ENGLISH FOR FRENCH MATHEMATICIANS

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1. Introduction

I have had the good fortune of spending a lot of time in France. Several of my collaborators and good friends are French. Over the years, I have noticed that there are some common mistakes that native French speakers often make when writing in English. This note is basically a list of some of things I have observed. It might also be of use for some non-French speaking mathematicians. If so, all the better!

Now a disclaimer: I'm not a native English (nor French!) speaker, but hopefully I don't give too much bad advice. Writing about Swedish for French mathematicians does anyway not seem terribly meaningful. The English I refer to here is American English, but I don't think this makes a big difference for the purposes of this note.

2. False friends

Many French words used in mathematics have direct analogues in English, but that does not mean that a literal translation is always correct. Here are some *pièges* in alphabetical order.

Ameliorate. The verb ameliorate does exist in English but most of the time *améliorer* would translate as *improve*.

Compacity. This is a beautiful word that unfortunately does not really exist in English. The translation of *compacité* is *compactness*.

Derive. The word *derive* does exist in English (it derives from the Latin word *derivare*) but you *differentiate* a function $f(x)$ when computing $f'(x)$.

Estimation. The French noun *estimation* usually translates as *estimate* in English. There is also a word *estimation* in English, but it refers to the process of finding an estimate.

Eventually. The translation of *éventuellement* is *possibly* and not *eventually*, which corresponds to *finalement*.

Explicit. In French, you can say *expliciter*, but in English there is no verb *explicit*. Use *make explicit* instead.

Identify. In English, you can identify *A with B*, not *to B*.

In detail. In English, one can explain something *in detail* but not *in details*.

In the form. What is *écrit sous la forme* in French becomes *written in the form* in English.

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Informations. The word information does not have plural or singular form. A sentence like *... nous donne des informations...* would be written *... gives us information....*

Notations. The word *notation* does have a plural form, but usually it is not what would be used in a mathematical text. Instead, *quelques notations* typically should be written as *some notation*.

Non! The negation mark *non* does not like to be left alone in English. Instead of writing *non negative*, write *non-negative* or *nonnegative*.

Permit to. A phrase like *This permits to...* is not correct in English even though it seems like a nice translation of *Cela permet de...* The reason is that *permit* is a transitive verb. One can write *This permits us to...* or, perhaps more commonly, *This allows us to...*

Precise. The verb *préciser* is quite common in French but there is no verb *precise* in English.

Precisions. There is a word *precision* in English but it cannot take plural form. A sentencence such as *Donnons quelques précisions* can instead be translated as (for instance) *Let us be more precise*.

Primitive. If $f' = g$, then f is usually called an *antiderivative* of g, rather than a *primitive*.

Rational. This word has only one "n" as opposed to the French word "rationnel". The same is true for many other words ending in *-ional*.

Recalls and reminders. Many mathematics papers in French has a section *Rappels* early on. It tends to state a number of facts that the reader may or may not have seen before. Dictionaries often list *recall* and/or *reminder* as a translation of *rappel* but neither of these would work in the situation above. If you want to have a section were you recall various facts, call it *background* or *basic facts*.

So and such. It's quite common to mix up *so that* and *such that*. Usually *such that* corresponds to *tel(le) que* whereas *so that* means something like *et alors*.

Some. It is tempting to translate the French article *des* with *some* but in many cases this article should simply disappear. For example, *Si* $q_1, \dots, q_k$ *sont des nombres rationnels...* should be translated as *If* $q_1, \dots, q_k$ *are rational numbers...*

Space. The word *space* is often "uncountable" in the sense that it does not take a plural form. For instance, one writes *projective space* (but *the projective plane*) instead of *the projective space*.

Unicity. This word does exist in English, but it does not mean the same thing as *uniqueness*, which is how you would translate *unicité* when describing, for example, that there is at most one solution to a certain equation.

