

Increasing the Readability of Academic Texts:

Irina Liskovets,
irina.liskovets@gmail.com
Sept 18, 2025

What is readability?

Readability is a measure of how easy a piece of text is to read. It can include elements of complexity, familiarity, legibility and typography. Readability formulas usually look at factors like sentence length, syllable density and word familiarity as part of their calculations.

General advice

- Consider the reading level.
- Use clear and concise language.
- Break down complex sentences.
- Structure your content logically.
- Use transition words
- Keep paragraphs at a reasonable length.
- Proofread for mistakes and edit.

MISTAKES

1. Prepositions

...this “orbicyclic” arithmetic function (as we called it in [23]) deserves a detailed investigation **by** its own right.

... by some reasons, from now on, the letter I is used instead of M .

...this “orbicyclic” arithmetic function (as we called it in [23]) deserves a detailed investigation **in** its own right.

...for some reasons, from now on, the letter I is used instead of M .

2. Coordination singular/plural

It is shown that the necessary and sufficient conditions for this function to vanish is equivalent to familiar Harvey's conditions that characterize possible branching data of finite cyclic automorphism groups of Riemann surfaces.

It is shown that the necessary and sufficient conditions for this function to vanish are equivalent to the familiar Harvey conditions that characterize possible branching data of finite cyclic automorphism groups of Riemann surfaces.

3. Article

It is shown that the necessary and sufficient conditions for this function to vanish is equivalent to **familiar Harvey's** conditions that characterize possible branching data of finite cyclic automorphism groups of Riemann surfaces.

It is shown that the necessary and sufficient conditions for this function to vanish are equivalent to the familiar **Harvey** conditions that characterize possible branching data of finite cyclic automorphism groups of Riemann surfaces.

Rules (abridged)

Use **the**

- referring to a **specific known concept** (e.g., the familiar X, the well-known Y, the classical Z).
- Referring to something **established in the field** (the Harvey's conditions).

4. Possessive or not

It is shown that the necessary and sufficient conditions for this function to vanish is equivalent to familiar **Harvey's** conditions that characterize possible branching data of finite cyclic automorphism groups of Riemann surfaces.

It is shown that the necessary and sufficient conditions for this function to vanish are equivalent to the familiar Harvey conditions that characterize possible branching data of finite cyclic automorphism groups of Riemann surfaces.

Explanation

familiar **Harvey's** conditions = Harvey is familiar
familiar **Harvey** conditions = conditions are
familiar

5. Word order

...will **be also** discussed...

The theorem proves not only the statement itself but also why **is it important**.

will **also be** discussed

The theorem proves not only the statement itself but also why **it is important**.

6. Commas

Therefore this “orbicyclic” arithmetic function (as we called it in [23]) deserves a detailed investigation.

In order to describe more sophisticated applications of E we need to remind some notions of algebraic topology.

Therefore, this “orbicyclic” arithmetic function (as we called it in [23]) deserves detailed investigation.

In order to describe more sophisticated applications of E , we need to recall some notions of algebraic topology.

6. Commas

Instead of completely defined automata we could consider partial deterministic automata, **that is** automata for which the transition function is defined not necessarily for all pairs (q, x) .

...we will designate it by the letter “D” possibly with a subscript

Instead of completely defined automata₂ we could consider partial deterministic automata, **i.e.**, automata for which the transition function is defined not necessarily for all pairs (q, x) .

...we designate it by the letter “D₂” possibly with a subscript.

6. Commas

the enumeration of ballot sequences, or equivalently SYT of an ordinary shape (see Section 14.2.5.2).

The Catalan-like form (1) when it is applicable for representing the number $M'(n)$ looks natural by itself

.... the enumeration of ballot sequences, or equivalently, SYT of an ordinary shape (see Section 14.2.5.2).

The Catalan-like form (1), when applicable to represent the number $M'(n)$, looks natural in itself.

6. Commas

If one executes Algorithm 1 on the Černý automaton C_4 (Fig. 6 is quite helpful here), one sees that the algorithm returns the word ab^2abab^3a of length 10 which is not the shortest reset word for C_4 .

If one executes Algorithm 1 on the Černý automaton C_4 (Fig. 6 is quite helpful here), one sees the algorithm produces the word ab^2abab^3a of length 10, which is not the shortest reset word for C_4 .

Rules

1. Lists

Use commas to separate items in a series (3 or more).

The proof relies on algebra, topology, and combinatorics.

2. Introductory elements

Use a comma after introductory words, phrases, or clauses.

In this section, we consider truncated shapes.

However, the recursion does not apply in this case.

Rules

3. Non-restrictive (extra) information

If a clause/phrase is non-essential, separate it with commas.

The Catalan numbers₂ which arise in many contexts₂ also appear here.

But **no comma** if it's restrictive (essential to meaning):

The numbers which satisfy this condition form a subgroup.

