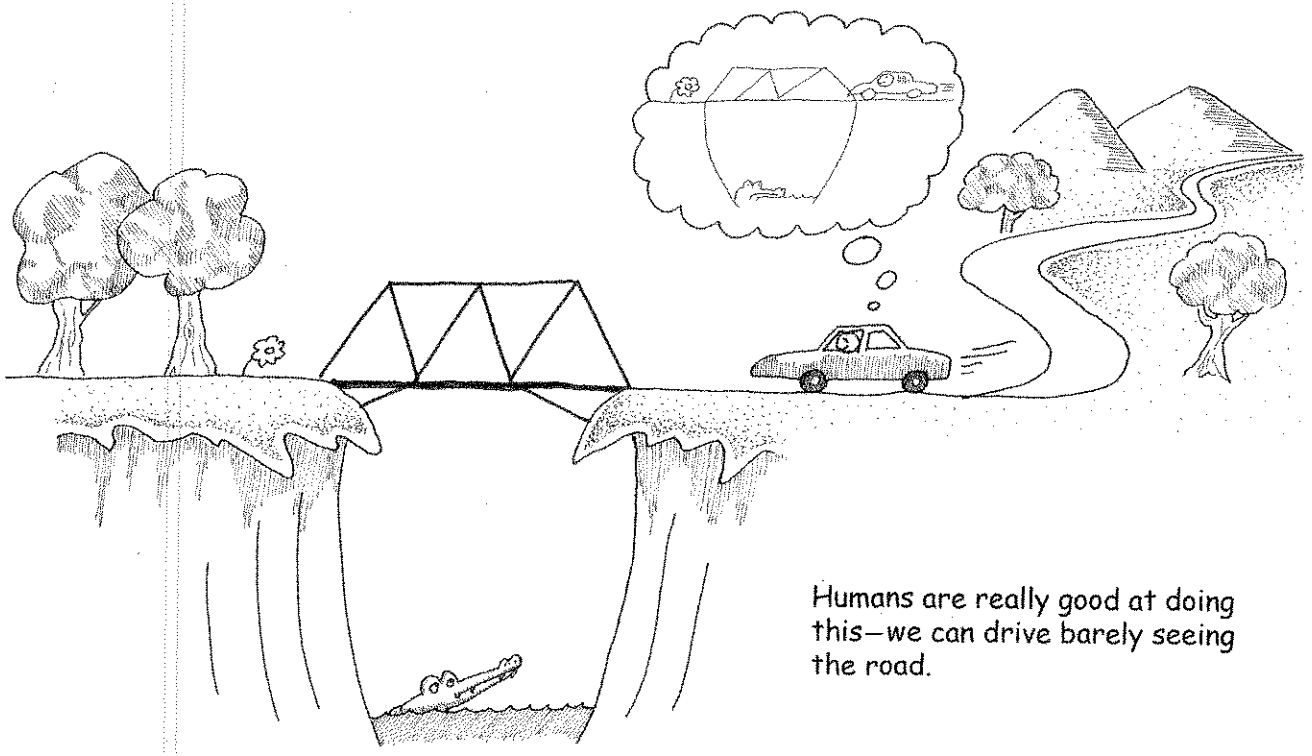
When we grasp a pattern, we usually get bored with it and iconify it.

Chunking is something we do all the time.

If I asked you to describe how you got to work in the morning in some detail, you'd list off getting up, stumbling to the bathroom, taking a shower, getting dressed, eating breakfast, leaving the house, and driving to your place of employment. That seems like a good list, until I ask you to walk through exactly how you perform just one of those steps. Consider the step of getting dressed. You'd probably have trouble remembering all the stages. Which do you grab first, tops or bottoms? Do you keep your socks in the top or second drawer? Which leg do you put in your pants first? Which hand touches the button on your shirt first?

Odds are good that you could come to an answer if you thought about it. This is called a morning routine because it *is* routine. You rely on doing these things on autopilot. This whole routine has been "chunked" in your brain, which is why you have to work to recall the individual steps. It's basically a recipe that is burned into your neurons, and you don't "think" about it anymore.

Whatever "thinking" means.

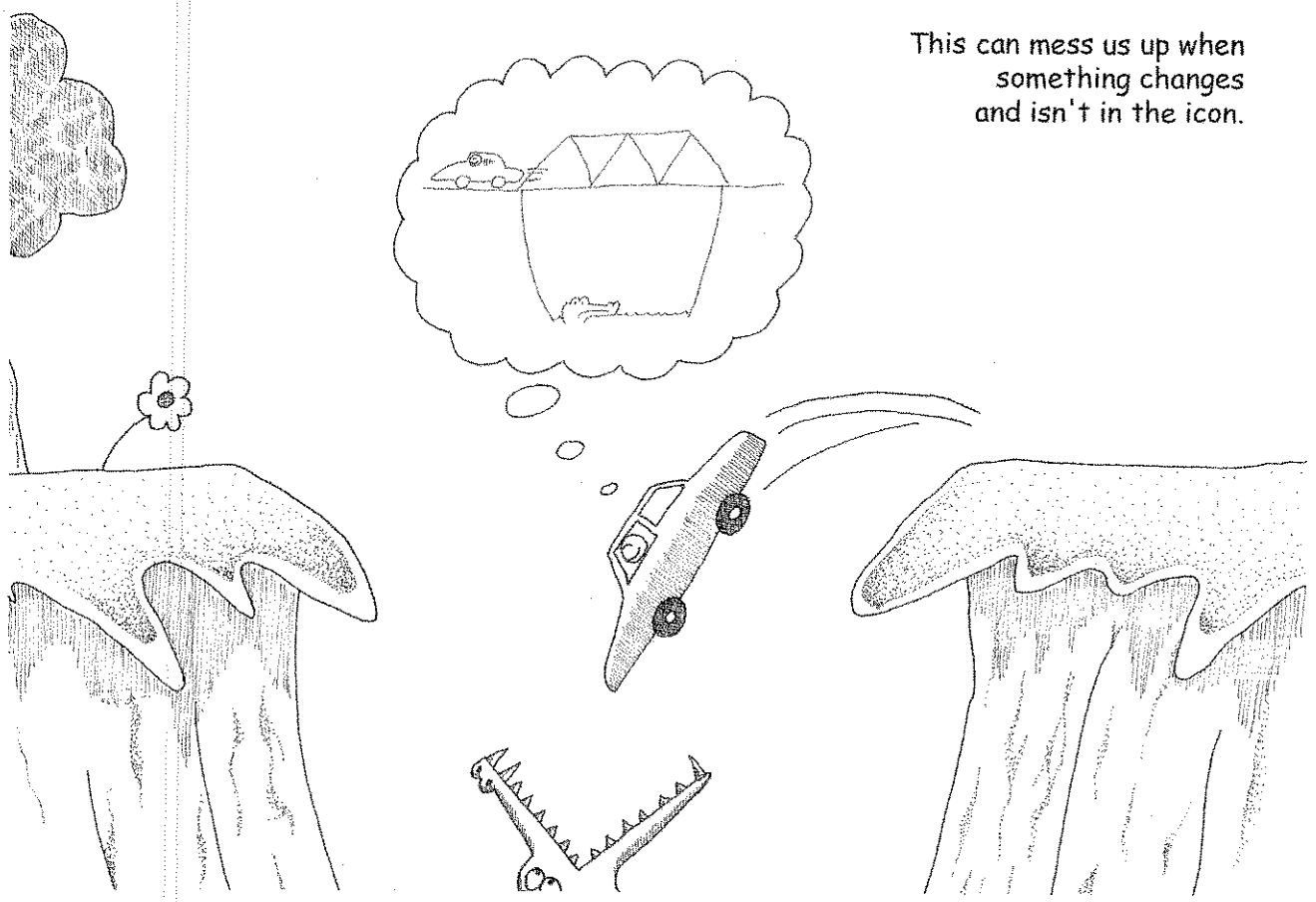


Humans are really good at doing this—we can drive barely seeing the road.

We're usually running on these automatic chunked patterns. In fact, most of what we see is also a chunked pattern. We rarely look at the real world; we instead recognize something we have chunked, and leave it at that. The world could easily be composed of cardboard stand-ins for real objects as far as our brains are concerned. One might argue that the essence of much of art is forcing us to see things as they are rather than as we assume them to be—poems about trees that force us to look at the majesty of bark and the subtlety of leaf, the strength of trunk and the amazing abstractness of the negative space between boughs—those are getting us to ignore the image in our head of "wood, big greenish, whatever" that we take for granted.

When something in a chunk does not behave as we expect it to, we have problems. It can even get us killed. If cars careen sideways on the road instead of moving forward as we expect them to, we no longer have a rapid response routine. And sadly, conscious thought is really inefficient. If you have to think about what you're doing, you're more liable to screw up. Your reaction times are orders of magnitude slower and odds are good you'll get in a wreck.

How we live in a world of chunking is fascinating. Maybe you're reading this and feeling uncomfortable about whether you're really reading this. But what I really want to talk about is how chunks and routines are built in the first place.



