Practical Tips That are Never Given to Make an Interesting and Delicious Scientific Paper

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Abstract

While multiple conventions that can be used to prepare a manuscript are suggested, some of the most important are almost never explicitly stated. This article shows, through metaphors, two of these rules: 1) the “Delicious Sandwich Law”, and 2) the “Narrative Intrigue Law.” Write a document is like making a sandwich. Making a good sandwich is not as easy as it seems. The initial idea of “take a piece of bread, put something in it and you will have a sandwich” does not always give good results. You must start with the filling that is obviously the main thing, “the content” or an “imaginative core”: the data of the result of your study, an idea, a reflection, a systematization of concepts, etc. And this core contains the conclusion. Don’t start making the sandwich for bread, start with the secret ingredient: the results and the conclusion section. But then you must put it on the bread: build the text; divide it into the usual sections. Continue writing the Summary, the Discussion and the Material and Methods, but leave the Introduction until the end; so, you can write a juicy introduction that will surprise and encourage the reader to continue, like that delicious first bite of a sandwich. The classic sections of Introduction-Discussion-Conclusion correspond to the parts of a literary work, such as a novel: setup-climax-denouement, or: order-disorder-order. The suspense must be maintained until the end, resuscitating the excitement of the investigation. The article must include a certain “intrigue”: the way to carry out the discussion until reaching the conclusion: the Title must draw attention, the Summary must attract, the Discussion must resemble the end of a detective novel, which cannot be stop reading, and the conclusion should be round, apotheosis, like fireworks.

Keywords: Journal article; Manuscripts; Medical as topic; Peer review; Research publication formats; Scholarly communication; Journal submission; Medical writing; Publishing; Literature; Authorship; Framework; Metaphor

Introduction

A scientific article, first of all, is a form of written communication, a form of nonfiction writing. Here it is included as a scientific article the letters to the director, reports, essays, articles, books, etc. They must present information and ideas clearly and effectively.

Writing a scientific text is a complex process, from the appearance of the initial idea, to the practical realization in the writing and, finally, the publication of the article in a scientific journal. The complexity is related to plan or trajectory of the practical realization of the text, to the structure of the document, which includes a series of accepted sections, and to the time needed to write it once the text design is decided, and the data or results of the study are available. The process of how to write a scientific article has been addressed in the literature from multiple perspectives and each section of this type of documents has been carefully studied [1].

Of course, a series of steps have been established to write a scientific article, and it is good to know them. One way to describe these steps would be: select a topic of interest, determine the purpose, consider the type of audience, develop thesis statement expressing the central idea, organize the materials in an order appropriate to the purpose of the document, and decide on the appropriate method to develop the ideas of the text (for example, definition, classification, analysis, comparison and contrast, example, etc.), write a preliminary draft, taking into account that it must have a clear introduction, a body and a conclusion; read critically the preliminary draft and try to improve it, revising it, reorganizing it, adding and eliminating the sentences and words to make the writing more effective, and correct the final version [2].
However, few authors follow such formal steps. It should always be remembered that there is no set of conventions that serve to prepare a manuscript and that it is a substitute for intelligent and live writing, and that the poor writing of the scientific article cannot be compensated with a certain amount of documentation and references. The scientific article is not a compilation of the thoughts of another person, but the presentation of a careful construction of ideas that rests in a study or in totally new personal ideas or concepts or that remodels or systematizes other previous ones, contributing new points of view, and that are presented for clarification and verification.

Sometimes, the way of presenting scientific information is unattractive and ineffective when it comes to communicating fundamental messages. If a scientific article does not attract the reader, it will not be effective. A person or an institution can produce excellent and original work, but if the presentation, the writing and the design of the document are not equal to the quality of the study, the content (the results of the study, the new concept or idea, the content, the new point of view), is lost and the scientific paper itself can be ignored or the author’s technical competence, often unfairly, is questioned [3,4].