Rules

4. Before coordinating conjunctions (FANBOYS)

Use a comma before *for, and, nor, but, or, yet, so* when the conjunction joins **two independent clauses** (each could stand alone as a sentence):

The function is multiplicative, and it admits a simple closed formula.

The recursion seems straightforward, yet its proof is surprisingly difficult.

Rules

5. Appositives (renaming nouns)

MacMahon, a pioneer in enumerative combinatorics, used recurrence relations.

Rules

6. After transitional or parenthetical words

however, therefore, moreover, furthermore, nevertheless, instead, indeed, in fact, for example / for instance, that is / namely, after all, on the one/other hand, by the way, of course, in particular, thus, in summary, hence, as a result, hence, etc.

*We note, **however**, that the recursion fails in this case.*

***Indeed**, the function is multiplicative.*

***Therefore**, we obtain the desired formula.*

***For example**, consider the case of $n = 3$.*

STYLE

We or I? – Better to avoid both

We begin with Eppstein's result (1990) in which restrictions are imposed on the action of the letters on the state set.

The article starts with Eppstein's result (1990) in which restrictions are imposed on the action of the letters on the state set.

Active/passive: active is better

We begin with Eppstein's result (1990) in which **restrictions are imposed** on the action of the letters on the state set.

We begin with Eppstein's result (1990), which **imposes restrictions** on the action of the letters on the state set.

or

Eppstein's 1990 result, which **restricts** the action of the letters on the state set, serves as the starting point.

Repetition

Suppose that a part of a certain device has the shape **shown** in Fig. 3. Such parts arrive at manufacturing sites in boxes **and** they need to be sorted **and** oriented before assembly. For simplicity, assume that only four initial orientations of the part **shown** in Fig. 3 are possible, namely, the four **shown** in Fig. 4.

Suppose that a part of a device has the shape **illustrated** in Fig. 3. Such parts arrive at manufacturing sites in boxes. They need to be sorted **and** oriented before assembly. For simplicity, assume that only four initial orientations of the part **shown** in Fig. 3 are possible, namely the four **depicted** in Fig. 4.

Repetition

If **one** executes Algorithm 1 on the Cerny automaton C_4 (Fig. 6 is quite helpful here), **one** sees that the algorithm returns the word ab^2abab^3a of length 10 which is not the shortest reset word for C_4 .

If **one** applies Algorithm 1 to the Černý automaton C_4 (Fig. 6 is quite helpful here), **it is possible to** see that the algorithm returns the word ab^2abab^3a of length 10, which is not the shortest reset word for C_4 .

Synonyms: mistakes

In order to describe more sophisticated applications of E we need to **remind** some notions of algebraic topology.

... besides, we **pay** the reader's attention to a minor change in designations...

In order to describe more sophisticated applications of E , we need to **recall** some notions of algebraic topology.

... we **draw** the reader's attention to a minor change in designations...

Explanation

One can **pay** one's own attention not other's
and **draw** other's attention

One can **remind** somebody to do something and
recall something

Synonyms: style

MacMahon [72] has originally used partial difference equations, also known as recurrence relations, to solve various enumeration problems, **among them** the enumeration of ballot sequences, or equivalently SYT of an ordinary shape (see Section 14.2.5.2).

MacMahon [72] originally used partial difference equations, also known as recurrence relations, to solve various enumeration problems, **including** the enumeration of ballot sequences, or equivalently, SYT of an ordinary shape (see Section 14.2.5.2).

Synonyms: style

A **different** method **to derive** product formulas, for other families of truncated shapes, has been developed by Panova [81].

An **alternative** method **for deriving** product formulas for other families of truncated shapes was developed by Panova [81].

Clarity

There are other intriguing questions, in particular the distribution of the diameter and the number of pre-dead states in acyclic and initially connected acyclic automata.

There are other intriguing questions, in particular **those concerning** the distribution of the diameter and the number of pre-dead states in **both** acyclic and initially connected acyclic automata.

Smoothness

In terms of maps, m -constellations (or simply constellations) are maps **in which** the faces are properly bicolored black and white, all black faces **are** of size m and the sizes of all white faces **are** multiples of m .

In terms of maps, m -constellations (or simply constellations) are maps **whose** faces are properly bicolored (black and white), **with** all black faces of size m and all white faces of size multiple of m .

Advice

- **Use transitional words**
- **Balance sentence length** → alternate short, clear statements with longer, more developed ones.
- **Maintain parallel structure** → when listing or comparing, keep the same grammatical form (*X is...*, *Y is...*, *Z is...*).
- **Prefer phrases over clauses:**

We consider the function $f(x)f(x)f(x)$, which is defined as the sum of squares of the coordinates.

- ♦ **Improved with a phrase**

We consider the function $f(x)f(x)f(x)$, defined as the sum of squares of the coordinates.

Heaviness: write more simply

If **one** executes Algorithm 1 on the Cerny automaton C_4 (Fig. 6 is quite helpful here), **one** sees that the algorithm returns the word ab^2abab^3a of length 10 which is not the shortest reset word for C_4 .