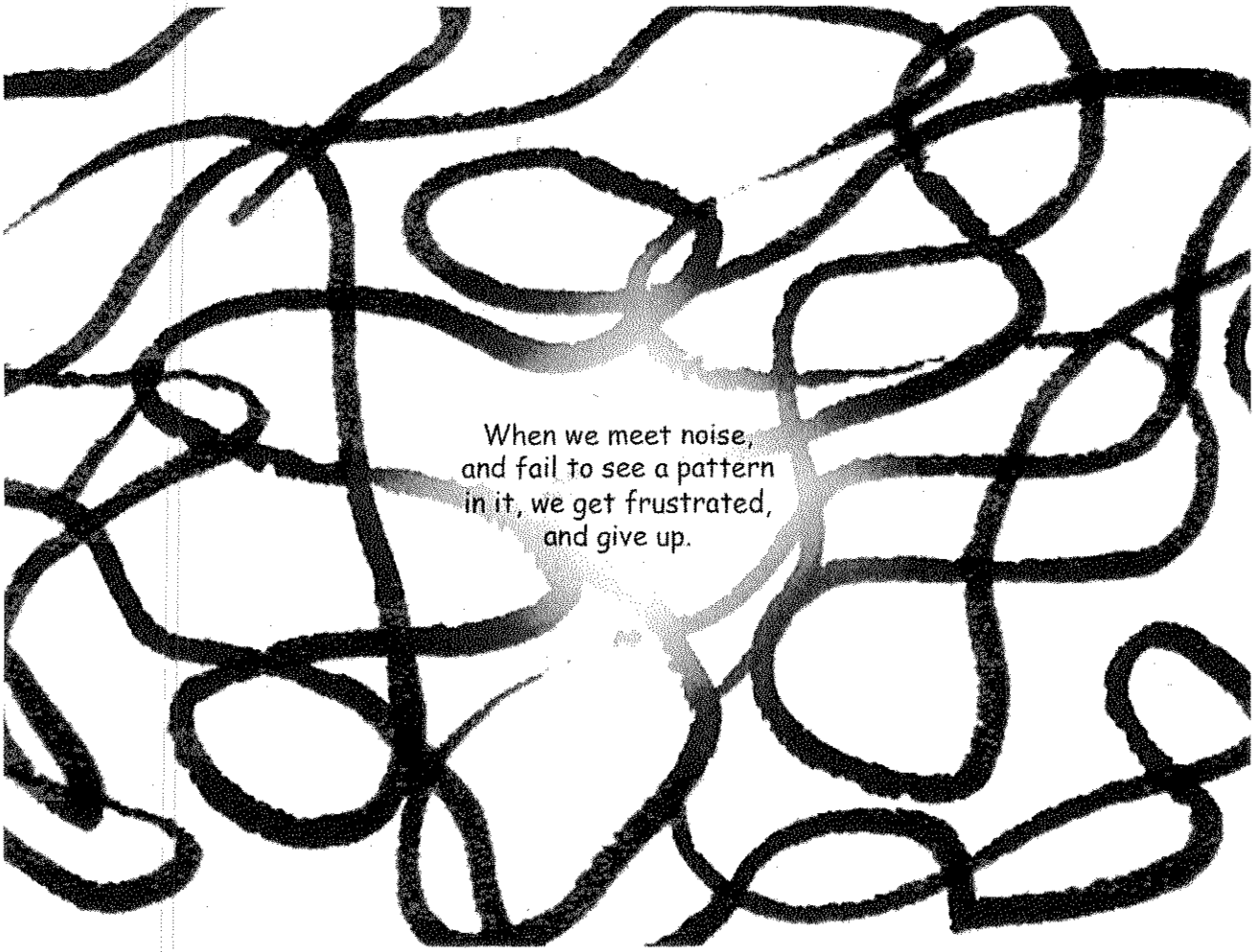
This can mess us up when something changes and isn't in the icon.

People dislike chaos. We like order—not regimented order, but order with a bit of *texture* or variation to it. For example, there's a long tradition in art history of observing that many paintings use a system of order called *the golden section,* which is basically just a way of dividing up the space on the painting into boxes of different proportions. It turns out that doing so makes the painting appear "prettier" to us.

This isn't exactly a revelation to anyone in the arts. Excess chaos just doesn't have pop appeal. We call it "noise," "ugly," or "formless." My music teacher in college said, "Music is ordered sound and silence." "Ordered" is a pretty important word in that sentence.

There's some highly ordered music that doesn't appeal to most of us either. A lot of folks say that the strain of jazz known as bebop is just noise. But I'm going to offer up an alternate definition of noise: *Noise is any pattern we don't understand.*

Even static has patterns to it. If the little black and white dots are the output of random numbers, they have the pattern of the output of random number generators—a complex pattern, but a pattern nonetheless. If you happen to know the algorithm used to generate the number, and the seed from which the algorithm started, you could exactly replicate that static. There's really next to nothing in the visible universe that is patternless. If we perceive something as noise, it's most likely a failure in ourselves, not a failure in the universe.


When we meet noise,
and fail to see a pattern
in it, we get frustrated,
and give up.

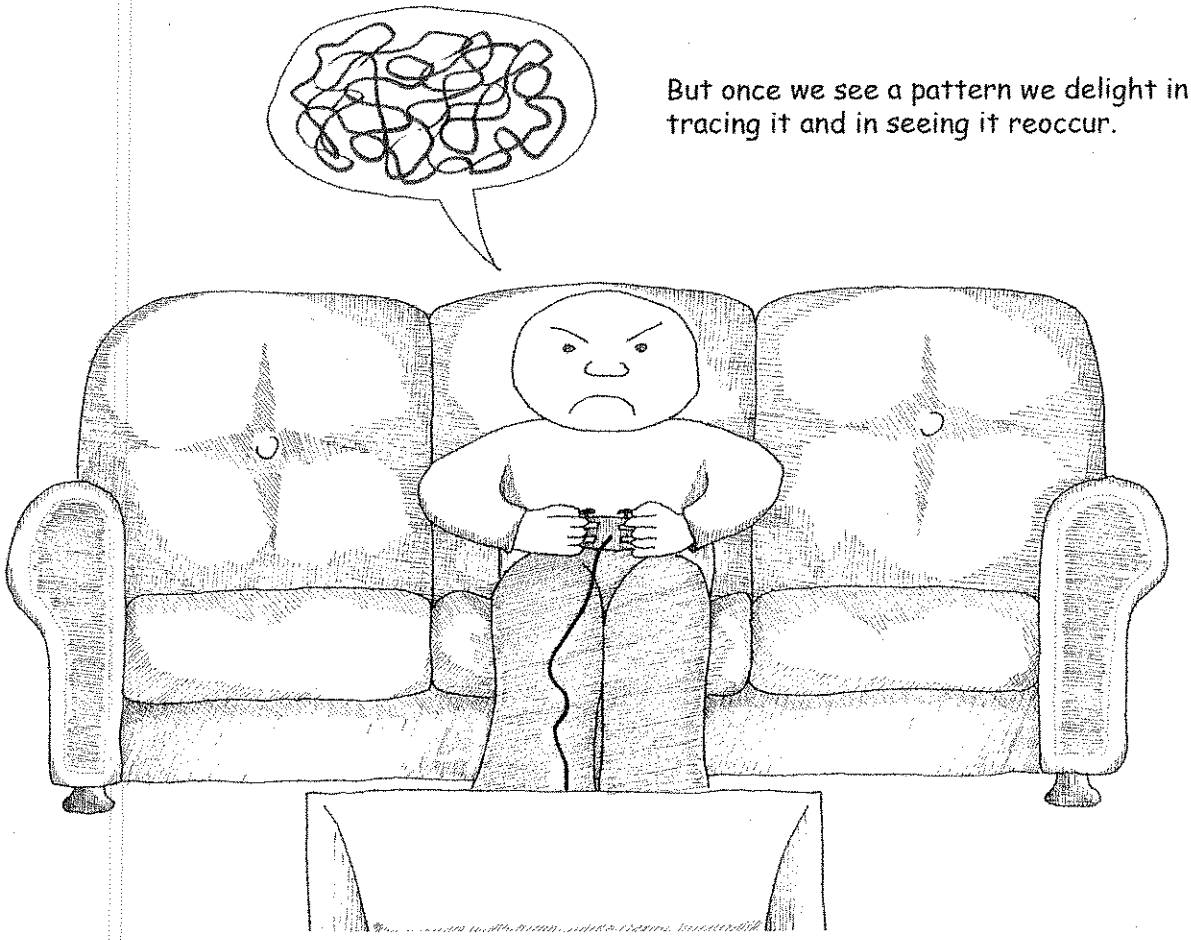
The first time you hear jazz it may sound weird to you, especially if you've been reared on good old-fashioned "three chords and the truth" rock 'n' roll. It'll be "devil music," to borrow a term from countless exasperated parents who railed against their kids' choice of music.

If you get past your initial distaste (which may last only a fraction of a second), you may come to see the patterns inherent in it. For example, you'll spot the flattened fifth that is so important to a jazzy sound. You'll start drumming your fingers to the expected 4/4 beat and find to your dismay that it's actually 7/8 or some other meter. You'll be at sea for a bit, but you may experience a little thrill of delight once you *get it* and experience a moment of discovery, of joy.

If jazz happens to interest you, you'll sink into these patterns and come to expect them. If you get really into it, you may come to feel that a musical style such as alternating-bass folk music is hopelessly "square."

Congratulations, you just chunked up jazz. (Hmm, I hope that doesn't sound too disgusting!)

But once we see a pattern we delight in tracing it and in seeing it reoccur.