From the field of literature, eminent writers have communicated “the interesting thing that would be an article written by an author who would like and could describe, step by step, the progressive march followed in any of his works until reaching the final term of its realization.” [5].

On the other hand, metaphors allow us to understand something unknown in terms of something more familiar. That is why they are a common resource in all sciences, which use ordinary words to name complex realities. Good clinical-scientific writing demonstrates an integration of theory and clinical-scientific material into a unified network of symbolic or metaphorical meanings. That is, metaphors are useful analogy devices to illuminate reality and favour the understanding of complex issues or processes [6,7].

In this scenario, based on the experience of the author, and by using some metaphors practical advice is shown, which is almost never explained, to help in practice to write a scientific article that is interesting until the end, and that its reading is delicious. In any case, it is not intended to say “everything” on how to write a scientific article, and for that the reader can find many more appropriate references [8-14]. The objective of this article is to say, “the main thing!” However, it also does not intend to give instructions on how to write a scientific document. But it will be tried to give a “recipe for cooking a scientific article”, and that recipe is rigorous, but also imaginative.

Discussion

Writing a scientific article is not just creating a manuscript. The text must have a part of art and another of science [1]. Writing a scientific article is shaping a set of data or ideas or events. It is about organizing the language to transform this data into an explanatory set that should be conceived as a whole. Writing each article or scientific text implies solving a problem, and so each text can be different [15].

The procedures

For your work to have an impact, you must resurrect the excitement of research, something that is often lost in your daily work. Successfully communicating the impact of your research is crucial to make your work more accessible and for career progression [16].

Different types of articles can be observed in scientific journals: original articles, case reports, images, comments, editorials, etc. Almost all manuscripts follow the style of maintaining certain sections: Introduction, Material/Methods, Results and Discussion. So, in principle, the author must select how the type of article he is going to write will be, and he must keep these sections of the text in mind. But, from there, the author must know two basic rules that are not usually said, to write his article:

The sandwich law: Writing a document is like making a sandwich. Making a (good) sandwich is not as easy as it seems. The initial idea of taking a piece of bread, putting something inside and we already have a sandwich, does not always give good results.

The narrative intrigue law: The article must include a certain “intrigue”. Thus, the independent aspects of the article will be the theme, the plot (material, methods, discussion), and the “intrigue” (the way to develop the discussion, until reaching the conclusion). The classic sections of Introduction-Discussion-Conclusion correspond to the parts of a literary work, such as a novel: setup-climax-denouement, or: order-disorder-order. And the story should have suspense until the end [15].

The topic

The orthodox in an essay is for that the author considers the subject from the beginning. However, it may be appropriate not to condition ourselves too much, and to accept unexpected points of view, from an idea, an image, a phrase, etc., and from there to discover the subject. Achieving a good text often depends on the pleasure the author experiences when writing it, and that depends largely on the pleasure in discovering.

Obviously, however, it is necessary to keep the subject in mind, so as not to lose the meaning of the text. In this discovery, the author revolves around the thematic axis a certain number of ideas he chooses to give more strength to the text [15].

Can you make a sandwich of everything? For example, soup? Is it possible to write a scientific article on any type of subject? The first thing to say is that we must be modest. The sandwich, as the scientific article admits many things, but they are not infinite. There are certain types of foods that soak the bread of the sandwich too much. On the other hand, you should not make a bread-only sandwich: we must avoid eating bread with bread.

The previous reflection: a previous script of the text

It is convenient to mentally plan the text of the essay or the article, and reflect on what it will contain: visualize or make a diagram of the main points (that is, the nodes on which the “intrigue” will be concentrated) and its connections and of the text as a whole; develop a rhythmic scheme, perhaps a curve that includes the
culminating moments of greater tension or importance, and others of decline or less important, and their situation in the text. The previous script serves as a guide to control the coherence of the text [15].

