

IPM – Component 3

The language of critique

Here we will go through aspects of language necessary in order to be able to write in a critique style.

Example1: Statistics

Consider the following text from “Teaching intuitive statistics I: Estimating means and variances”, Patricia Lovie and A. D. Lovie. *Int. J. Math. Educ. Sci. Technol.*, 1976, Vol. 7, No. 1, 29-39. We will look at this to see if it contains any summaries and/or critiques:

1 Work in intuitive statistics has dealt with the intuitive estimation of means,
2 variances and correlations, as well as with the processes of intuitive inference
3 under uncertainty. In general, it has been found that human beings are, with
4 reservations, quite good at describing data, but have difficulty in handling
5 inferential aspects of modern statistics (Slovic and Lichtenstein [2], Tversky and
6 Kahneman [3]). It must be concluded, therefore, that relatively naive and unaided
7 human beings can handle only fairly simple statistical routines, and that
8 performance falls off dramatically when they are faced with more demanding
9 statistical procedures.

10
11 Despite the problems posed by man's varied performance as an intuitive
12 statistician, it is vital for anyone faced with a numerical environment to have an
13 insightful appreciation of the situation and of the processes of drawing inferences
14 from it. For example, two of the reasons for teaching users of statistics to be better
15 intuitive statisticians are, first, that conventional statistics courses do not
16 necessarily provide much insight into the meaning of the various data structures
17 encountered, and students often make elementary statistical mistakes which might
18 be avoided if intuitive aspects of the data structure were emphasized (see Lovie
19 and Lovie [4]); second, that some recent statistical techniques either assume that
20 users have sufficient insight into the structure of the data to decide where to put
21 the greatest computational effort [...] or have no associated error theory and so
22 rely on intuitive evaluation of hypotheses [...].

Analysis

- Lines 3-5 is the first instance of a critique. The key phrase which identifies these lines as critique is “but have difficulty in” because the authors are contrasting the positive aspect mentioned earlier (“human beings are ... quite good at ...”) with the negative aspect of “but have difficulty in ...”
- Lines 6-9 illustrates the authors making an inference or assumption as a result of their critique of lines 3-6.
- Lines 14-18 is the second instance of a critique. Within the context of the text this is seen by the wording “do not necessarily provide” and “make elementary mistakes which might be avoided”.
- Lines 19-22 is the third instance of a critique. This text may be more subtle in it being a critique because there are no negative words used. Instead, there is the wording
 - “some recent ... assume that ...”. One reads this as meaning that the assumptions have a negative impact because users don’t know where to put greatest computational effort.

and

- “... or have no ... so rely on...”. Again, one reads this as meaning that the assumptions have a negative impact because no relevant theory has been performed.

Example 2: Artificial intelligence

Consider the following text taken from “Is there a role for statistics in artificial intelligence?”, Sarah Friedrich, et al, *Advances in Data Analysis and Classification* (2022)16:823–846.

1 AI has made remarkable progress in various fields of application. These include
2 automated face recognition, automated speech recognition and translation
3 (Barrachina et al, 2009), object tracking in film material, autonomous driving, and
4 the field of strategy Games such as chess or go, where computer programs now
5 beat the best human players (Koch 2016; Silver et al. 2018). Especially for tasks in
6 speech recognition as well as text analysis and translation, Hidden Markov models
7 from statistics are used and further developed with great success (Juang and
8 Rabiner 1991; Kozielski et al. 2013) because they are capable of representing
9 grammars. Nowadays, automatic language translation systems can even translate

10 languages such as Chinese in to languages of the European language family in real
11 time and are used, for example, by the EU (European Commission 2020a).

12
13 [...] Despite these positive developments that also dominate the public debate,
14 some caution is advisable. There are a number of reports about the limits of AI, e.g.,
15 in the case of a fatal accident involving an autonomously driving vehicle
16 (Wired.com 2019). Due to the potentially serious consequences of false positive or
17 false negative decisions in AI applications, careful consideration of these systems is
18 required (AI Now 2020). This is especially true in applications such as video
19 surveillance of public spaces. For instance, a pilot study conducted by the German
20 Federal Police at the Südkreuz suburban railway station in Berlin has shown that
21 automated facial recognition systems for identification of violent offenders
22 currently have false acceptance rates of 0.67% (test phase 1) and 0.34% (test
23 phase 2) on average (Bundespolizeipräsidium Potsdam 2018). This means that
24 almost one in 150 (or one in 294) passers-by is falsely classified as a violent
25 offender. In medicine, wrong decisions can also have drastic and negative effects,
26 such as an unnecessary surgery and chemotherapy in the case of wrong cancer
27 diagnoses.”