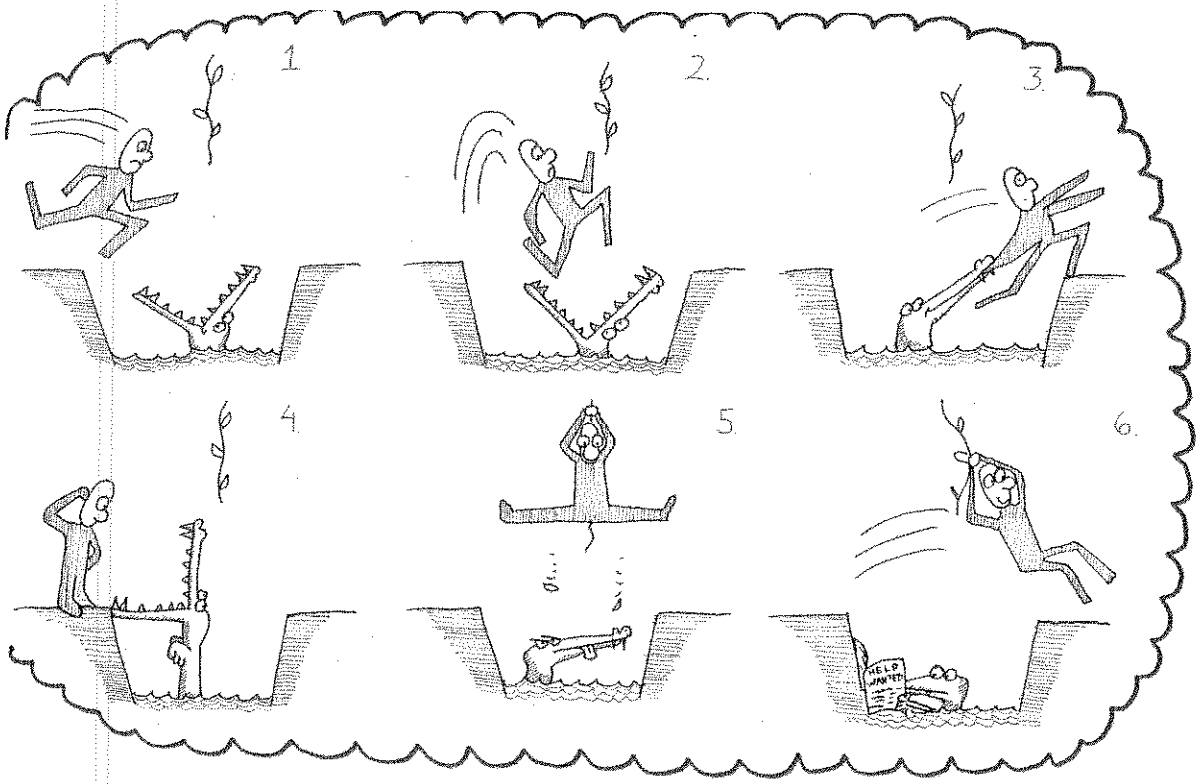


That doesn't mean you are done with jazz, though. There's a long way to go between intellectual understanding, intuitive understanding, and grokking something.

"Grok" is a really useful word. Robert Heinlein coined it in his novel *Stranger in a Strange Land.* It means that you understand something so thoroughly that you have become one with it and even *love* it. It's a profound understanding beyond intuition or empathy (though those are required steps on the way).

"Grokking" has a lot in common with what we call "muscle memory." Some writers on cognition describe the brain as functioning on three levels. The first level is what we call conscious thought. It's logical and works on a basically mathematical level, assigning values and making lists. It's kind of slow, even in those genius IQ types. This is the sort of mind we measure when we take IQ tests.

The second level of the brain is really slow. It's integrative, associative, and intuitive. It links things that don't make much sense. This is the part of the brain that packages things up and chunks them. This part of how we think isn't something we can access directly—it doesn't use words. It's also frequently wrong. It's the source of "common sense" which is often self-contradictory ("look before you leap, but he who hesitates is lost"). It's the thing that builds approximations of reality.



We call this "practicing," and the more we do it,

The last kind of thinking is *not* thinking. When you stick your finger in fire, you snatch it back *before* your brain has time to think about it (seriously, it's been measured).

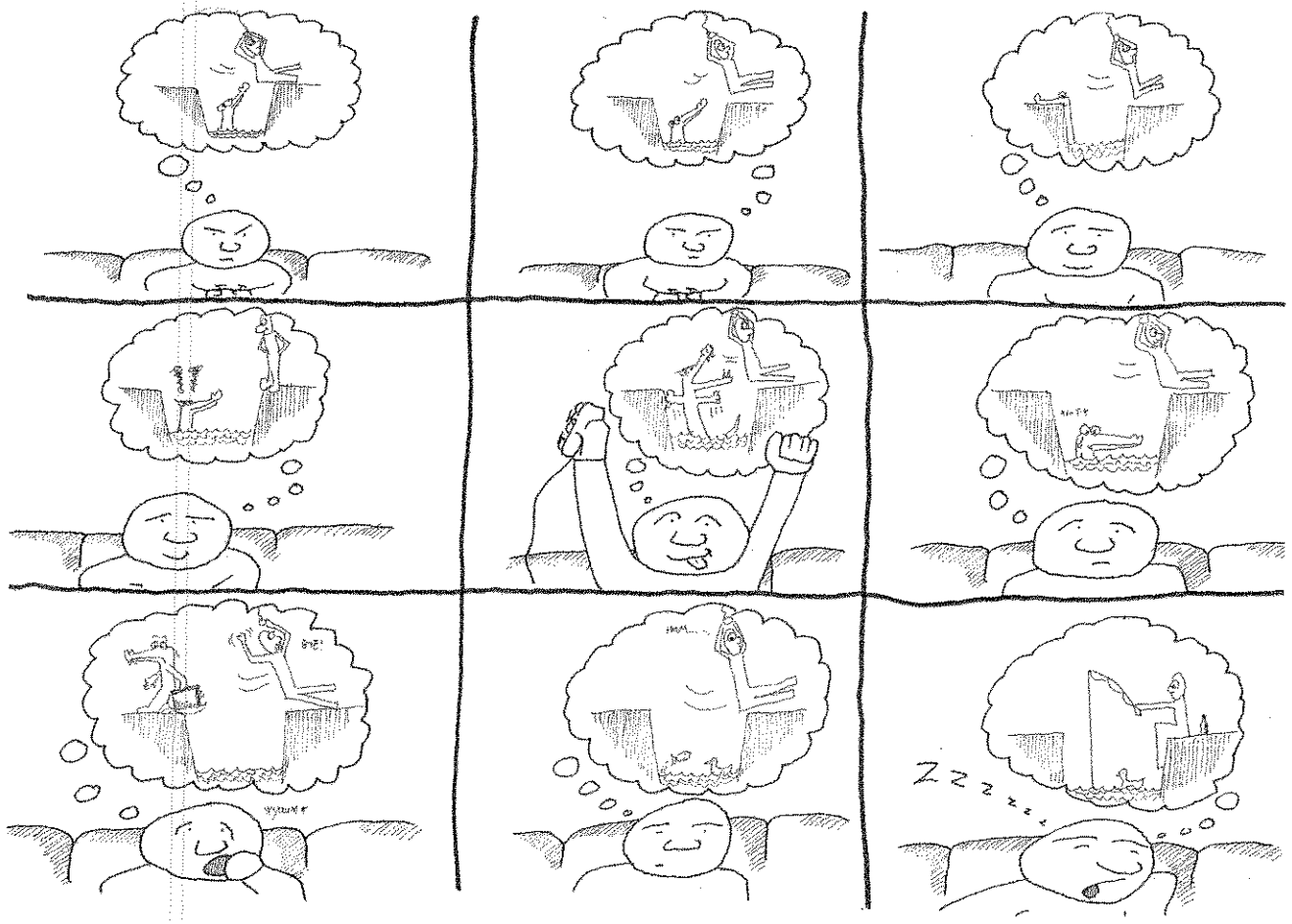
Calling this "muscle memory" is a lie. Muscles don't really have memory. They're just big ol' springs that coil and uncoil when you run electrical current through them. It's really all about nerves. There's a very large part of your body that works based on the *autonomic nervous system,* which is a fancy way of saying that it makes its own decisions. Some of it is stuff you can learn to bring under more conscious control, like your heart rate. Some of it is reflexes, like snatching your fingers out of the fire. And some of it is stuff you train your body to do.

There's an old joke about a crowd gathered at the bottom of a burning building. Up at the top countless people jump from windows to be caught by the firemen. There's one mother who is unwilling to toss her baby to the waiting rescuers. Finally, one guy at the bottom says, "I can catch the kid, ma'am, I'm a famous football player." So the mother tosses the baby to the football player.

It's a bad toss, so he has to run a little ways. He dives to catch the little tyke, and rolls on the ground in a perfect tumble, and finally stands, holding the baby up to a cheering crowd. Everyone is amazed.

Then he drop-kicks the baby.

OK, sick joke aside, it illustrates that we're not just talking about muscle memory, but about whole sets of decisions we make instinctively.



the less we have to think about what we're doing.