The document begins with the end: by the conclusion

The "modus operandi" to write a scientific text begins by drawing a plan with a view to the outcome before starting to write. Only if the idea of the outcome/conclusion is continually kept in mind can we confer to a plan its indispensable appearance of logic and causality, ensuring that all evidence and especially the general tone tend to develop the established intention. The scientific article, like the poem must begin at the end; this is how all works of art or science should begin [5].

The scientific article begins virtually in the author's mind. Start with a sedimentation or consolidation core; an "imaginative core": a somewhat elaborate idea perhaps slowly over months, or more generally already a table of data or that systematizes a set of thoughts or reflections, or some data as a result of a study, an observation or a figure that systematizes and condenses ideas, or some keywords, a phrase like a light that suddenly comes on, etc. This imaginative core contains the conclusion.

Where and how is this imaginative core born? The "research momentum" [12] may appear unexpectedly. You must seek inspiration, the idea, the "hunch", in nature and in daily work, from practice; That is, to the practice of curiosity [17]. Maybe walking! -That has been associated with thinking for a long time. And anecdotal evidence from philosophers, writers, researchers, artists, business leaders testifies the powers of walking to think [18]. And it may be that in this way, after walking and exercising, we are hungry to write an article based on that conclusion, idea, vision, hypothesis; we are hungry to eat a scientific sandwich!

This is the beginning of sandwich filling. Therefore, the document begins with the end: by the conclusion that is linked to the results, the new idea, the new vision, the new concept or the new theoretical systematization, etc. [19]

Then, it is already clear: the author should start making the sandwich by the filling. Do not start with bread, start at the end: with the content of the paper; the content of the sandwich. You should write the results-conclusion section as soon as possible (before choosing the bread, cut it, decide what sauce to put, etc.), so, as a working hypothesis, it will help you define the scope of the document (and it will allow you to decide on bread) [19]. If you then need to restructure it, it is better to have a starting point to restructure.

How extensive should this central core of the document be (the text with the results and the conclusion: results of the data, new vision or concept, the recommendation, etc.)? Well, it's how to ask how many slices of cold cuts are suitable for making a sandwich. There is not a quantity: it all depends on whether they go alone or if they are accompanied. For example, if you put mayonnaise or pickled pickle, you will have to lower the amount of ham.

It is often convenient to use sauces to make the sandwich more juicy or to give it a better appearance. Now, how much sauce is there to put? Everything must be balanced. The sauce cannot drip too much, nor keep the bread as if it were a soup. Care must be taken with the sauces.

But, after having the document content, the sandwich content (the conclusion, the results), you must place the bread on both sides. What kind of bread is the most suitable? It depends on the content of the sandwich. Untreated products, such as ham or anchovy, allow any type of bread. If you are working with a drier content, they allow more spongy breads. For meat with more cooking or sauces, harder bread is needed, with a stronger crust and more body. It is about balancing what is put inside and the wrap, which is the bread [20].

The "intrigue"

The intrigue in a scientific text is the basis of the story or discussion, and is constituted by a disorganized set of data, facts, references, etc., more or less significant. It could constitute a logical succession of actions, data or facts, but ideally, that argument, as in a novel, expands into a number of episodes that constitute the intrigue. So, in the intrigue, the theme of the essay or the result of the study, is reaching a "maturity" in the narrative process, evolving, showing various data, facts or ideas, of which the reader remains pending [15].

The plot

It is the disposition of the intrigue in an order tending to achieve a globally balanced, meaningful and coherent text. It is the effective organization of the basic threads of the text. The plot connects the ideas or the results with the facts. If this connection is defective, the text fails. The author must obtain, by means of the disposition of the data, ideas, references, comments, hypotheses, etc., a plot (mainly in the section of Discussion of an article) that is shown as a harmonious and significant whole. For this purpose, the author must select, transform and rank the material, distributing episodes and establishing moments of "climax" through a certain progression. Those parts of the data or ideas that are considered most important should be emphasized, and the least important should be condensed [15].

