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Language

1.1 Speech
Our ancestors evolved into their present anatomical form some 200,000 years ago. Some 150,000 years later, or 50,000 years ago, they learned to talk to each other.

Children learn their native language without going to school. They learn by listening to other people talk. Talking face to face is a natural human activity.

Noam Chomsky (linguistics.mit.edu/user/chomsky) created modern linguistics and used language to study consciousness.

1.2 Writing
Reading and writing were invented more recently, probably between 6,000 and 5,000 years ago, possibly in Mesopotamia, now Iraq. Reading is a skill learned at home or in school. It is not a natural act like talking with another person face to face. So writers should make reading as easy as possible.

In Politics and the English Language, George Orwell (1984, Animal Farm, Homage to Catalonia, . . .) gave us six rules for writing English:

1. Never use a metaphor, simile, or other figure of speech which you are used to seeing in print.
2. Never use a long word where a short one will do.
3. If it is possible to cut a word out, always cut it out.
4. Never use the passive where you can use the active.
5. Never use a foreign phrase, a scientific word, or a jargon word if you can think of an everyday English equivalent.
6. Break any of these rules sooner than say anything outright barbarous.
If you follow Orwell’s rules, your writing will be easier to read. It will be 
*tight* and free of extra words and phrases that distract the reader.

Orwell’s rules also make writing easier. When you are about to write a 
sentence, you probably think of several choices for its words and phrases. 
Instead of agonizing over the merits of each choice, you can use Orwell’s 
rules to winnow the list of alternatives down, often to a unique choice.

1.3 A higher level

There is a higher level of writing, but I don’t have anything much to tell you 
about that. You can read articles and books by some of the best writers, 
such as Sidney Coleman, Freeman Dyson, Richard Feynman, Roy Glauber, 
Steven Weinberg, Edward Witten, and Anthony Zee in the field of physics, 
Linus Pauling in chemistry, and the several authors of the book *Molecular 
Biology of the Cell*. And it would not hurt to read Hemingway, Churchill, 
Tom Wolfe, F. Scott Fitzgerald, Oscar Wilde, James Joyce, Tolstoy, . . . .

Orwell’s rules aren’t a recipe for great writing, but violating them can 
ruin a great story.

1.4 Know your audience

When talking with a friend of yours, you have some idea of what he or she 
knows and wants to learn from you. The exchange of information in both 
directions is immediate and effective. When face to face with someone new, 
you quickly see how the person reacts to what you say. You find out what 
background is needed and how fast to explain the physics.

But when giving a talk to a group of people you have less feedback and 
when writing a paper, you have none. So you somehow must learn something 
about your audience before you prepare your talk and before you write your 
paper.

If you are giving a talk to a small research group of which you are a 
member, then you have a good idea what they know, and you can focus on 
explaining your new results in terms of what you know they know.

But if you are giving a talk to a large audience or are writing an article 
for an international journal, then you must explain much more.

1.5 Explaining the physics

One way of communicating with a large audience of strangers is to explain 
the physics from scratch using only the concepts that you are sure they
are familiar with. You should explain new ideas and results in terms of the concepts they already know. If you follow Orwell’s rules, you will be able to explain the new terms and new ideas succinctly and efficiently.

The key task is to explain the new physics in ways that make it easy for your audience to learn it.

1.6 The ideal talk, the ideal paper
A second reason to know your audience is to find out what they want to learn. If you know your audience, you may know that they want to understand something that you understand. If you explain that to them clearly, they will love you.

1.7 Some tips
Vary the lengths of your sentences. A very short sentence can have a big impact on the reader, especially if it follows a few longer ones.

Use a speller. But if the word is technical, use Google to check it.

Use correct grammar. Mistakes distract readers and annoy listeners. Grammatical errors also can lower the level of trust your audience has in you. You can use Google to answer most questions about grammar.