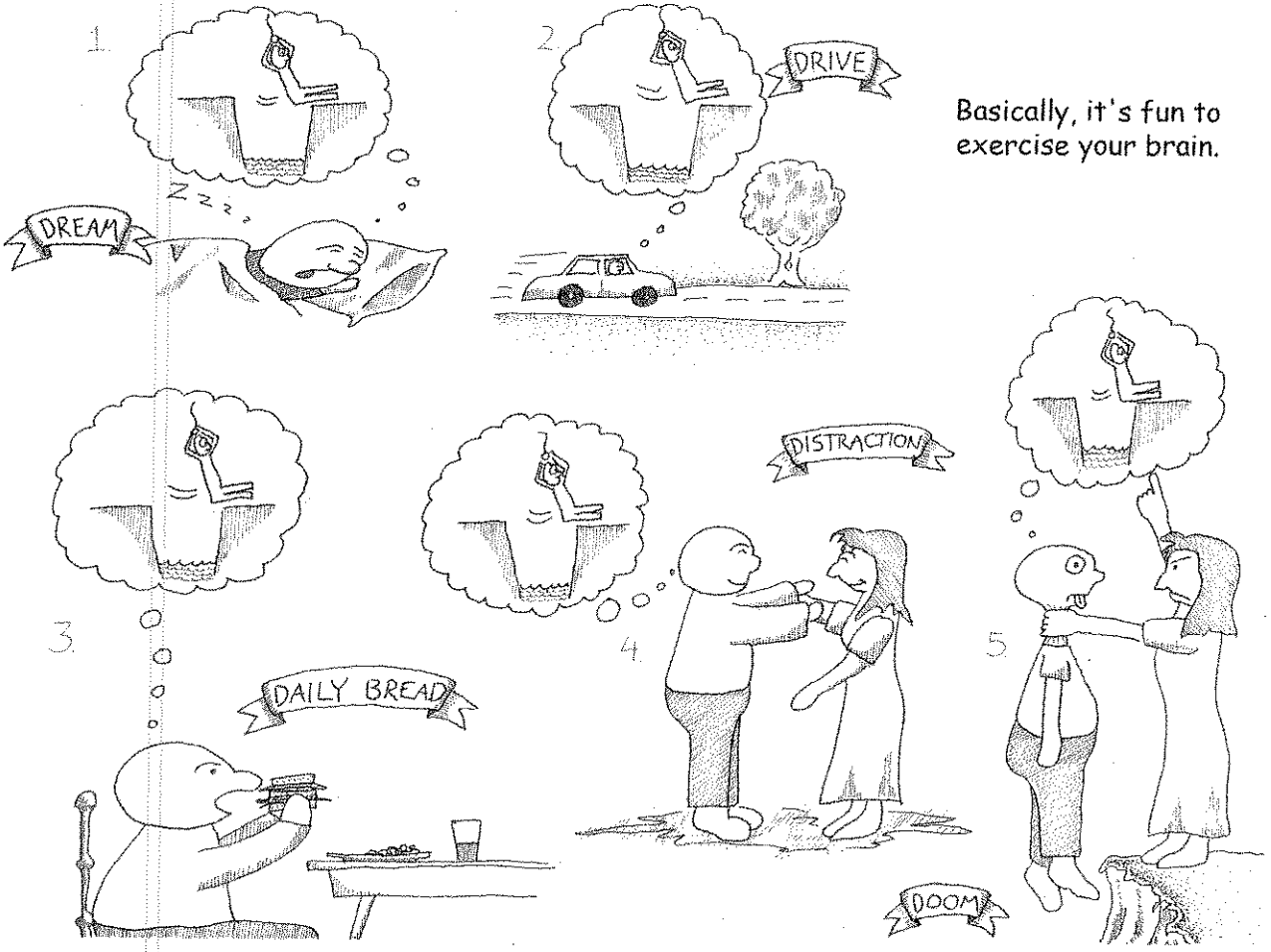
Take the example of playing a musical instrument. I play the guitar—mostly acoustic guitar. I've also dabbled in piano and keyboards, and I've had enough musical training that I can fake my way through a banjo or mountain dulcimer.

My wife gave me a mandolin for my birthday this year. Mandolins have a different scale than a guitar—they're tuned like a violin. The frets are closer together. The chords are all different. There are a handful of techniques that just aren't used on the guitar. The notes sustain less. The musical vocabulary is different. And yet, I'm not finding it that hard to get basic competence.

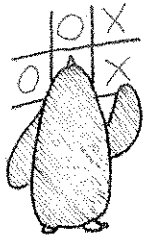
The reason isn't just muscle memory; that just accounts for *some* of my ability to move my fingers quickly along the fingerboard, but not all. For example, the distances I move my fingers are very different and the places I move them to are different too. What is really going on is that because I have been playing guitar for over a decade, I have grokked enough about stringed instruments to create a library of chunked knowledge to apply. When I was playing the guitar all those years, I was also working on more obscure stuff, deepening my knowledge of the intervals between notes, mastering rhythm, understanding harmonic progression.

Building up this library is what we call "practice." Studies have shown that you don't even have to do it physically. You can just *think* about doing it and it'll get you much of the way there. This is strong evidence that the brain is doing the work, not muscles.

When our brain is *really* into practicing something, we'll dream about it. This is the intuitive part of the brain burning neural pathways into our brain, working on turning newly grasped patterns into something that fits within the context of everything else we know. The ultimate goal is to turn it into a routine. Frankly, my impression is that the brain doesn't particularly want to have to deal with it again.



Basically, it's fun to exercise your brain.



CHAPTER THREE: WHAT GAMES ARE

Which brings us, finally, to games.

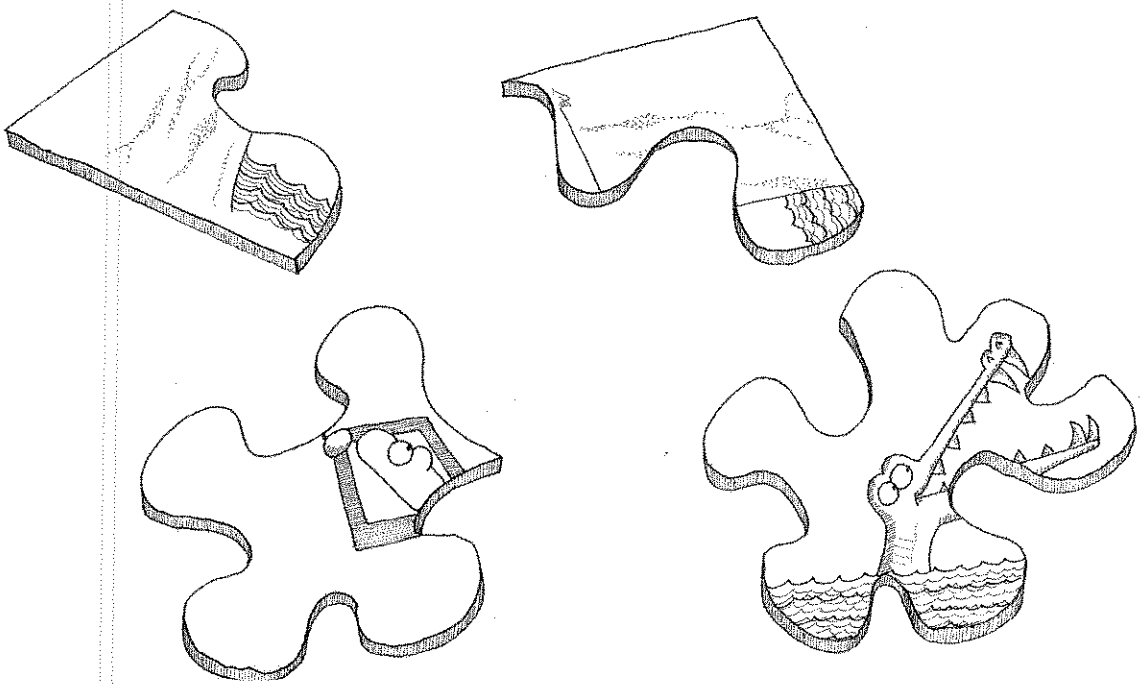
If you review those definitions of "game" I presented earlier, you'll see that they have some elements in common. They all present games as if they exist within a world of their own. They describe games as a simulation, a formal system, or as Huizinga put it, a "magic circle" that is disconnected from reality. They all talk about how choices or rules are important, as well as conflict. Finally, a lot of them define games as objects that aren't real, things for pretending with.

But games are very real to me. Games might seem abstracted from reality because they are iconic depictions of patterns in the world. They have more in common with how our brain visualizes things than they do with how reality is actually formed. Since our perception of reality is basically abstractions anyway, I call it a wash.

The pattern depicted may or may not exist in reality. Nobody is claiming that tic-tac-toe is a decent mimicry of warfare, for example. But the rules we perceive—what I'll call the pattern—get processed exactly the same way we process very real things like "fire burns" and "how cars move forward."

Games are puzzles to solve, just like everything else we encounter in life. They are on the same order as learning to drive a car, or picking up the mandolin, or learning your multiplication tables. We learn the underlying patterns, grok them fully, and file them away so that they can be rerun as needed. The only real difference between games and reality is that the stakes are lower with games.

Games are puzzles



Games are something special and unique. They are concentrated chunks ready for our brains to chew on. Since they are abstracted and iconic, they are readily absorbed. Since they are formal systems, they exclude distracting extra details. Usually, our brains have to do hard work to turn messy reality into something as clear as a game is.

In other words, games serve as very fundamental and powerful learning tools. It's one thing to read in a book that "the map is not the territory" and another to have your armies rolled over by your opponent in a game. When the latter happens, you're *gonna get the point* even if the actual armies aren't marching into your suburban home.

The distinctions between toys and games, or between play and sport, start to seem a bit picky and irrelevant when you look at them in this light. There's been a lot of hay made over how play is non-goal-oriented and games tend to have goals; over how toys are aimed at pointless play rather than being games; about how make-believe is a form of play and not a game.

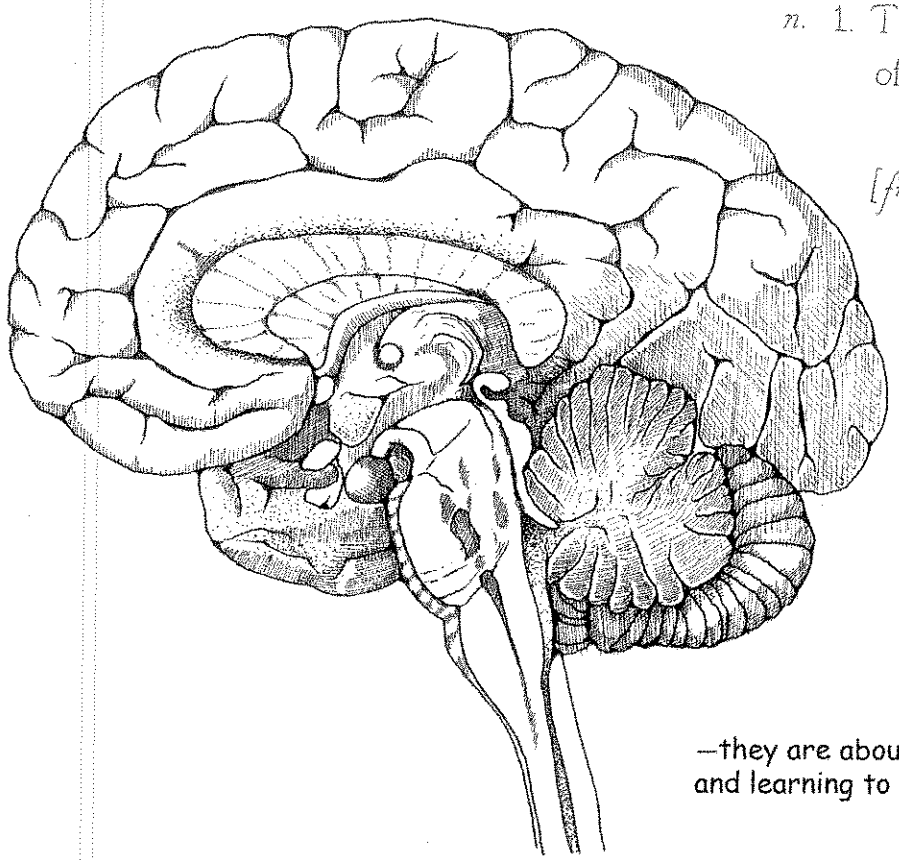
A game designer might find those distinctions useful because they provide helpful guideposts. But all these things are the same at their most fundamental level. Perhaps this is the reason why language hasn't done a very good job of making distinctions between "play," "game," and "sport." Playing a goal-oriented game involves simply recognizing a particular sort of pattern; playing make-believe is recognizing another one. Both deservedly belong in the same category of "iconified representations of human experience that we can practice with and learn patterns from."