Executing Algorithm 1 on the Černý automaton C_4 (see Fig. 6) shows that the algorithm returns the word ab^2abab^3a of length 10, which is not the shortest reset word for C_4 .

Heaviness: choose what can be simplified and what is not

AI version

Thus, studying synchronization within this important subclass of automata appears to be well justified, especially **if one takes into account** that the problem of finding short reset words is known to remain difficult **when restricted** to aperiodic automata.

Thus, studying synchronization within this important subclass of automata **is** well justified, especially **given** that the problem of finding short reset words **remains** difficult **even for** aperiodic automata.

Heaviness: omit what can be omitted

The Catalan-like form (1) when **it is** applicable for representing the number $M'(n)$ looks natural by itself.

The Catalan-like form (1), when applicable to represent the number $M'(n)$, appears natural in itself.

Heaviness: split long sentences and simplify

Here and subsequently we follow the convention that an arithmetic function vanishes for non-integer arguments (besides, we pay the reader's attention to a minor change in designations with respect to $E(m_1, \dots, m_r)$: by some reasons, from now on, the letter I is used instead of M).

Hereafter we follow the convention that an arithmetic function vanishes for non-integer arguments. We also draw the reader's attention to a minor change in designations with respect to $E(m_1, \dots, m_r)$: for certain reasons, the letter I will now be used in place of M .

Heaviness: split long sentences and add linking words

There exist initially connected acyclic automata with a unique pre-dead state which cannot become minimal acceptors for any choice of the set of accepting states, for instance, such are automata with 3 or more pre-pre-dead states in **which** all transitions **from them** lead to the pre-dead state q_* .

There are initially connected acyclic automata with a unique pre-dead state that cannot become minimal acceptors for any choice of the set of accepting states. For instance, this is the case for automata with 3 or more pre-pre-dead states, all **of whose** transitions lead to the pre-dead state q_* .

Heaviness: split long sentences and add linking words

This fraction increases with k but, presumably, it does not tend to 1 as n tends to infinity taking into account the arguments given in Subsect. 5.2: there is a significant fraction of initially connected acyclic automata with 3 or more pre-pre-dead states, and in a significant fraction of them at least 2 such states are similar.

This fraction increases with k , but, presumably, it does not tend to 1 as n tends to infinity, taking into account the arguments given in Subsect. 5.2. Indeed, there is a substantial fraction of initially connected acyclic automata with three or more pre-pre-dead states, and in many of these at least 2 such states are similar.

Present vs Future

...we **will designate** it
separately by the letter “D” ...

We **shall adopt** here the
“English” convention for
drawing diagrams...

we **designate** it by the letter
“D”

We **adopt** here the “English”
convention for drawing
diagrams...

Explanation

In academic writing, the future tense should be used only when referring to events that will genuinely occur in the future (e.g., 'X **will publish** a paper next year'). In other cases, particularly when referring to the scope of the present article, the present tense is preferred.

Present Perfect vs Past Simple

MacMahon [72] **has** originally **used** partial difference equations...

A different method to derive product formulas, for other families of truncated shapes, **has been developed** by Panova [81].

MacMahon [72] originally **used** partial difference equations...

An alternative method for deriving product formulas for other families of truncated shapes **was developed** by Panova [81].

AI'S HELP

AI's help

AI's tendency to oversimplify

$E(m_1, m_2, \dots, m_r)$ **proves to be** multiplicative, and a simple formula for its calculation is provided

This reveals **one of the main** intrinsic difficulties of the synchronization problem

The function E ... **is** multiplicative, and a simple formula for its computation is given.

This illustrates **a** difficulty of the synchronization problem:

AI's tendency to oversimplify

Indeed, the recursion for A_n (Proposition 14.7.8) **can be seen to be equivalent** to the generating function

AI version

Indeed, the recursion for A_n (Proposition 14.7.8) **is equivalent** to the generating function.

Sometimes AI can't be trusted

Instead of completely defined automata we could consider partial deterministic automata, that is automata for which the transition function is defined not necessarily for all pairs (q, x) .

Instead of completely defined automata, we may consider partial deterministic automata, i.e., automata for which the transition function is not necessarily defined for all pairs (q, x) .

Sometimes AI can't be trusted

This reveals one of the **main intrinsic** difficulties of the synchronization problem: the standard optimality principle does not apply here since **it is not true that** the optimal solution behaves optimally also in all intermediate steps.

AI version

This illustrates a fundamental difficulty of the synchronization problem: the standard optimality principle does not hold, since an optimal solution **does not necessarily** behave optimally at all intermediate steps.

Basic Advice:

- Check for correct prepositions and punctuation.
- Avoid repetition — use Grammarly or ChatGPT to find synonyms.
- Prefer the active voice over the passive, the present tense over the future, and the past simple over the present perfect.
- Divide long sentences into shorter ones.
- Use linking words.
- Express ideas as concisely as possible.
- When using AI, be aware of its limitations.

Thank you for your
attention