CHAPTER 1

So much advice, so much lousy writing

Most people shun writing the way any chordate instinctively shuns pain. The task of writing is inescapably labor-intensive, no matter how facile a writer you are. Every blank page demands its lines of coherent sentences and cohesive paragraphs that ultimately amount to something like a rational, convincing argument. But our fear of writing reaches far beyond the hours we know we'll sweat over a keyboard, colonizing our blank screens with words. Instead, most of us are less afraid of the hard work than of grappling for hours with a complex system whose working parts we barely know. As a professor who has taught writing for more years than I'd care to publicly admit, I've heard thousands of confessions that gush out of students. *I'm a terrible writer*, they confess. Or, *Writing's my major weakness*. Strikingly, the majority of students who make these confessions are fairly strong writers – just as the students who assure me that they're good writers tend to create fresh paragraphs whenever they feel the reader needs to see a bit of white space, rather than from any sense of a paragraph as a coherent entity. Obviously, some sort of odd phenomenon must be at work here, when college students and even seasoned professionals have no idea whether their writing skills are adequate for a stringer position on the *New York Times* or barely pass muster as a child reporter writing for the *East Palatka Elementary Gazette*. Try making a similar analogy for reading or analytical skills, and you'll discover most people have a sound grasp of their abilities in these areas. But when the discussion turns to writing, a disconcerting number of us find ourselves at sea.

Three aspects of writing: micro, macro, middle

We struggle to even assess our writing ability because writing itself is inherently complex. Most forms of writing demand simultaneous attention to – along with at least some tenuous mastery of – three aspects of writing: argument, correct usage, and the constituents that make for clear, effective sentences and paragraphs. Unfortunately, the first two items have reaped all the press. Aristotle began a venerable, millennia-long history of writings on argument that continue today in classrooms the world over, despite Aristotelian notions of argument applying strictly to lengthy orations that ran to hours and were aimed at illiterate audiences with vastly different expectations and needs than any audience alive today. And, of course, the usage and correctness mavens are, as Christ described the poor, always with us – from the likes of H. W. Fowler through to William Bennett. But Fowler was a public school master, Bennett, a former Secretary of Education, and John Simon, another outspoken grammar maven, is a film critic. All of which proves you don't need any bona fide credentials as a linguist or researcher dedicated to the study of English to be a grammar maven – just muscular opinions about subjects like the correct use of *less* as opposed to *fewer*. You can master the art of using the colon correctly – one of the more recherché rules in the grammar canon – and also be on intimate terms with the difference between *logos* and *pathos* and even recognize an exordium when you see one, yet still write about as clearly as Forrest Gump. Why? Between the macro side of writing – the features of argument – and the micro side with its grammar and punctuation exists a vast middle ground, where virtually all the grunt work of writing occurs.

Ironically, the two ends of the writing spectrum collectively account for the majority of advice on writing and are probably responsible for the consumption of entire forests of virgin timber over the centuries. But the vast middle ground has attracted relatively few experts. Moreover, to worsen matters, the handful of experts on this middle ground offer wrong-headed advice to writers. "Imitate published writers," advises Richard Marius in *A Writer's Companion*.[1] Unfortunately, this advice could land you in rather hot water when you channel James Joyce in your next

performance evaluation. Or, even worse, as Marius puts it in Item 8 of his Fundamental Principles of Sentences: "Begin a Few Sentences with the Adverb *There*."

I happened to glimpse this particular gem in a writing manual I'd opened at random during a rant to a hapless sales assistant at a bookstore and waved the book at him, demanding to know if he realized this advice was the single worst recommendation you could make to any writer. Not surprisingly – given the wealth of misleading advice out there – he didn't. In fact, he probably considered steering me toward the Self Help section and recommending I browse the titles on anger management.