Consider the key difference between something like a book and different kinds of games. A book can do the logical conscious part of the brain pretty well. And really good readers have an ability to slurp that info directly into the subconscious, intuitive mind. But what a book will never be able to do is accelerate the grokking process to the degree that games do, because you cannot practice a pattern and run permutations on it with a book.

cog·ni·tion

n. 1. The mental process of knowing.

[from Latin *cognitio.]*



—they are about cognition,
and learning to analyze patterns.

Linguists have noticed that language obeys fairly strict mathematical rules. For example, humans cannot understand a sentence that is too deeply nested. "The bishop the fireman the mother the football player kicked the baby tossed the baby asked the mother to toss the baby called in the fire to the fire department" is a bad sentence because it violates this rule. The clauses are too deeply nested. We can puzzle it out with our slow logical conscious brain, but we work against our own natures when we do so.

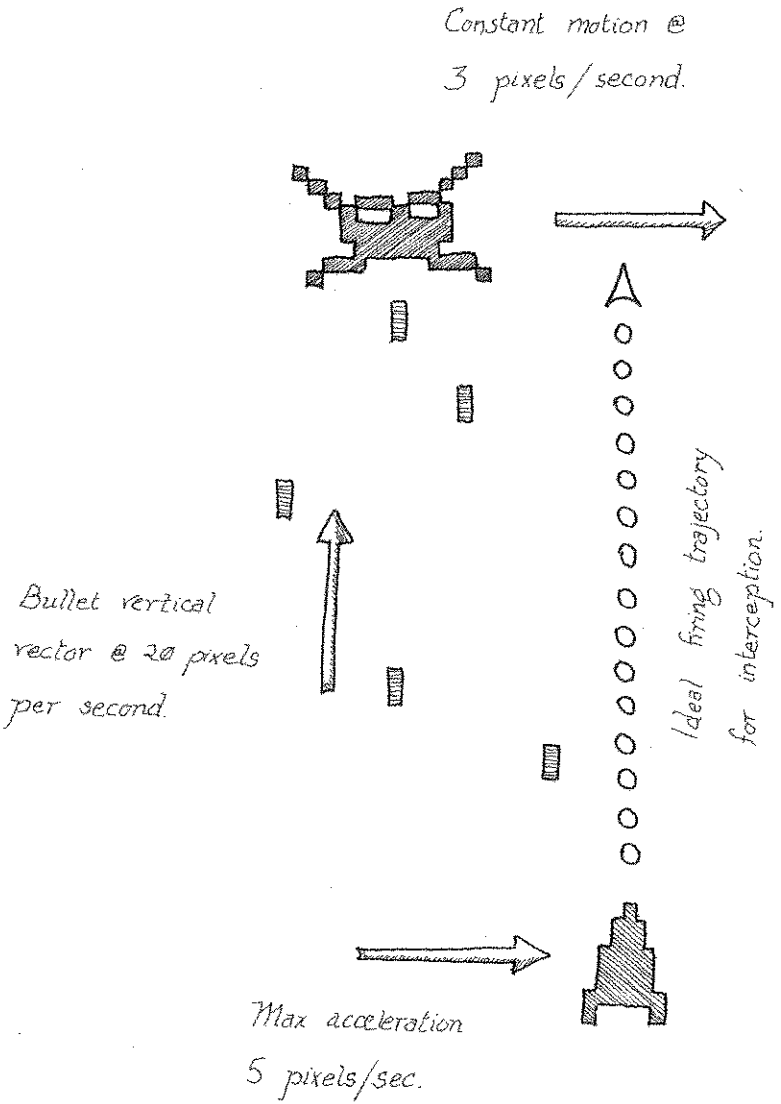
Games run into similar limitations. The biggest of them is their very nature. They are exercises for our brains. Games that fail to exercise the brain become boring. This is why tic-tac-toe ends up falling down—it's exercise, but so limited we don't need to spend much time on it. As we learn more patterns, more novelty is needed to make a game attractive. Practicing can keep a game fresh for a while, but in many cases we'll say, "Enh, I get it, I don't need to practice this task," and we'll move on.

Almost all games fall prey to this. They are limited formal systems. If you keep playing them, you'll eventually grok them. In that sense, games are disposable, and boredom is inevitable.

Extremely formal games are more susceptible to mathematical analysis, which is a limitation in itself. We don't think that we can drive just because we know the rules of the road and the controls of a car, but extremely formal games (such as most board games) have fairly few variables, and so you can often extrapolate out from the known rule set. This is an important insight for game designers: *the more formally constructed your game is, the more limited it will be.* To make games more long-lasting, they need to integrate more variables (and less predictable ones) such as human psychology, physics, and so on. These are elements that arise from outside the game's rules and from outside the "magic circle."

(If it's any consolation to games, that's where game theory tends to fall down too—psych tends not to be that amenable to math.)

When you're playing a game, it exercises your brain,



This finally brings us to the title of the book and the fundamental question: What is fun?

If you dig into the origins of the word, it comes either from *"fonne,"* which is "fool" in Middle English, or from *"fonn,"* which means "pleasure" in Gaelic. Either way, fun is defined as "a source of enjoyment." This can happen via physical stimuli, aesthetic appreciation, or direct chemical manipulation.

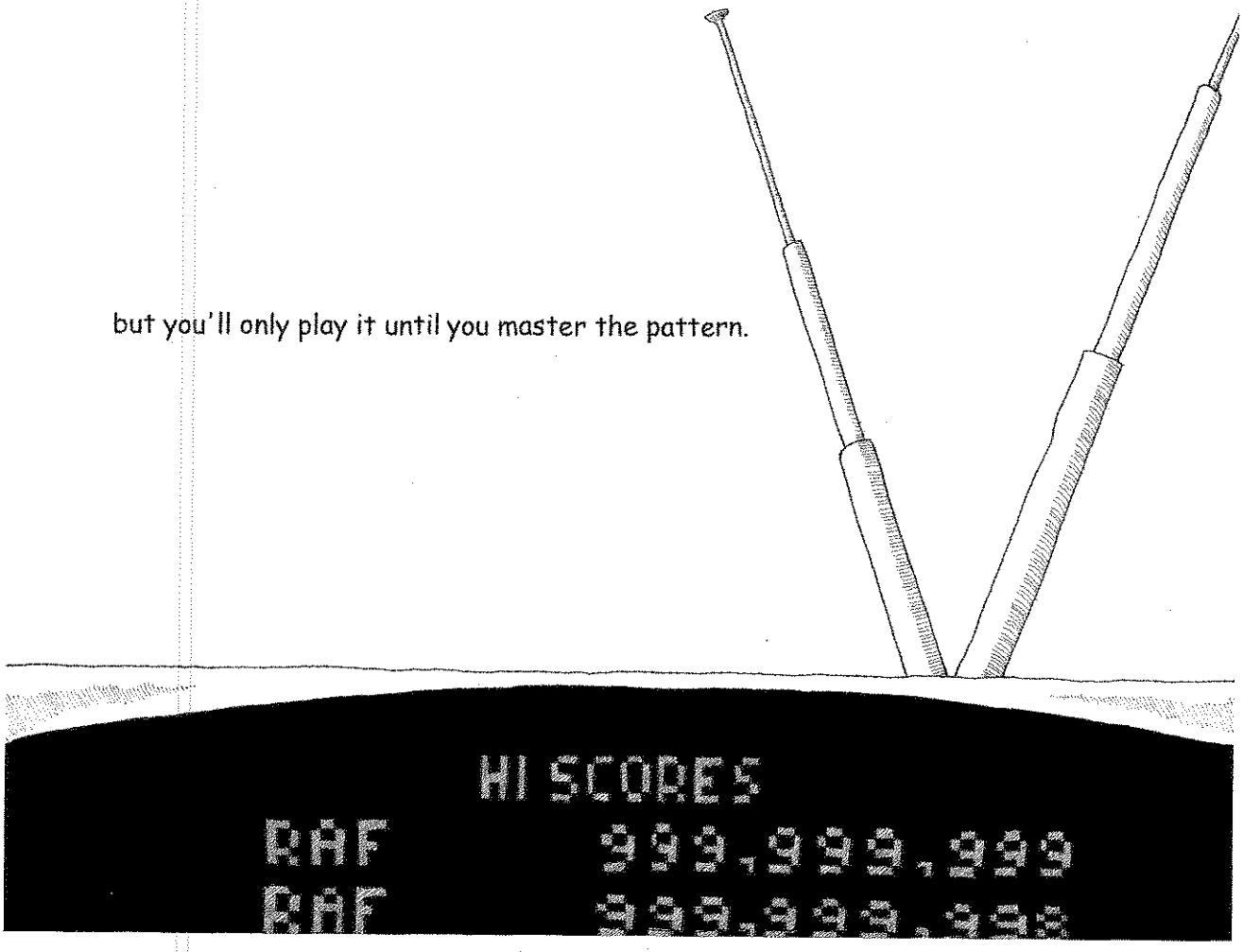
Fun is all about our brains feeling good—the release of endorphins into our system. The various cocktails of chemicals released in different ways are basically all the same. Science has shown that the pleasurable chills that we get down the spine after exceptionally powerful music or a really great book are caused by the same sorts of chemicals we get when we have cocaine, an orgasm, or chocolate. Basically, our brains are on drugs pretty much all the time.