Analysis

In this text it should be quite clear that lines 13-27 represent the critique part. This is so because after listing the positive effects of AI in lines 1-11 the authors then go on to list the negative effects. Key wording and phrases of the critique include:

- “Despite these positive development” (line 13);
- “some caution is advisable” and “the limits of AI” (line 14);
- “Due to the potentially serious consequences” (line 16);
- “careful consideration ... is required” (line 17);
- The whole description about facial recognition (lines 18-24);
- “wrong decisions can also have drastic and negative effects” (line 25);
- “unnecessary surgery and chemotherapy in the case of wrong cancer diagnoses” (lines 26-27);

Example 3: Civil Engineering

Consider the following text from “Mechanical Strengths and Microstructures of Recycled Aggregate Concrete Incorporating Nanoparticles”, Wengui Li et al., *Advances in Civil Engineering Materials*, Vol. 7, No. 1, 2018. We will look at this to see if it contains any summaries and/or critiques:

1 “There are tons of waste concrete generated every year from demolished buildings
2 or natural disasters all over the world. The series of environmental problems
3 caused by the construction and demolish wastes is becoming more and more
4 severe. Meanwhile, there are large aggregate demands from the construction
5 industry because of the limited availability of natural resources. Recycled
6 aggregate concrete (RAC) is considered an ideal way to solve these problems
7 because it can turn waste concrete into coarse aggregates to produce new
8 concrete.

9 However, the practical application of RAC is still limited, probably because
10 the performance of RAC is typically inferior to that of the corresponding natural
11 aggregate concrete (NAC) [1,2]. To promote the application of RAC, a great deal of
12 research has been done to improve its structural performances. Although these
13 traditional methods help to improve RAC properties to some extent, they either
14 make recycled aggregate preparation a sophisticated procedure or not cost-
15 effective, or just improve concrete performance marginally. There is still quite a
16 distance to go to realize the practical application of RAC. Recently, the
17 development of nanotechnology has provided new insight to improve the
18 performance of cement-based materials.

Analysis

- Lines 1-8 act as an introduction, setting the context for the relevance of RAC. This might be considered as a summary of the general situation with respect to concrete waste, environmental issues related to concrete waste, and the continued demands for concrete. But this passage would not be considered a summary because there is no detail. Instead it is considered an introduction to the rest of the paragraph.
- Line 9-11 is the first instance of a critique:
 - the sentence “Recycled aggregate concrete (RAC) is considered an ideal way to solve ...” list the positive aspects of RAC;

- this is then followed by “*However*, the practical application of RAC is *still limited...*”. The key language which tells us this part is a critique is the use of the words/terms “however” and “still limited” in the context of the practical application;
- “... probably because the *performance* of RAC is *typically inferior to that of* the corresponding natural aggregate concrete (NAC)”: The key language which tells us this part is a critique is the use of the words/terms “performance ... is typically inferior to that of ...”
- Lines 12-15 is another instance of a critique:
 - the sentence “Although these traditional methods ...” acts as a reminder of standard approaches;
 - this is then followed by the problem of the degree of sophistication involved, cost effectiveness, and minor improvement in performance. The key language which tells us this part is a critique is the use of the words/terms “Although ... to some extent”, “they either <*do something to complicated*> ... or not cost effective or ... improve <*something*> marginally”

Example 4: A general text – In-class exercise

Consider the following text which come from “Revisiting “Is the scientific paper a fraud?””, Susan M Howitt & Anna N Wilson, EMBO reports Vol 15 | No 5 | 2014. For these two texts,

1. which part acts as a summary and which part acts as a critique?
2. what kind of language (vocabulary, phrasing, etc.) make one piece read as a summary and makes the other piece read as a critique?

“In 1963, Peter Medawar gave a talk, *Is the scientific paper a fraud?*, in which he argued that scientific journal articles give a false impression of the real process of scientific discovery [1]. In answering his question, he argued that, “The scientific paper in its orthodox form does embody a totally mistaken conception, even a travesty, of the nature of scientific thought.” His main concern was that the highly formalized structure gives only a sanitized version of how scientists come to a conclusion and that it leaves no room for authors to discuss the thought processes that led to the experiments. Medawar explained that papers were presented to appear as if the scientists had no pre-conceived expectations about the outcome and that they followed an inductive process in a logical fashion.