Even the most well-intentioned how-to-write manuals give us little concrete advice on all those burning questions that lie uneasily just below the surface as we hunch over keyboards and churn out sentences. How can you tell a good sentence from a bad one? What distinguishes a well-written paragraph from a crappy one? Are some word choices better than others? And how in the hell do you follow Principle #17 from that ever-present bible of writing advice, Strunk and White's *Elements of Style*, which counsels you to "Omit needless words"?[2] After all, how many people – outside of a few hundred thousand freshmen desperate to pad out a paper to a required word limit – have ever mused, "Oh, only a ten-word sentence – I'd better toss a couple of needless words in there"?

The reasons most writers have been struggling for years are actually pretty clear-cut. If you want to write well, you'll find a lot of contradictory advice in those helpful manuals on writing that attempt to address writing's middle ground and which clutter up the shelves at Barnes & Noble or Waterstones. Our libraries and bookstores are groaning with mostly consistent guidance on using punctuation and grammar and on crafting a convincing argument. But am I the only one who thinks Strunk and White's advice in *The Elements of Style*, "Find a suitable design and hold to it," is just a little too similar to a Buddhist koan? What about Sheridan Baker's exquisite description in *The Practical Stylist* of a paragraph as "a single idea … Like an essay itself, it has a beginning, a middle, and an end. The beginning and the end are usually each one sentence long, and the middle gets you smoothly from one to the other"?[3]

Whenever I read principles like these, I can't help recalling the episode of *Monty Python's Flying Circus* where Anne Elk defines a brontosaurus as being small at one end, rather large in the middle, then small again at the other end. Sad to say, Strunk and White's advice on building paragraphs is about as precise and helpful as Anne Elk's bit of wisdom. They seem to be telling us to be consistent – rather helpful advice in life as in writing. But our chief difficulty is then figuring out what the hell they mean by "a suitable design," which seems as elusive as the fine art of distinguishing necessary from unnecessary words. Does this strategy involve winnowing out those pesky, insignificant words like *in*, *to*, and *of*? Developing our vocabularies – or avoiding polysyllables at all costs? Or maybe they have something else entirely in mind: a paragraph that describes a complex topic, fat with sentences so long, they make Henry James seem like Hemingway – or the *New York Times* read like *The Sun*. And, while we're at it, does my paragraph have a beginning that falls into Baker's one-sentence definition, followed by a rather larger middle that gets tidily wrapped up by my concluding sentence?

If you're not quite confused yet, we could always obey Strunk and White's golden rule about suitable design, then follow *A Writer's Companion* and imitate the practices of published writers. If we just channel Henry Miller, Virginia Woolf, or ee cummings, we might get out of this particular rut,

although this
might not be
a
good
idea, if u
think about
it.

The science of writing

Ultimately, all our problems with writing have a common source: precisely how all these experts arrived at the "principles" they

claim lead to good writing. If you emulate what published writers have written – or, more accurately in many cases, got away with – you're not exactly treading a sure path to good writing. For instance, you run the risk of being mistaken for an ESL writer if you imitate the likes of Herman Melville. Writing researchers C. H. Knoblauch and Lil Brannon discovered this possibility when they slipped a swatch of *Moby-Dick* in with two student essays and asked teachers of writing to identify its strengths and weaknesses. The teachers' verdict: Melville's paragraphs had "some evident virtues, especially in [their] occasionally sophisticated word-choices … Sentence fragments abound, and the phrasing seems unnatural at times." The teachers decided Melville was probably an "advanced English Second Language student." Melville's masterpiece earned him a berth in a remedial writing class, not the impression one wants to make in applying for a job or writing a legal brief.[4] In addition, you will also never learn why some particular phrasings are better than others. Imitation works beautifully if you're learning the violin via the Suzuki Method. Imitation works for your average ten-year-old who can't read music but has parents with ambitions to produce the next Itzhak Perlman. However, imitation fails to work quite so well for a middle-level manager charged with writing a proposal. Come to think of it, unless you can locate a Warren Buffett rewrite of some thoroughly unintelligible bit of business prose, you'll have difficulty finding any stellar models of good writing in most professions, let alone for most of the kinds of writing our everyday lives require. Moreover, lore inherited from generations of not-particularly-helpful reference manuals on good writing is equally suspect. If you prefer active construction to passive, as so many books counsel, your writing *will* become more efficient and concrete. Yet virtually none of these experts explains why active construction works better than passive – or that this principle fails to apply in every situation.