One of the subtlest releases of chemicals is at that moment of triumph when we learn something or master a task. This almost always causes us to break out into a smile. After all, it is important to the survival of the species that we learn—therefore our bodies reward us for it with moments of pleasure. There are many ways we find fun in games, and I will talk about the others. But this is the most important.

Fun from games arises out of mastery. It arises out of comprehension. It is the act of solving puzzles that makes games fun.

In other words, with games, learning is the drug.

but you'll only play it until you master the pattern.



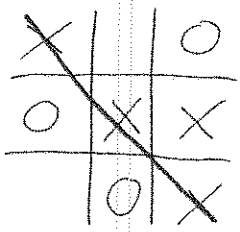
Boredom is the opposite. When a game stops teaching us, we feel bored. Boredom is the brain casting about for new information. It is the feeling you get when there are no new patterns to absorb. When a book is dull and fails to lead you on to the next chapter, it is failing to exhibit a captivating pattern. When you feel a piece of music is repetitive or derivative, it grows boring because it presents no cognitive challenge.

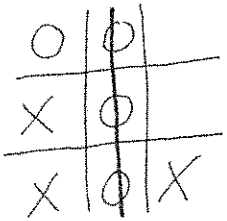
We shouldn't underestimate the brain's desire to learn. If you put a person in a sensory deprivation chamber, they will get very unhappy very quickly. The brain craves stimuli. At all times, the brain is casting about trying to learn something, trying to integrate information into its worldview. It is insatiable in that way.

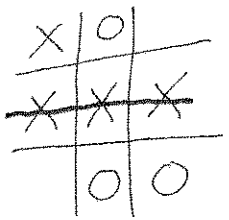
This *doesn't* mean it necessarily craves new *experiences*—mostly, it just craves new *data*. New data is all it needs to flesh out a pattern. A new experience might force a whole new system on the brain, and often the brain doesn't *like* that. It's disruptive. The brain doesn't like to do more work than it has to. That's why it chunks in the first place. That's why we have the opposite term, "sensory overload."

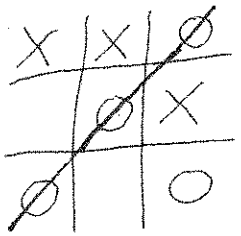
Games grow boring when they fail to unfold new niceties in the puzzles they present. But they have to navigate between the Scylla and Charybdis of deprivation and overload, of excessive order and excessive chaos, of silence and noise.

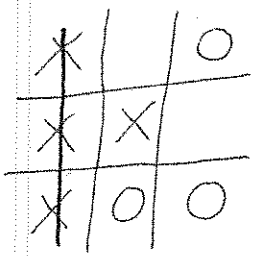
This means that boredom might not wait until the end of the game. After all, brains are *really* good at pattern-matching and dismissing noise and silence.

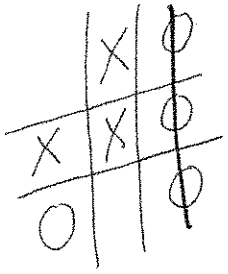


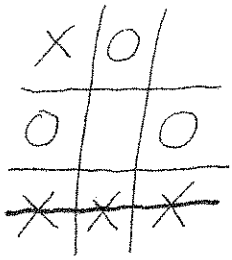


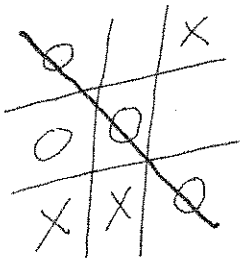


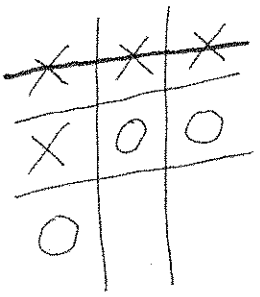










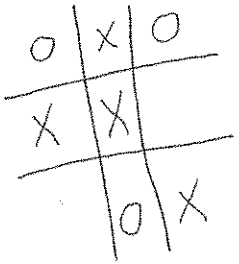


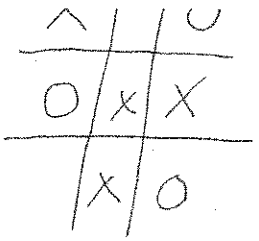
Once you've mastered it— or realized you can't get any better—

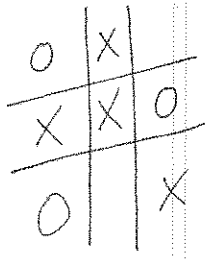
Here are some ways in which boredom might strike, killing the pleasurable learning experience that games are supposed to provide:

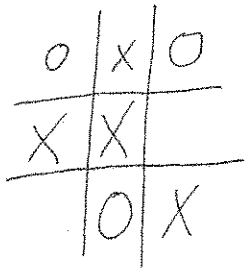
- The player might grok how the game works from just the first five minutes, and then the game will be dismissed as trivial, just as an adult dismisses tic-tac-toe. "Too easy," might be the remark the player makes.
- The player might grok that there's a ton of depth to the possible permutations in a game but conclude that these permutations are below their level of interest—sort of like saying, "Yeah, there's a ton of depth in baseball, but memorizing the RBI stats for the past 20 years is not all that useful to me."
- The player might fail to see any patterns whatsoever, and nothing is more boring than noise. "This is too hard."
- The pacing of the unveiling of variations in the pattern might be too slow, in which case the game may be dismissed as trivial too early. "This is too easy now—it's repetitive."
- The game might also unveil the variations too quickly, which then leads to players losing control of the pattern and giving up because it looks like noise again. "This got too hard too fast," they'll say.
- The player might master everything in the pattern. They have exhausted the fun, consumed it all. "I beat it."

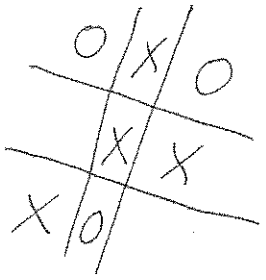
the game becomes boring.