[...] There is, of course, a good reason why the scientific paper is highly formalized and structured. Its purpose is to communicate a finding and it is important to do this as clearly as possible. Even if the actual process of discovery had been messy, a good paper presents a logical argument, provides supporting evidence, and comes to a conclusion. The reader usually does not need or want to know about false starts, failed experiments, and changes of direction. This approach to scientific communication has implications for teaching undergraduates the nature and practice of science as it creates a completely wrong impression of how science actually works and perpetuates a stereotype of scientists as logical and rational beings, doggedly adhering to the scientific method. Students may confuse the presentation of a logical argument with an accurate representation of what was actually done. This leads to a view of science that is unrealistic and may even be damaging as it implies that failure, serendipity, and unexpected results are not a normal part of research.”

More problematic examples

Certain phrasing or sentences may look like critiques but may not actually be critiques. To see this, consider the following two examples:

- i) The argument of adopting this approach must be weighed with consideration of initial implementation costs and long-term benefits.
- ii) A good paper presents a logical argument, provides supporting evidence, and comes to a conclusion. The reader usually does not need or want to know about false starts, failed experiments, and changes of direction.

Some students in the past have considered these examples as critiques. Their reasoning was because they are speaking about things in a negative and/or positive way. But these examples are actually general explanatory sentences. How can we tell the difference? One way is to make the sentences simpler/shorter by deleting words from the sentences whilst still keeping the focus or meaning of the sentences. This means we are transforming a sentence which is specific and detail into one which is more and more general.

For the two examples above we can perform this deletion as follows:

For example i)

- *Highly specific focus with great detail*

The argument of adopting this approach must be weighed with consideration of initial implementation costs and long-term benefits.

- *Less specific focus and more general*

The argument of this approach must be compared with implementation costs and long-term benefits.

- *Very general focus*

The argument must be compared with consideration of costs and benefits.

Does the last version read like a critique? No. Does it read like a summary? No. What does it read like? A simple explanation.

For example ii)

- *Highly specific focus with great detail*

A good paper presents a logical argument, provides supporting evidence, and comes to a conclusion. The reader usually does not need or want to know about false starts, failed experiments, and changes of direction.

- *Less specific focus and more general*

A paper presents an argument, provides evidence, and comes to a conclusion. The reader does not need to know about failed experiments and changes of direction.

- *Very general focus*

A paper presents argument, evidence and conclusion. The reader does not need to know about failures and changes.

Does the last version read like a critique? No. Does it read like a summary? No. What does it read like? A simple explanation.

The moral of the story is, If the sentence(s) does(do) not obviously and clearly read like a critique then it may not be a critique. More generally, if the text you are reading does not read like a summary, literature review, methodology, results or discussion/analysis then it may not be one of these. When you are learning how to read and write these different styles of writing start with those parts of the text which are clearly and obviously those styles of writing, i.e.

which clearly and obviously use the language of introduction or literature review or critique or summary, etc.

The language/discourse of critiques

The examples above involved certain types of vocabulary, phrasing and sentence building. Using appropriate vocabulary, along with appropriate semantic cues, I can come up with a totally artificial description which still represents a critique.

Critique Many analysts now argue that the results of theory X have not shown promise. One such analyst is Jones (2003) where he argues that ... However, Jones fails to acknowledge the significance of ... He overlooks the fact that the results are a consequence of ... Furthermore, Jones' research does not take into account pre-existing ... such as ...

For comparison here is an artificial description representing a summary:

Summary: Prior research on X by Smith (2000) reveals that there are fundamental changes in object Y as a result of altering Z. The reason for these changes lay in ... However, Smith (2000) did report that these changes could be mitigated under certain conditions, one of which was W. However, when replicating the study by Smith (2000), Jones (2010) found no such mitigation. On the contrary, Jones (2010) states that "W had no significant effect in preventing changes. This may be due to ...". Similar results have been confirmed by other studies (Carter (2011), Pembroke (2015), and Subbs (2017)).

Question: So what is it about my artificial examples above which makes one of them read as a critique and the other one read as a summary?