Title and Index

In any case, this core or basic content may need some help to chew it better; For example, mix it with some other product, such as mayonnaise or pickle. It is proposed that together with the main content, the title and a certain index of the work be written at the beginning. We already have the inside of the complete sandwich! What things can be mixed and what is not advisable to use in the sandwich? The sandwich invites to the mix, but is it worth it? A priori there are no incompatible things, and experts recommend putting the trial and error into practice. Umberto Eco, the Italian writer and philologist says that a thesis or scientific article is like
a chess game, it has a certain number of movements, but from the beginning you have to be able to predict the movements that will be made with your eyes on the checkmate to the opponent [21].

Introduction, materials and methods, discussion, tables, figures and references

A brief summary of these sections from the classical or orthodox point of view would be: “Materials and Methods or Patients and Methods” describes exactly what was done in the study so that another researcher can repeat it. “Results” is about clearly giving the results, perhaps organized in the form of a table or figure (preferably only one). In “Discussion” the study, the case, the idea, the hypothesis, should be highlighted in the light of current practice, discussing the advantages and disadvantages. The review of the literature should be more than cite the results of other authors. It should also be discussed the strengths and weaknesses of these studies, which should be provided a picture, albeit limited, of the state of knowledge and the main questions on the subject that these studies clarify and left unclear (e.g. by inadequate samples, incorrect design, testing erroneous statistics, characteristics of the persons studied, etc.). For “References” it should be know the different dating styles (Vancouver, Turabian, etc.). Author should know the rules of the Journal where you are sending the text. The references should be quoted, numerically, in the text in correlative order. The abbreviations of journals should conform to those of the US National Library of Medicine for Medline/Pub Med [1-22].

Many journals show a “Standards for authors” section, which can be, in some of them, a clarifying and instructive reading at a general level, to know the different sections of an article [23,24]. Instructions to authors would normally include references to the International Editors Committee of Medical Journals and the guidelines of the Publications Ethics Committee for a good and ethical publication practice [25].

All of that is adequate, necessary, and correct. But what is not said is that the sandwich bread is the Introduction-Materials and Methods-Discussion-Tables and Figures-References (remember that the Conclusion is already written, which is part of your sandwich filling, later you can nuance it or shape it to better fit the entire sandwich). All these elements or sections construct a certain building, they support it, okay; But all these sections are to allow the important part of the article, the data, the results, the reflection, the conclusion, a new point of view, a significant hypothesis, etc., to be in the centre of the sandwich.

There are hundreds of different types of breads: of nuts, seeds, cereals, raisins, onions, garlic, parsley, in all imaginable shapes and sizes. One way to use the bread for the sandwich (Introduction, Materials and Methods, Discussion, Tables and Figures and References of the scientific article), is to build it like the birds make their nests: through a meticulous interweave of twigs and straw, moss and cover them inside with feathers, wool or grass flakes or vegetables, is to build it like the birds make their nests: through a meticulous interweave of twigs and straw, moss and cover them inside with feathers, wool or grass flakes or vegetables, which are collected in different places. That is, thread passages in the text where it is most effective. If you already have that central core of the document with your idea or point of view or data of the results and the title, and a certain index of work, “you can now move on to bread.”

Continue writing the Summary, Discussion and Material and Methods (or the rest of the sections that surround and support the core of the document or sandwich); Subsequent modifications can be made depending on how the paper is taking shape. But leave the introduction until the end; it would be easier. So, you can write a juicy introduction that will surprise and encourage the reader to continue “eating the sandwich/scientific article”, like that first juicy sandwich that makes us say “Humm”, while we close our eyes.

In the Introduction is where the framework in which the article moves is defined, but leave it for the end, and do not put many references, leaving the main ones for Discussion, but do not put any reference in Conclusion, to emphasize your point of view, his hypothesis, his result, etc., so that they are like a final series of fireworks when commenting on his results or his theoretical reflection or systematization, so that these sentences stand out and illuminate his work.