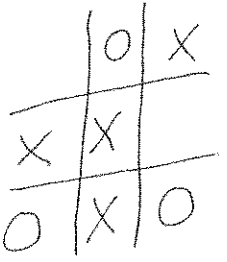


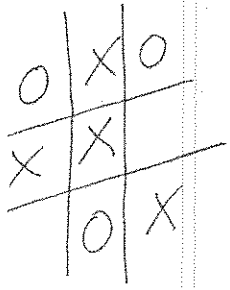


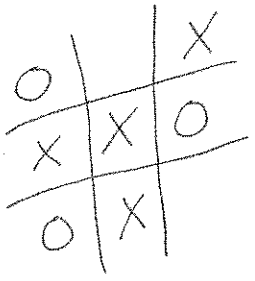


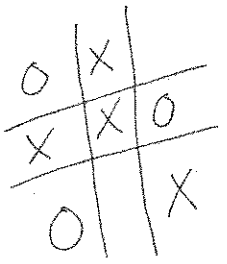


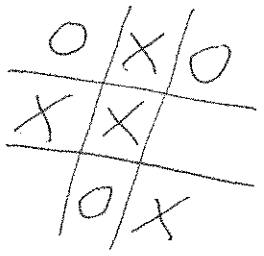












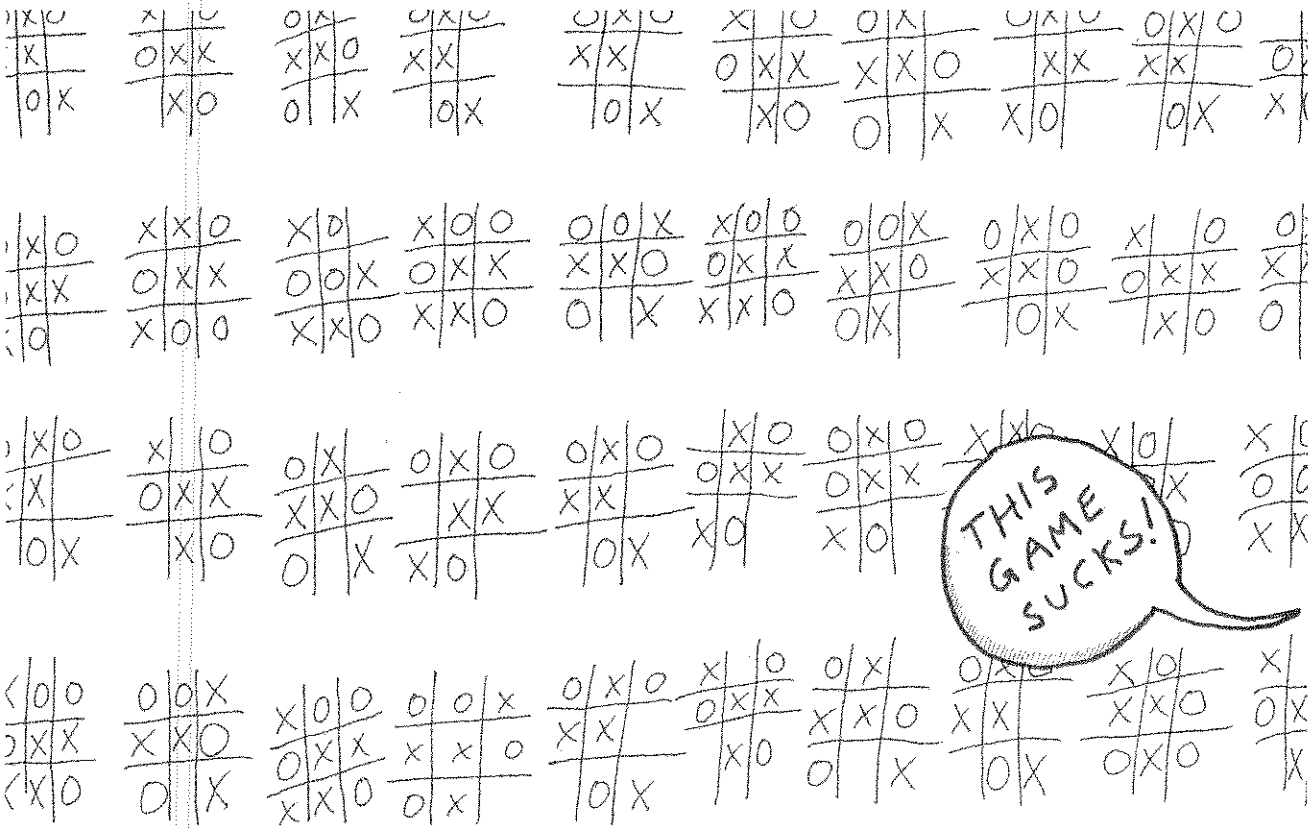
Any of these will result in the player stating that they are bored. In reality, some of these are boredom+frustration, and some are boredom+triumph, and so on. If your goal is to keep things fun (read as "keep the player learning"), boredom is always the signal to let you know you have failed.

The definition of a good game is therefore "one that teaches everything it has to offer before the player stops playing."

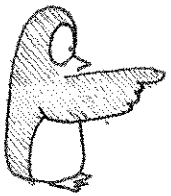
That's what games are, in the end. Teachers. Fun is just another word for learning.

One wonders, then, why learning is so damn boring to so many people. It's almost certainly because the method of transmission is wrong. We praise good teachers by saying that they "make learning fun." Games are very good teachers... of something. The question is, what do they teach?

Either way, I have an answer for my late grandfather, and it looks like what I do fits right alongside the upstanding professions of my various aunts and uncles. Fireman, carpenter, and... teacher.



Basically, all games are edutainment.

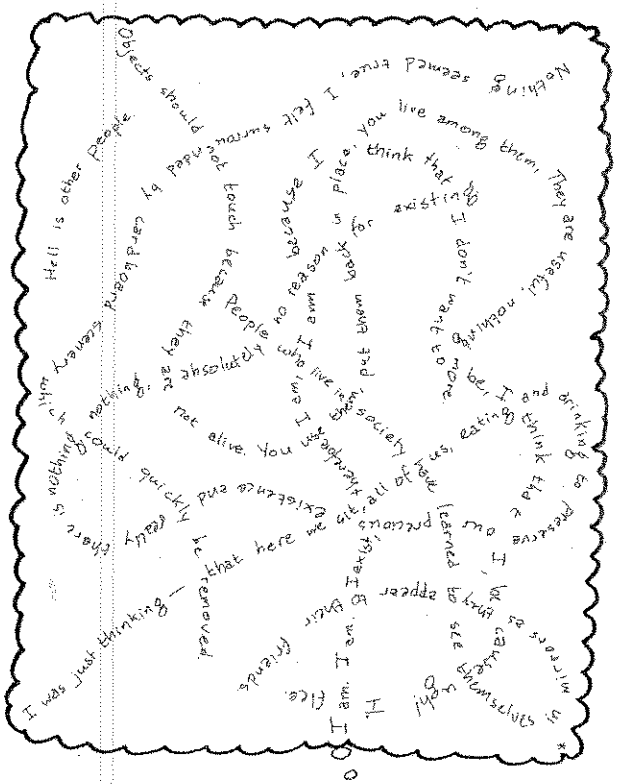


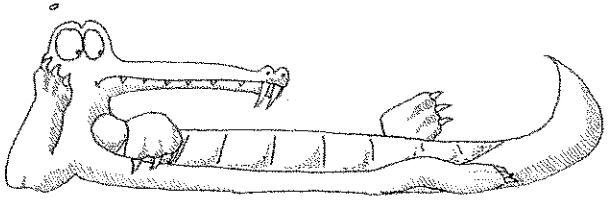
CHAPTER ELEVEN: WHERE GAMES SHOULD GO

I've spent a lot of time talking about how games intersect the human condition. I think there is an important distinction to be drawn, however. In other media, we frequently speak of how a given work is revelatory of the human condition. By this, we mean that the work is a good portrayal of the human condition—it is something that gives us insight into ourselves. As the Greeks put it, *gnothi seauton*—know thyself. It's perhaps the greatest challenge we as humans face, and in many ways, it may be the greatest threat to our survival.

Many of the things that I have discussed in this book, such as theories of cognition, understanding of gender, learning styles, chaos theory, graph theory, and literary criticism, are fairly recent developments in human history. Humanity is engaged in a grand project of self-understanding, and most of the tools we have used in the past were imprecise at best. Over time we have developed better tools at a glacial pace in the quest to understand ourselves better.

It's an important endeavor because other humans have typically been our greatest predator. Today we have come to realize how interrelated we all are even though the left continent doesn't know what the right continent is doing. We have come to realize that actions we undertake often have far-reaching consequences that we never anticipated. Some, such as James Lovelock, have gone so far as to call us all one giant organism.





All quotes from
* Sartre, pondering online multiplayer roleplaying games.

It is not the same thing

for our games

to portray the human condition

and the human condition to exist

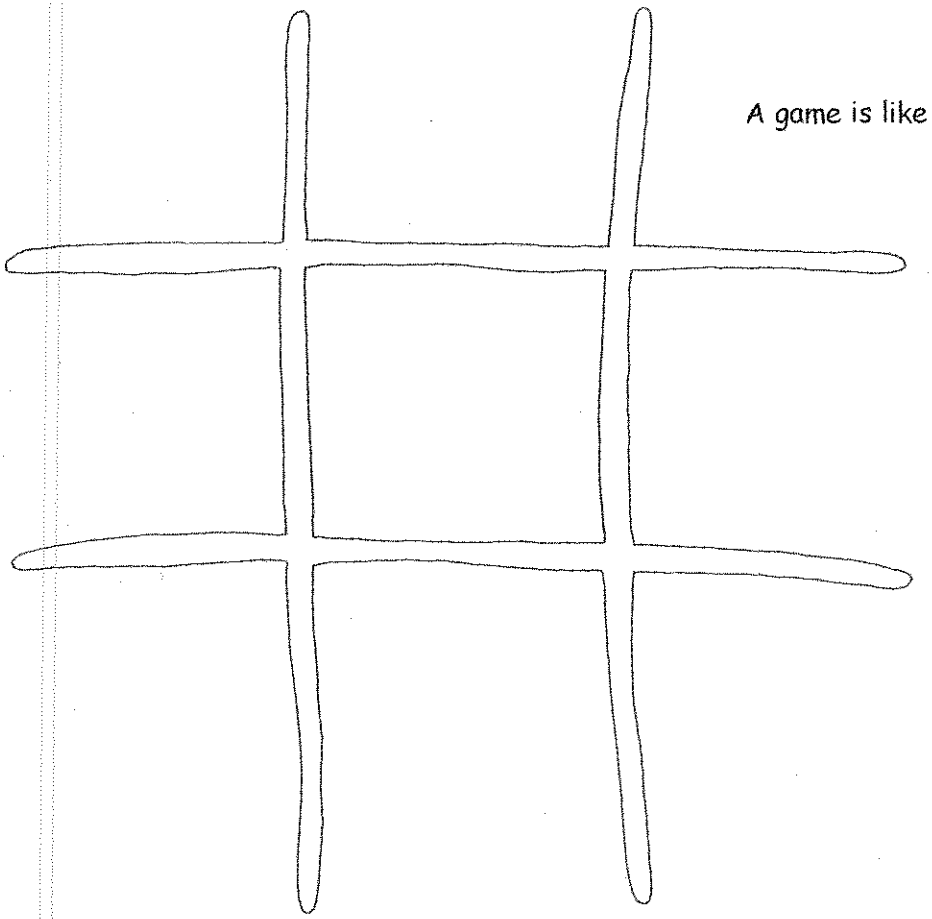
within our games.

I'm not being all that fanciful or idealistic in saying that we are in many ways trembling on the threshold of a far deeper understanding of ourselves than ever before, thanks to advances as diverse as medical imaging, network theory, quantum physics, and even marketing. Given how much of our view of the world is shaped by our perceptions and the way we filter information as it reaches us, clarifying our understanding of that filter is bound to significantly reshape our relationship to the world.

In this light, it's interesting to see how many of the most famous quotes of Jean-Paul Sartre seem eerily applicable to our relationship to the virtual worlds created by games. Students of philosophy would tell you that he was simply recognizing the artificiality of every world we perceive, since they are all mental constructs in the end.

Games thus far have not really worked to extend our understanding of ourselves. Instead, games have primarily been an arena where human behavior—often in its crudest, most primitive form—is put on display.

There is a crucial difference between games portraying the human condition and the human condition merely existing within games. The latter is interesting in an academic sense, but it is unsurprising. The human condition manifests anywhere. We may come to better understanding of ourselves by examining our *relationship* to games, as this book attempts to do, but for games to truly step up to the plate, they need to provide us with insights into ourselves.