Nearly all books on writing's under-explored middle ground deal merely with the surface, with messing around with words on the page, or with practices observed by what are usually arty writers with some credentials and a couple of books in print. But writing is always a transaction, a means to extend our convictions beyond the reach of the human voice, across time and space. At

the receiving end: the hapless reader, confronted with the message you've sent. Even if you've written in English so plain you could put it on the label of a can of dog food, your readers have a fairly horrific amount of work to do – deciphering your meaning, minimizing ambiguities, pinning words into grammatical categories, filing your information away, comparing it against other information they already possess, and deciding which details merit transfer from fleeting short-term memory to more durable long-term memory.

Reading itself is a highly complex act. Until relatively recently, reading was what social scientists like to call a *black box*, a process where we know the inputs and the outputs but not the mechanism that translates one into the other. Back in the 1970s and 1980s, researchers in what was once the field of Artificial Intelligence, known familiarly as AI, pursued research on how readers understand written language, primarily because they were interested in building computers that could read. This research in psycholinguistics and cognitive psychology began shedding light on the mental processes that enable us to make sense of words on a page. By the early 1990s, however, most AI researchers were willing to admit that the field was something of a will-o'-the-wisp – building a machine that could think and read seemed like a good idea at the time. But after a few decades of watching computers still struggling to recognize speech or tell stories that could be handled with aplomb by an eighteen-month-old, most researchers moved on.

Despite the oomph and funding oozing away from AI research, research into the neuro-cognitive process of reading continued apace, in psycholinguistics, neuroscience, and cognitive and educational psychology, bolstered by new imaging technologies that offered glimpses of our reading brain. But this flourishing research on the act of reading remained utterly disconnected from research on writing, which seems like a puzzling omission, given just how eloquently psycholinguistic and neuro-cognitive studies on reading speak to what defines a clear sentence or coherent paragraph. However, in reality, this omission is hardly puzzling, given the way academics operate in discipline-specific silos that discourage them from venturing onto their colleagues' turf, not to mention the thoroughly daunting vocabulary required for the

average humanist to wade through research results reported in the likes of *Science* or *Cerebral Cortex*. In addition, scientists rely on validated tests and expensive technologies from eye-tracking devices to functional magnetic resonance imaging (fMRI) to conduct research on the reading brain. In contrast, the humanists charged with teaching and researching writing have writing samples, questionnaires, and their own powers of observing fledgling writers at work. In terms of resources, the scientists might as well be Goliath, and the composition researchers and instructors, David – without the sling-shot.

The connections seem obvious between what neuroscientists and psycholinguists have learned about the reading brain and what writers need to know when they sit down with a blank page. Yet the science of reading and the teaching of writing end up as two conversations conducted in parallel – different audiences, tuned to entirely different channels. In fact, I dedicated a decade to studying research on the reading brain to gauge the impact of hypermedia environments on the act of reading, all while struggling to teach students to write and generally finishing each course feeling as though I should offer the students a tuition refund. I only realized I could leverage the research on reading to teaching writing when I accepted an invitation to spend a half-day teaching lawyers how to write readable legislation. Lawyers, I decided, would require hard data to change gems like the 290-word sentence on wire-tapping that appears in the California Penal Code Section 631a[5] into something resembling a string of sentences you could comprehend on the first, rather than the twelfth, reading. And, I realized, I had hard data in spades that I could translate into principles to guide writers.

Somewhat like music, writing is a system. Languages have rules about structure – where you put the subject, where you put the verb. Moreover, readers have an unconscious preference for certain types of sentences – a fact well established through decades of research into how brains process language. Put simply, when you write a sentence, your readers' brains will process that sentence in highly predictable ways, despite their blissful unconsciousness of all the cogs and wheels whirring as they scan the page. The same also holds true for groups of sentences, paragraphs, entire

documents. So you ignore these predictable processes at your peril – and, unfortunately, also at your readers'.