Do not forget that the Materials and Methods section should be written carefully, probably after Results/Conclusion and Title. Journal reviewers read this Materials and Methods section more carefully, and it must be technically correct. Although we should not be afraid: we can use the methods we want, including statistics, the only supreme requirement is that we explain with extreme clarity our criteria as to why it was done that way.

In the Results section, the data should be grouped to show how laws or general conclusions are drawn from them. The Results section should not be a chaotic territory. We must bear in mind that the reader begins to examine an “unknown territory”, and nothing seems more hopeless than the “chaos of the rocks”; but if the author shows how the nature of that territory was being registered and stratified, the reader begins to clearly see the region and its general structure becomes more or less intelligible [26].

In the Discussion section, we must always speculate and predict what we will find in other places, in relation to the data of our study or with the new idea or point of view or concept, and thus showing the reader what is being clarified and what remains to be clarified. Remember that when you want to think clearly, you should start writing your arguments for and against, as Robinson Crusoe did on his desert island [17,27,28].

Finally, remember to write the text, that in general, in the narration (Introduction and Discussion), verbs predominate, and in the description (Results) nouns, adjectives and adverbs predominate [15].

How to finish the article: The “conclusions”

The end of the article must be connected to the principle. It should be draw an imaginary thread between the beginning and the end; take an element, aspect, situation that was expressed at
the beginning of the article, and retake it in another way at the
end, justifying the general meaning of the article, developing the
objective of the text, and enhancing the result [15].

If the Title should attract attention, the Summary should
attract, the introduction to be tasty, juicy, surprising and interesting
from the front line and, the discussion should resemble the end of
a detective novel, that reader cannot stop to read. The conclusion
should be round, apothecary (and without references). As if it were
a matter of savouring some delicious spices that bring us many
surprising nuances, such as an apothecary of fireworks!!

Number of authors/researchers

To make progress that breaks the scientific status quo, researchers could be better working in small teams. Large teams
tend to work with existing theories instead of creating new ones. The fact that smaller scientific teams tend to produce more
disturbing scientific findings is interesting in the context of the
secular trend towards larger and larger teams. There may be a
turning point after which the benefits of large teams begin to
decrease. Thus, it seems that there are different ways in which small
and large teams can make high impact contributions to science. It is
ewell established that larger research teams tend to produce articles
of greater impact, measured by the number of their citations. But
an article cited a lot is not necessarily an article of great progress;
Review articles, for example, tend to be very cited, but these articles
rarely change scientific paradigms. If subsequent articles cite only
the given article, not including citations that appeared therein, this
suggests that the work was transformative, or “a starting point” for
a new field of research [29,30].

Selecting an appropriate journal to publish

But, as the English proverb says, “the proof of pudding is that
it is eaten”; you can only judge the quality of something after
having tried it, used it or experienced it. So, where do I publish my
article? What drink best combines my sandwich? Personal taste,
context, practical possibilities, ease of access, previous experience
and the ingredient chosen for the sandwich (the content: results-
conclusion), among other circumstances, determine the choice. I
can have my sandwich with or without a plate, with a drink or not.
Depending on the circumstances, and some Journals do not have to
be worse or better than others, it depends.

The rewrite

The first writing of an essay or a scientific article is not the final
one. Rewriting is basically, delete, replace or expand. By articulating
the available material, we suppress and add material for the first
time, according to the desired conductive thread. At the time of
rewriting, the same operation is making by visualizing the set and
assessing whether the desired effect has been achieved. In the
rewrite the author must delete everything that does not contribute
something to the set. Above all, repeated information should be
deleted [15].