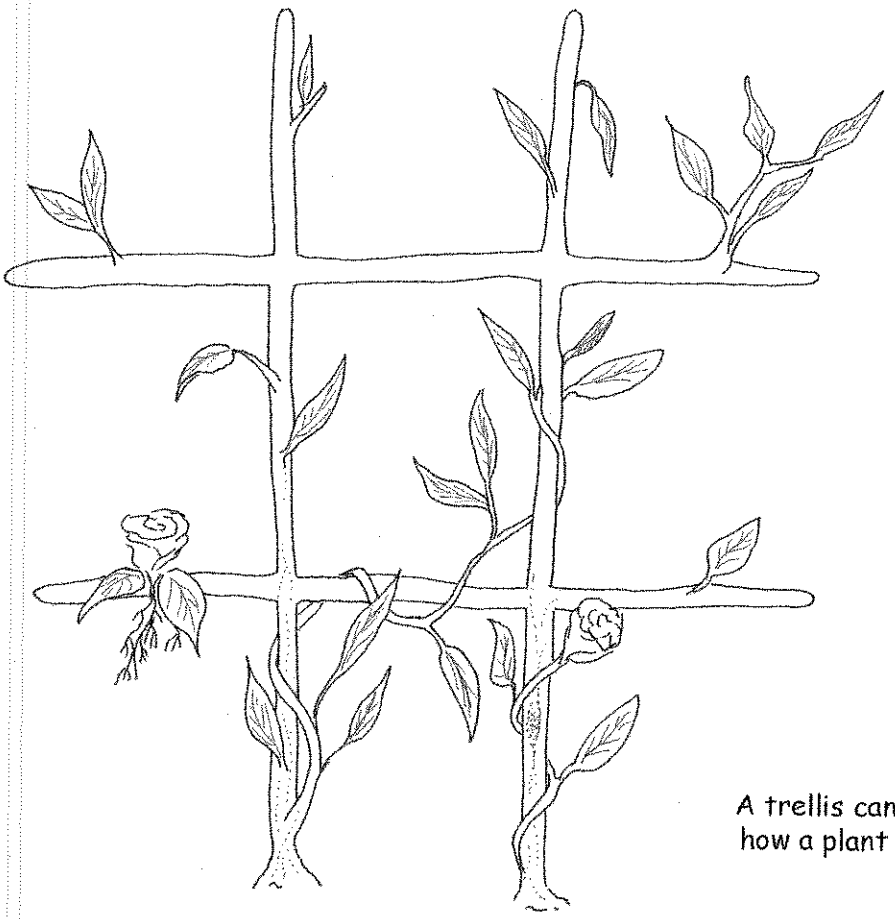


A game is like a trellis.

Right now, most games are about violence. They are about power. They are about control. This is not a fatal flaw. Practically any form of entertainment is about sex and violence, if you want to look at basic building blocks. It's just that they are contextualized into love, yearning, jealousy, pride, coming of age, patriotism, and other subtler concepts. If you took out all the sex and all the violence, you wouldn't have very many movies, books, or TV shows.

While we're bemoaning the lack of maturity in the field, we need not to miss the forest for the trees. Too much sex and violence isn't the problem. The problem is *shallow* sex and violence. This is why we decry casual player killing in an online world, why we snicker at puerile chat sex logs, why we resent seeing bouncing boobies in the beach volleyball game, and why we are disturbed by the portrayals of ethnicities and women. And also why we get excited to hear of the possibility for meaningful conflict in games or get defensive about the "reality" of online relationships.

We should fix the fact that the average cartoon does a better job at portraying the human condition than our games do.

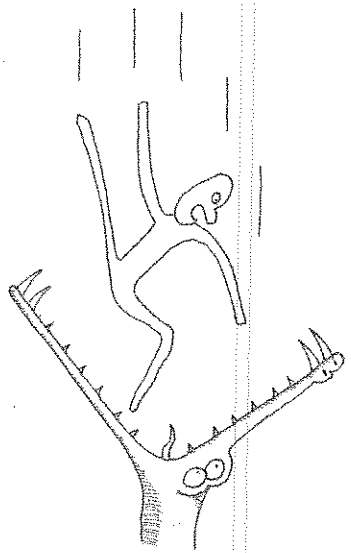


A trellis can shape how a plant grows.

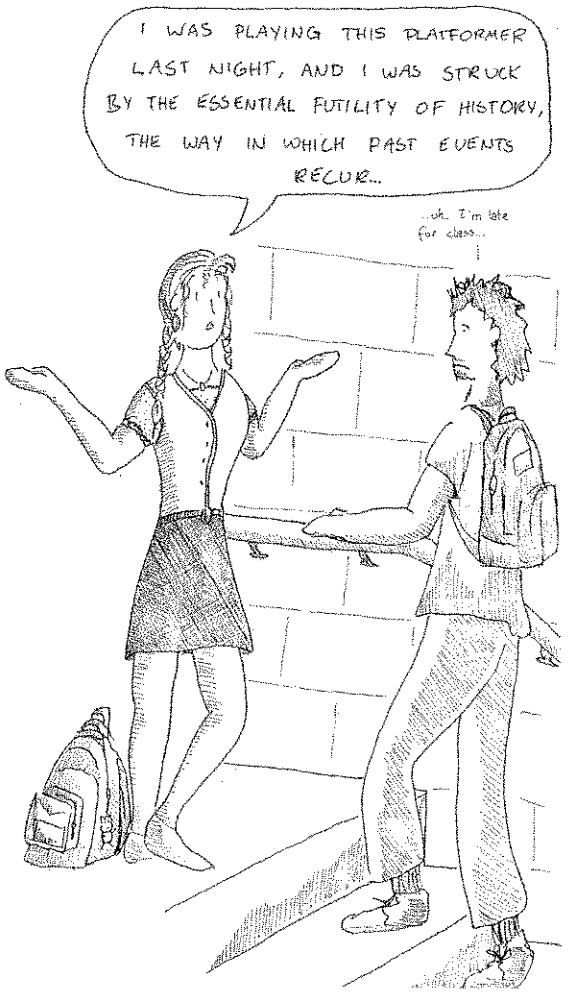
I have been using the analogy of a trellis. If people are the plants and the game is the trellis, it should not surprise us that the plants are shaped to some degree by the trellis. It also shouldn't surprise us that the plants grow to escape the trellis. Both of these are merely in the nature of the plant. It learns from its environment and its inborn nature both, and it works to escape those confines, to progress, to reproduce and be the tallest plant in the garden.

When we look at the great works of art, however, they are shaped in special ways. They are trellises that form the plant in particular directions. They have intent behind them, and they have the purpose of achieving something in particular with the growth of that plant.

Not all fields have discovered the knack to this. Storytelling mastered it long, long ago. Music discovered that something in the combination of certain frequencies of sound, certain rates of sound wave pulses, and certain combinations of timbres could be combined to achieve specific, targeted effects. Relatively recently, we have seen the field of architecture come to a realization that the shape of the space we walk in can be formed with intent—we can be made angry, inquisitive, friendly, or antisocial by means of how we divide spaces, how high we vault a ceiling, where we permit natural light, where people walk, and what colors we paint the walls.



Often the plants escape the trellis, but that is not a credit to the trellis, it's a credit to the plants.



The reason why games as a medium are not mature, despite their prehistoric origins, is not because we haven't reliably mastered creating fun, or do not have a vocabulary to define fun, or terminology to describe features or mechanics. It's not because we only know how to create power fantasies.

It's because when you feed a plant through a musical trellis, the trellis-maker can shape the plant to many possible forms. When you feed a plant through a literary trellis, the writer can shape the plant to many possible forms.

When you feed a player through a game trellis, right now, we know only "fun" and "boring." Mastery of the medium of games will have to imply authorial intent. The formal systems must be capable of invoking desired learning patterns.

If they can't, then games are a second-rate art form, and always will be.

I am not going to pretend I know how to achieve this. But I see glimmers of hope in many games. I see the possibility of creating games where the rules are informed by our understanding of human beings themselves—counters that react according to the newly discovered rules of human minds.

We know how to create games where the formal mechanics are about climbing a ladder of status. I don't know how to make a game that is about the loneliness of being at the top, but I think I can see how we might get there.

For games to reach art,
the trellis itself,
the mechanics,
must be revelatory of
the human condition.

Consider a game in which you gained power to act based on how many people you *controlled* but you gained power to heal yourself from attacks based on how many *friends* you had. Then include a rule that friends tend to fall away as you gain power. This is expressible in mathematical terms. It fits within an abstract formal system. It is also an artistic statement, a choice made by the designer of the ludeme.

Now, the tough part—the game's victory condition must not be about being on top or being at the bottom. Instead, the goal must be something else—perhaps ensuring the overall survival of the tribe.

Now, suddenly, we see that being at the top, and having no allies, is a choice. Being lower in the status hierarchy is also a choice, and it may be a more satisfying choice. The game is presenting a pattern and a lesson with a specific desired outcome. We need the right feedback in place as well, of course: we should reward all players for sacrificing themselves for the good of the tribe. Perhaps if they are captured in the course of the game, they may no longer act directly but still score points based on the actions of the players they *used* to rule. This would represent their legacy—an important psychological driver that mere power fantasies tend not to tackle.

There are many possible lessons to be extracted from such a game, and there's no right answer to the question of choice of strategy. It is simply representing some aspects of the world as it is. It's crude, and not worked out in detail, but it is an example of a game that might actually teach something subtler than tactics in a simulated battle. We begin to create mechanics that simulate not the projection of power, but lofty concepts like duty, love, honor, and responsibility, and evolutionary ones like "I want my children to have a better life than mine."

The obstacles to making games—trellises—that shape plants in ways we choose are not mechanical ones. The obstacle is a state of mind. It's an attitude. It's a worldview.

Fundamentally, it is intent.

And that means the puzzles should be a bit more interesting than animalistic concepts like "territory," "aiming," or "timing."