The curse of knowledge is insidious, because it conceals not only the contents of our thoughts from us but their very form. When we know something well, we don’t realize how abstractly we think about it. And we forget that other people, who have lived their own lives, have not gone through our idiosyncratic histories of abstraction.

There are two ways in which thoughts can lose their moorings in the land of the concrete. One is called chunking. Human working memory can hold only a few items at a time. Psychologists used to think that its capacity was around seven items (plus or minus two), but later downsized even that estimate, and today believe it is closer to three or four. Fortunately, the rest of the brain is equipped with a workaround for the bottleneck. It can package ideas into bigger and bigger units, which the psychologist George Miller dubbed “chunks.”22 (Miller was one of the greatest stylists in the history of the behavioral sciences, and it’s no coincidence that he co-opted this homely term rather than inventing some technical jargon.)23 Each chunk, no matter how much
information is packed inside it, occupies a single slot in working memory. Thus we can hold in mind just a few of the letters from an arbitrary sequence like M D P H O B R S V P C E O I H O P. But if they belong to well-learned chunks such as abbreviations or words, like the ones that pop out when we group the letters as MD PHD RSVP CEO IHOP, five chunks, we can remember all sixteen. Our capacity can be multiplied yet again when we package the chunks into still bigger chunks, such as the story “The MD and the PhD RSVP’d to the CEO of IHOP,” which can occupy just one slot, with three or four left over for other stories. Of course this magic depends on one’s personal history of learning. To someone who has never heard of the International House of Pancakes, IHOP takes up four slots in memory, not one. Mnemonists, the performers who amaze us by regurgitating superhuman amounts of information, have spent a lot of time building up a huge inventory of chunks in their long-term memories.

Chunking is not just a trick for improving memory; it’s the lifeblood of higher intelligence. As children we see one person hand a cookie to another, and we remember it as an act of giving. One person gives another one a cookie in exchange for a banana; we chunk the two acts of giving together and think of the sequence as trading. Person 1 trades a banana to Person 2 for a piece of shiny metal, because he knows he can trade it to Person 3 for a cookie; we think of it as selling. Lots of people buying and selling make up a market. Activity aggregated over many markets gets chunked into the economy. The economy now can be thought of as an entity which responds to actions by central banks; we call that monetary policy. One kind of monetary policy, which involves the central bank buying private assets, is chunked as quantitative easing. And so on.

As we read and learn, we master a vast number of these abstractions, and each becomes a mental unit which we can bring to mind in an instant and share with others by uttering its name. An adult mind that is brimming with chunks is a powerful engine of reason, but it comes with a cost: a failure to communicate with other minds that have not mastered the same chunks. Many educated adults would be left out of a discussion that criticized the president for not engaging in more “quantitative easing,” though they would understand the process if it were spelled out. A high school student might be left out if you spoke about “monetary policy,” and a schoolchild might not even follow a conversation about “the economy.”

The amount of abstraction that a writer can get away with depends on the expertise of her readership. But divining the chunks that have been mastered by a typical reader requires a gift of clairvoyance with which few of us are blessed. When we are apprentices in our chosen specialty, we join a clique in which, it seems to us, everyone else seems to know so much! And they talk among themselves as if their knowledge were second nature to every educated person. As we settle in to the clique, it becomes our universe. We fail to appreciate that it is a tiny bubble in a vast multiverse of other cliques. When we make first contact with the aliens in other universes and jabber at them in our local code, they cannot understand us without a sci-fi Universal Translator.

Even when we have an inkling that we are speaking in a specialized lingo, we may be reluctant to slip back into plain speech. It could betray to our peers the awful truth that we are still greenhorns, tenderfeet, newbies. And if we readers do know the lingo, we might be insulting their intelligence by spelling it out. We would rather run the risk of confusing them while at least appearing to be sophisticated than take a chance at belaboring the obvious while striking them as naïve or condescending.