This thumbnail history brings us, at last, to the good news. You can quickly and painlessly master the art of becoming a terrific writer. Or, at least, you, too, can be one of those hapless saps in the office who always gets lumbered with the job of writing documents simply because you do it so well. And the process is not only relatively simple; this method also works across virtually every field, profession, and type of non-fiction writing. In addition, this method uses a systematic, rules-based approach, well suited to the learning styles of engineers, scientists of every stripe, and everyone who prefers an approach to writing based on tangible data, rather than on instinct and verbal facility – or flailing around in the dark and hoping for the best. Follow most of the principles in *The Reader's Brain*, and your readers, your colleagues, and, more important, your superiors and clients will find your writing a model of precision and effectiveness. Best of all, this method stems from decades of scientific research in linguistics, cognitive psychology, and neuroscience. Moreover, I've road-tested this method for nearly a decade in writing courses for undergraduates in more than fifty disciplines, MBA students and mid-career executives, lawyers, engineers, and faculty in every branch of the biomedical sciences.

To paraphrase Scott Adams, the brains behind the American comic strip *Dilbert*, I'm writing from a position entirely different from the usual consultant or professor, mercifully insulated from the insults and challenges of workplace writing – a perspective Adams likened to "writing a first-hand account of the experience of the Donner party, based on the fact that you've eaten beef jerky."[6] Like Adams, I've gnawed some ankles. In fact, I've devoured some femurs while working as a copywriter for blue-chip clients and writing in the trenches in seventeen disciplines. I've tackled everything from white papers on vaccines for C-suite executives to articles straddling rheumatology, genetics, and cardiology. And my work tends to get accepted rapidly due substantially to the ease with which editors, executives, and reviewers can read it.

The pages that follow translate the research I've long relied on in psycholinguistics, cognitive psychology, and neuroscience into easy-to-follow principles that will enable you to

- construct sentences that efficiently convey your message, regardless how complex it is;
- understand where to place important information (and where to hide bad news to avoid unduly pissing your readers off);
- distinguish between good and poor word choices;
- create paragraphs that fit together seamlessly;
- introduce complex information without confusing the pants off your readers;
- make your sentences just seem to "flow" like an expert writer's.

The Reader's Brain uses five categories to promote clear, effective, and efficient writing, the five Cs: clarity, continuity, coherence, concision, and cadence. Practice most of these simple, easy-to-follow principles, and you'll not only become a good writer, you'll also become a pro at spotting – and fixing – even the worst writing disasters.

CHAPTER 2

The new science of writing

We owe a good deal of what we now know about the reading brain to a 1980s *idée fixe* – the scientific equivalent of padded-shoulder suits and even bigger hair: that computers could be taught to think, read, and play a mean game of chess. In retrospect, this sort of optimism is entirely understandable, since during the eighties, computers rapidly evolved from do-it-yourself Radio Shack-style jalopies with a fraction of the computing power of your run-of-the-mill modern cell phone to Maseratis capable of parallel processing. During the eighties and early nineties, computers progressed a generation in speed and capacity every two to three years. This trend tidily observed Moore's Law that predicted transistors and integrated circuits would double in capacity approximately every two years – a prediction that only proved uncannily apt, given that Moore made his prediction in 1965, the same year the first commercially successful mini-computer debuted.[1] Small wonder, then, that scientists in AI believed computers could also evolve in a matter of decades into the thinking creatures humans had taken millennia to become.

Now, not so many years later, we're ready to concede that HAL might not be around in 3001, let alone 2001, even though computers, it turns out, really *can* play a mean game of chess and even win at *Jeopardy*. In 1997, IBM's supercomputer Deep Blue won a six-game match against world chess champion Garry Kasparov – thrashing him so badly that the rattled Kasparov claimed the geeks behind Deep Blue were using a human chess master to control the computer's gambits. Still, however, computers cannot read – at least, not in the conventional sense of poring over lines of written symbols and arriving at an understanding of what Anna and Count Vronsky were up to in *Anna Karenina*. Nevertheless, for more than a decade, AI became the equivalent of the Klondike