Writes. It is perhaps tempting to translate *s'écrit* with *writes* but this is incorrect. Instead one can write (!) *is written* or *can be written*.

When... then. Both the sentence *If a is an even number, then $a+1$ is odd* and *If a is an even number, $a+1$ is odd* are correct. One can also write *When a is an even number, $a+1$ is odd* but the formulation *When a is an even number, then $a+1$ is odd* is **not** correct.

Whence. The word *whence* is technically more or less a translation of *d'où* but are usually only found in texts by Shakespeare or French mathematicians. The related (but not quite synonymous) words *hence*, *thus*, *therefore* and *consequently* are more common and preferable.

3. Grammatical differences

A and an. The article *an* is used instead of *a* when the following word starts with a consonant *sound*. This means that one should write *a homeomorphism* and not *an homeomorphism*!

All, any, every, each and whole. These words are related to the French words *tout(e)(s)*, *tous* and *chaque* but there is no simple isomorphism as far as I know. It is in fact quite tricky to get this right! Let me just mention a few things:

(1) The words *each* and *every* tend to be singular, so you cannot write *for each points* or *for every manifolds*.
(2) *All*, on the other hand, tends to be plural, so one should write *for all integers* instead of *for all integer*. One should also translate *tout entier n* with *every integer n*.
(3) *Dans tout cet article* does not translate as *In all this article* but, rather, as *In this whole paper* or *Throughout this paper*.

Numbers. Sometimes English and French differ in whether to use singular or plural. For example, in French you would (I think) say *equivalence de catégorie* but in English, this would be *equivalence of categories*.

Theorem capitalization. More things are capitalized in English than in French. For example, one would write *in Theorem 2.3* as a translation of *dans le théorème 2.3*, and similarly for Lemma and Proposition. Note also the missing "the" (see the remark on theorem numbering below).

Theorem names. Some mathematicians are honored by having a result named after them. In this case you would normally write, for example, *the Calabi-Yau Theorem* and not *the Calabi-Yau's Theorem*.

Theorem numbers. In French one may say *le théorème 1.4* but in English this becomes *Theorem 1.4* and not *the Theorem 1.4*. By the way, note that *Theorem* is capitalized while *théorème* is not.

Too many of's. The French *de* is more frequently used than the English "of". For instance, *homomorphisme de groupe* would usually be *group homomorphism*. However, you would say *a homomorphism of abelian groups* instead of *abelian group homomorphism* (since otherwise it would be the homomorphism that is abelian).

Word order. The construction *Fixons X une variété complexe* is common in French mathematics. In English one would usually write *Let us fix a complex variety X* and **not** *Let us fix X a complex variety*.

4. Other remarks

Here are some further remarks (some of which admittedly a bit pedantic, and please don't check my own papers to verify that I follow them all).

(1) In English there is no space before a colon (:), a semicolon (;), an exclamation mark (!) or a question mark (?).
(2) Quotation marks look like this in English: "quote" and not « quote ».
(3) Surnames are usually not written in all capitals in English. So you would write Joe Smith and not Joe SMITH.
(4) Out of tradition, multiplication in "English" formulas is usually denoted by `$\cdot$` rather than `$\times$`. Thus one writes $2 \cdot 3 = 1$ rather than $2 \times 3 = 1$ (here we are in characteristic 5).
(5) The abbreviation for *constant* in a formula is usually *const* and in any case not *cte*.
(6) In (at least US) English, a punctuation mark is always inside a quotation, that is, we write *the so-called "Teichmüller extremal mapping."* while in French it comes after the quotation mark.
(7) In English, a footnote should be placed after a punctuation mark (if there is any) while in French it is right after the word.
(8) In English an em dash is not surrounded by space, as opposed to its French cousin, the *tiret cadratin*. For example, compare

This notion—introduced by Noether—is very useful.

with

Cette notion — introduite par Noether — est très utile.

An em dash is written as a triple dash or `\emdash` in TEX.

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