It’s true that every writer must calibrate the degree of specialization in her language against her best guess of the audience’s familiarity with the topic. But in general it’s wiser to assume too little than too much. Every audience is spread out along a bell curve of sophistication, and inevitably we’ll bore a few at the top while baffling a few at the bottom; the only question is how many there will be of each. The curse of knowledge means that we’re more likely to overestimate the average reader’s familiarity with our little world than to underestimate it. And in any case one should not confuse clarity with condescension. Brian Greene’s explanation of the multiverse in chapter 2 shows how a classic stylist can explain an esoteric idea in plain language without patronizing his audience. The key is to
assume that your readers are as intelligent and sophisticated as you are, but that they happen not to know something you know.

Perhaps the best way to remember the dangers of private abbreviation is to recall the joke about a man who walks into a Catskills resort for the first time and sees a group of retired borscht-belt comics telling jokes around a table with their pals. One of them calls out, “Forty-seven!” and the others roar with laughter. Another follows with “A hundred and twelve!” and again the others double over. The newcomer can’t figure out what’s going on, so he asks one of the old-timers to explain. The man says, “These guys have been hanging around together so long they know all the same jokes. So to save time they’ve given them numbers, and all they need to do is call out the number.” The new fellow says, “That’s ingenious! Let me try it.” So he stands up and calls out, “Twenty-one!” There is a stony silence. He tries again: “Seventy-two!” Everyone stares at him, and nobody laughs. He sinks back into his seat and whispers to his informant, “What did I do wrong? Why didn’t anyone laugh?” The man says, “It’s all in how you tell it.”

A failure to realize that my chunks may not be the same as your chunks can explain why we baffle our readers with so much shorthand, jargon, and alphabet soup. But it’s not the only way we baffle them. Sometimes wording is maddeningly opaque without being composed of technical terminology from a private clique. Even among cognitive scientists, “poststimulus event” is not a standard way to refer to a tap on the arm. A financial customer might be reasonably familiar with the world of investments and still have to puzzle over what a company brochure means by “capital changes and rights.” A computer-savvy user trying to maintain his Web site might be mystified by instructions on the maintenance page which refer to “nodes,” “content type,” and “attachments.” And heaven help the sleepy traveler trying to set the alarm clock in his hotel room who must interpret “alarm function” and “second display mode.”

Why do writers invent such confusing terminology? I believe the answer lies in another way in which expertise can make our thoughts more idiosyncratic and thus harder to share: as we become familiar with something, we think about it more in terms of the use we put it to and less in terms of what it looks like and what it is made of. This transition, another staple of the cognitive psychology curriculum, is called functional fixity (sometimes functional fixedness). In the textbook experiment, people are given a candle, a book of matches, and a box of thumbtacks, and are asked to attach the candle to the wall so that the wax won’t drip onto the floor. The solution is to dump the thumbtacks out of the box, tack the box to the wall, and stick the candle onto the box. Most people never figure this out because they think of the box as a container for the tacks rather than a physical object in its own right, with handy features like a flat surface and perpendicular sides. The blind spot is called functional fixity because people get fixated on an object’s function and forget its physical makeup. The toddler who ignores the birthday present and plays with the wrapping paper reminds us of how we lose our appreciation of objects as objects and think of them as means to an end.

Now, if you combine functional fixity with chunking, and stir in the curse that hides each one from our awareness, you get an explanation of why specialists use so much idiosyncratic terminology, together with abstractions, metaconcepts, and zombie nouns. They are not trying to bamboozle us; that’s just the way they think. The mental movie of a mouse cowering in the corner of a cage that has another mouse in it gets chunked into “social avoidance.” You can’t blame the neuroscientist for thinking this way. She’s seen the movie thousands of times; she doesn’t need to hit the PLAY button in her visual memory and watch the critters quivering every time she talks about whether her experiment worked. But we do need to watch them, at least the first time, to appreciate what actually happened.