Be careful remember that you cannot compensate for a bad
writing of the document, or even worse, confusing results or a poor
conclusion, with a lot of documentation and references. We cannot
compensate that the sandwich filling is tasteless or in a minimal
amount, or worse, is undercooked or poorly preserved, with a
large amount of bread. A result that is not representative, or is
partial, confusing, of little practical importance, not generalizable,
etc., or an idea that adds nothing to the known, or an opinion that
repeats the usual, ending with “further studies must be done “, or
something similar; cannot be improved or compensated with a long
text in Introduction and Discussion, full of hundreds of References,
although these are very appropriate. Perhaps even unnecessary
hypertrophy in a scientific paper is counterproductive; you have
to know how to keep the essential; we must make a healthy,
nutritious and adequate snack to eat, with adequate amounts of
bread, vegetables, sauces, etc., but not much saturated fat; Make
it a balanced meal. Less is more when it comes to writing a good
scientific article. And tell the “story” in a clear and simple language
[31]. It is preferable that the reader is left with a bit of hunger after
finishing his tasty sandwich. Maybe he’ll go find another one; may
be that reader look for other publications of the author.

New questions

If you think have mastered the technique of making a good
scientific article (or sandwich), remember every problem solved
raises many new questions, and we can still fear not knowing how
to make a good sandwich. But it is better to take risks: after all, you
have ham, turkey, tortilla, tuna, hardboiled egg, etc., and even if we
fail in that attempt, that action can strengthen our confidence in
our own value. And this is how we will be encouraged to carry out
future initiatives.

But, can you freeze sandwiches? Can we leave our scientific
document for a while in the drawer of the worktable, either after
being rejected by a journal and before sending it to another, or
simply to reflect on it? Yes, you can freeze snacks and they look
good. Just take them out in the morning; nothing happens to bread
or sausages. Then, after a while of reflection, you can take out your
paper and you will see that it stays well. Alone, take time to unfreeze
and maybe make those little touches you’ve been thinking about,
or incorporate some of the suggestions from the reviewers of that
magazine that refused to publish it. But there are certain issues that
cannot stand leaving them for a long time; Snacks that should not
be frozen are vegetable snacks because raw vegetables (tomato,
lettuce) and sauces deteriorate a lot. There are issues that have
great changes in concepts and there are many new bibliographic
contributions in a very short time that make a study or an essay,
lose nutritional properties and suffer alterations in appearance or
taste, after a few months.

Conclusion

The scientific paper should be attractive and delicious, like a
bite of food you want to taste. So, writing a scientific article is like
making a sandwich. It is the "Sandwich Law" (Figure 1): it has the filling that is obviously the main thing, "the content": the data of the result of its study, an idea, a reflection or a systematization of concepts, etc. The better the filling, the better the sandwich. But you have to write it: you have to put it between the bread: build the text, divide it into the usual sections of introduction, materials and methods or participants and methods or clinical observation and results (if it is a scientific study or clinical case), discussion and conclusion; You also have to put bibliographical references, tables, figures, etc.

![Figure 1: “The Delicious Sandwich Law”](image)

Writing a scientific article should also follow the “The Narrative Intrigue Law.” The article must include a certain "intrigue" (Figure 2). The classic sections of “Introduction-Discussion-Conclusion”, corresponds to the parts of a literary work, such as a novel: setup-climax-denouement, or: order-disorder-order. And the text should keep the suspense until the end. It involves moving the reader, and to do this, the author himself must have been moved by his study, results, ideas, etc.

![Figure 2: “The Narrative Intrigue Law “: Storyboard and suspense curve](image)

It is possible to suggest a few steps to write the text, so that the creation of the plot and suspense is facilitated and allows "to make a truly Delicious sandwich" (Figure 3). It should be borne in mind that, in addition to the article being delicious and we cannot stop until it is read in its entirety, and that it provides significant elements, the other goal of every true scientific text must be "to force the reader to think": to think in the deepest sense of the facts, or ideas or data or events. Although young researchers may find beneficial effects in using a structured scheme to prepare scientific articles, remember, as Jean Cocteau said, “The only technique worth mastering is the one you invent.”
**Figure 3:** “The Narrative Intrigue Law”: Stages of writing a scientific article

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