The way in which vocabulary and phrasing can be built in order to write in a critique style is illustrated in the table on the next page. The aim of this table is to show you examples on an *underlying principle* of what constitutes *critique* language language and phrasing. This underlying principle is what you should aim to learn and understand. Then you will know *how* to critique and you will only need to learn the individual vocabulary, terminology, and phrasing of your discipline in order to critique in *your own words*.

Exercise

Choose a paper or essay from your own discipline and analyse for its critique language. You can repeat this exercise for the summary parts of your paper: find those parts of the paper which summarise, and identify their language structures.

Example 1

{ Smith (2000)
the paper
previous work }

{ ignores
makes no attempt to
does not
fails to }

{ compare
identify
address the effectiveness of
distinguish between
determine the underlying cause
give sufficient consideration to }

Example 2

{ the study
the findings
Smith's results
His conclusions
... }

{ would have been
might have been }

{ more
far more
much more
... }

useful
relevant
significant
convincing

If the author had

{ used
considered
adopted
included
addressed
... }

Two examples of suitable phrasing for critique writing

Linguistic features of a critique

(1) 3rd conditional or past unreal conditionals, e.g.:

- “The analysis *might have* been stronger if ...”
- “The writer *could have* focused more on ...”
- “The study *would have* achieved greater accuracy if ...”

(Note - In a critique the *if* clause is often placed second in the sentence, after the main clause¹.

Why do you think this is?)

(2) **Inversions** when a negative or an adjectival phrase begins a sentence, e.g.:

- “*Not only has* this study challenged previous findings, it has also...”
- “*In no part* of the methods section *do* the authors specify precisely what ...”
- “*Particularly salient were* the observations on ...”
- “*Of less significance were* the findings ...”

(Note – Inversions foreground or give special emphasis to the information/idea located at the beginning of the sentence. Why might a writer choose to do this?)

(3) **Hedging/Boosters** to make clear precisely how weak/strong a claim is, e.g.:

- “This *arguably* goes further than ...”
- “It *may be* that this factor ...”
- “... and it *could be* explained on the basis that ...”
- “and this is *certainly* a major advance ...”
- “... the authors have *clearly* established ...”

(4) **Attitude markers** revealing the attitude of the writer of the critique to its subject-matter, e.g.:

- “*Surprisingly* the author did not consider ...”
- “It is *difficult to understand* why ...”
- “... is *particularly interesting*.”

¹ Swales, J. and Feak, C. (2012). *Academic Writing for Graduate Students*. 3rd ed., Ann Arbor, MI: University of Michigan at 260

(5) **Self-mentions**, e.g.:

- "... but, *as it seems to me*, this ..."
- "*I was not persuaded* by this argument."
- "*I believe* ..."
- "Nevertheless, *I would argue* that this approach ..."

(Note - The use of self-mentions varies considerably from discipline to discipline and likewise opinions about the stylistic appropriacy of self-mentions can vary (sometimes considerably) from tutor to tutor within a particular faculty or department. Therefore you should check with your tutor or department whether it is considered acceptable to use self-mentions when writing a critique *before* you start to write.)

(6) **Choice of lexis**

The table below contains a list of vocabulary items which are commonly used when writing a critique (Adapted from Swales & Feak (2012) (op. cit.); Nesi & Gardner (2012))

Verbs	Adverbs	Adjectives	Nouns
account for	accurately	accurate	accuracy
aid	completely	ambitious	analysis
analyse	correctly	apparent	aspect
answer	currently	beneficial	assumption
appear	enough	careful	collection
assert	exactly	competent	consideration
collect	fully	complete	difference
combine	inaccurately	complex	difficulty
complete	incorrectly	correct	effect
describe	insufficiently	detailed	element
employ	later	difficult	factor
exhibit	necessarily	effective	flaw
fail	really	extra	growth
predict	relatively	fair	impact
raise	successfully	flawed	implication
represent	sufficiently	good	importance
review	unfairly	important	inaccuracy
seem	unsuccessfully	impressive	increase
succeed		inaccurate	information
suffer from		incorrect	insight
suggest		ineffective	model

wonder		innovative insignificant insufficient interesting likely limited little modest obvious potential preliminary reasonable reliable remarkable restricted scientific serious significant similar simple small successful sufficient suitable unfair unimportant unlikely unreasonable unreliable unsatisfactory unscientific unsuccessful unusual useful	reduction significance source site tool
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