§ 9.20 Voice and Gender

Section 20. Voice and Gender

Who will be the speaker in your paper: “I”, “we”, or no one? You may think it is impossible for no one to speak, but consider this excerpt from a student paper:

Due to brief misinterpretation of questions two and three, only one $x$ value was sought and found. Only after leaving the computer facility was it discovered that two or three values were required. Hence, some of the value tables were constructed using a simple “home-grown” program on an Apple II and do not contain as accurate a scale as the tables printed with Microcalc.

quoted by George D. Gopen and David A. Smith in What’s an Assignment Like You Doing in a Course Like This?

Apparently nobody did anything; the repeated use of passive voice (“one $x$ value was sought”; “it was discovered”; “values were required”) made everything just happen!

You ought to take an active voice – it sounds better and it allows you to take both pride in and responsibility for your findings. But what about choosing between “I” and “we”? If yours is a jointly written paper, of course use “we”. As for single-author papers, it used to be considered self-centered to use “I”; the polite approach was to use “we”. This use of “we” is called the royal we, since kings used to talk this way. Less grandiosely, it is sometimes called the editorial we.

But sentiments have changed, and it is no longer gauche to use “I”. Many research papers in mathematics use “I”. Don’t toot your horn unnecessarily, but if you did something, say so.

There is another meaning of “we”: the author and the reader. If you say

Combining like terms, we see that this expression is a perfect square.

you are saying that you as author have seen this, and so will the reader if he or she does the computation. When you want to tell the reader to work with you, “we” is the right term, even in a paper where the author is “I”. On the other hand, if you are saying what you have done, or will do, use “I”. For instance:
In Section 1, I will give the mathematical definition of derivative and show how it captures the intuitive idea of instantaneous slope. Then in Section 2, I will show you how to compute derivatives easily.

To use “we” instead of “I” above would be to use the royal we. I don’t recommend it.

**Referring to the Reader.** If the writer is “I”, who is the reader? It used to be thought that “you” is too bold, so the reader was “the reader” or “the student”. While Miss Manners can get away with “Gentle Reader”, today I recommend that you use “you”. If you want the reader to do something (and “we” is inappropriate because you are not proposing to do it with the reader), use “you”. For instance,

\[ f(x) = x^2 - 4x + 3 \]

has its maximum value at \( x = 2 \), as you can check.

There is another fellow who gets mentioned in math papers: “one”, as in “The 100th prime is 541, as one can show.” This is not a euphemism for the reader. If you write “The 100th prime is 541, as you can show”, then you are strongly suggesting to the reader that he or she should do the check. When you say “one can show”, you are telling the reader that it is possible to check the claim, but that it is probably tedious or difficult to do so and in any event the reader need not do it.

Or, consider the difference between “Maximization is a problem one studies in calculus” and “Maximization is a problem you study in calculus”. The first version does not make any presumption about whether you the reader have studied calculus or will. The second assumes you have or will. If you haven’t or won’t, the second wording can make you uncomfortable, all for no purpose; the sentence is about what goes on in calculus, not about the people who study calculus.

**The passive is not always bad.** Stylists are really down on the passive voice – not forceful enough, takes an extra word or two, etc. But there are times when it is appropriate. (Stylists know this. They hope that by telling you not to use it, you won’t overuse it.) Consider the following sentence.

The distinction between exposition and research will be discussed in the subsection on research papers.

It could be written

I will discuss the distinction between exposition and research in the subsection on research papers.

However, the second version makes me the subject of the sentence and thus puts me in the limelight. I shouldn’t be in the sentence at all, let alone be the subject.
In short, sometimes a noun must go at the start of a sentence to receive proper emphasis, but the only way to do this is to use a passive verb.

A. He or She?

Sometimes, even in math papers, you must use third-person pronouns. Unfortunately, the third-person singular pronouns in English are gendered; this is unfortunate because gender almost never has any bearing on the mathematics.

Until recently, the solution was to use “he”, with the understanding (or some people thought there was an understanding) that this included “she”. But today you are damned if you do and damned if you don’t. If you always use “he”, you are a Neanderthal to some. If you do anything else (“he or she”, “she or he”, “s/he”, “she”) you are hopelessly Politically Correct to others. Is there a way out?

Sometimes. The plural English pronouns are unsexed, so you can rewrite your sentence using plurals. Sometimes the rewrite is just too awkward, or has a subtle difference in meaning that isn’t quite right, but it’s worth a try.

Example: earlier in this section “we see” was explained by

you are saying that you as author have seen this, and so will the reader if he or she does the computation.

This could have been written

you are saying that you as author have seen this, and so will your readers when they do the computation.

In this case, I prefer the original (even if it then requires “he or she”) because it evokes an image of the author and an individual reader making a team of two, checking each other’s work on this computation. But it’s a close call.

Second example: The sentence earlier in this section

If you write “The 100th prime is 541, as you can show”, then you are strongly suggesting to the reader that he or she should do the check.

could have been

If you write “The 100th prime is 541, as you can show”, then you are strongly suggesting that readers should do the check.

Here I prefer the revision.
Similar problems arise with nouns that name jobs. The person who delivers the mail used to be called the mailman; what should he or she be called now? Mailperson sounds too cute to me, but mail carrier is fine. A harder case (more relevant to math students) is chairman. Chairperson and Chair both sound a little forced; maybe Department Head is OK. Fortunately, the job nouns you are most likely to deal with in mathematical writing – mathematician, scientist, computer scientist, statistician, professor, instructor, student – are all unsexed.

The bottom line on gender is that gender is usually irrelevant to the mathematics, so you don’t want the issue to intrude consciously on unconsciously on your writing. To use only masculine pronouns, following tradition, intrudes unconsciously by suggesting that only men do math. To use cute or lengthy circumlocutions intrudes consciously. The more you can manage to avoid intrusions, the better.

### Section 21. Words or Symbols?

Mathematicians give things single-letter names for good reason – it shortens the writing and increases the clarity. To quote a telling example from Price [20], suppose you want to say

If you start with any number and subtract one from the square of the number, then the answer you will get is the same as the answer you will get if you multiply one more than the number by one less than it.

How much simpler and shorter to say

Let \( x \) be any number. Then \( x^2 - 1 = (x+1)(x-1) \).

In this example, we were doing calculations with the quantities we named; we squared, added, multiplied. Even if you are doing none of that, naming (i.e., making local definitions) can give clarity. Consider the following example from discrete math, where a graph is a network of vertices connected by edges, and a cycle is a sequence of edges that begins and ends at the same place.

We find a cycle in our graph. If the cycle contains all edges, we are done. Otherwise, remove the cycle and look for another cycle in the remaining graph. If the cycle we find does not contain all the edges, then...

This is unclear; for instance, in the last sentence, which cycle is referred to and from which graph should it contain all the edges? How much better to write:

We find a cycle \( C \) in our graph \( G \). If \( C \) contains all the edges of \( G \), we are done. Otherwise, Let \( G' \) be \( G \) with the edges of \( C \) removed and find another cycle \( C' \) in \( G' \). If \( C' \) does not contain all the edges of \( G' \), then...

Now the references are clear.