In a similar way, writers stop thinking—and thus stop writing—about tangible objects and instead refer to them by the role those objects play in their daily travails. Recall the example from chapter 2 in which a psychologist showed people sentences, followed by the label true or false. He explained what he did as “the subsequent presentation of an assessment word,” referring to the label as an
"assessment word" because that's why he put it there—so that the participants in the experiment could assess whether it applied to the preceding sentence. Unfortunately, he left it up to us to figure out what an "assessment word" is—while saving no characters, and being less rather than more scientifically precise. In the same way, a tap on the wrist became a "stimulus" and a tap on the elbow became a "poststimulus event," because the writers cared about the fact that one event came after the other and no longer cared about the fact that the events were taps on the arm.

But we readers care. We are primates, with a third of our brains dedicated to vision, and large swaths devoted to touch, hearing, motion, and space. For us to go from "I think I understand" to "I understand," we need to see the sights and feel the motions. Many experiments have shown that readers understand and remember material far better when it is expressed in concrete language that allows them to form visual images, like the sentences on the right:  

The set fell off the table.
The measuring gauge was covered with dust.
Georgia O'Keeffe called some of her works "equivalents" because their forms were abstracted in a way that gave the emotional parallel of the source experience.

Notice how the abstract descriptions on the left leave out just the kind of physical detail that an expert has grown bored with but that a neophyte has to see: ivory chessmen, not just a "set"; an oil-pressure gauge, not just a generic "measuring gauge"; bleached bones, not just "forms." A commitment to the concrete does more than just ease communication; it can lead to better reasoning. A reader who knows what the Cutaneous Rabbit Illusion consists of is in a position to evaluate whether it really does imply that conscious experience is spread over time, or whether it can be explained in some other way.

The profusion of metacommens in professional writing—all those levels, issues, contexts, frameworks, and perspectives—also makes sense when you consider the personal history of chunking and functional fixity in the writers. Academics, consultants, policy wonks, and other symbolic analysts really do think about "issues" (they can list them on a page), "levels of analysis" (they can argue about which is most appropriate), and "contexts" (they can use them to figure out why something works in one place but not in another). These abstractions become containers in which they store and handle their ideas, and before they know it they can no longer call anything by its name. Compare the professionalese on the left with the concrete equivalents on the right:

Participants were tested under conditions of good to excellent acoustic isolation.
Management actions at and in the immediate vicinity of airports do little to mitigate the risk of off-airport strikes during departure and approach.
We believe that the JCTS approach to delivering integrated solutions, combining effective manpower, canine services and cutting-edge technology was a key differentiator in the selection process.

We tested the students in a quiet room.
Trapping birds near an airport does little to reduce the number of times a bird will collide with a plane as it takes off or lands.
They chose our company because we protect buildings with a combination of guards, dogs, and sensors.

What we see as "a quiet room" an experimenter sees as "testing conditions," because that's what she was thinking about when she chose the room. For a safety expert at the top of the chain of command, who lives every day with the responsibility for managing risks, the bird traps set out by her underlings are a distant memory. The public-relations hack for a security firm refers to the company's activities in a press statement...
in terms of the way she thinks about them when selling them to potential clients.

Slicing away the layers of familiar abstraction and showing the reader who did what to whom is a never-ending challenge for a writer. Take the expository chore of describing a correlation between two variables (like smoking and cancer, or video-game playing and violence), which is a staple of public-health and social-science reporting. A writer who has spent a lot of time thinking about correlations will have mentally bubble-wrapped each of the two variables, and will have done the same to the possible ways in which they can be correlated. Those verbal packages are all within arm’s reach, and she will naturally turn to them when she has to share some news:

There is a significant positive correlation between measures of food intake and body mass index.
Body mass index is an increasing function of food intake.
Food intake predicts body mass index according to a monotonically increasing relation.

A reader can figure this out, but it’s hard work, like hacking through a blister pack to get at the product. If the writer de-thingsifies the variables by extracting them from their noun casings, she can refer to them with the language we use for actions, comparisons, and outcomes, and everything becomes clearer:

The more you eat, the fatter you get.