Scientific Writing II

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I. *What is scientific writing?*

II. *General guidelines* for better writing（改善写作的一般准则）.

III. *Tips for Editing* (grammatical issues)（语法问题）

I. Why Scientific Writing I and II?

"Scientific Writing I" by Prof. Hassan.

Some overlap (possibly?)
But from two different perspectives is good.

Reasons):
If they agree on one point….. the point is quite important.
If they disagree on the other point,…. opportunity to think it over by yourself.

I. What is scientific writing?

	Scientific Writing	**Note**
Goal 目标	Communicate scientific information ***clearly*** and ***concisely***. 清楚、简洁地传达科学信息	Not a novel. 不是小说 No flowery, wordy, redundant expressions; redundancy is needed in oral presentation.
Readers 读者	Peer (fellow scientist). For journal article, expert in the field. 科学家同道	No need to explain general knowledge in detail. Just an overview, or citing literature is enough. Not an instruction manual. 不是说明书
Relation with other works 与其他成果的关系	Proper reference to previous authors. 适当引用前人的文章	All works (including yours) are built on previous works.

Several Types of Scientific Writing

Genre 类型	Readers读者	Note
Journal Article 学术期刊论文	***Scientists (expert).***	➢ ***This lecture (and Scientific writing I?)***
Thesis (Bachelor, Master,Doctor) 学位毕业论文	Professors. 教授	Judge achievement of a writer. Writing thesis beyond the scope of this lecture.
Others	Non-specialist	Research Proposal (Lecture by Prof. Saeid Pirasteh, 2021-11-11) Scientific Poster Presentation. (Lec. Prof. Pluemer?)

II. General Guidelines

Suppose you are a scientist, and you have just made a great discovery.

When you start writing on the discovery, remember that

just listing facts & findings does **NOT** make it a meaningful paper.

仅仅列出事实和发现并不能使其成为一篇科学论文

Why? …

*READERS **ignore** such papers; boring, doubtful , not understandable.枯燥无味，令人怀疑，无法理解*

(1) Take steps ***before*** writing. 写作前的几步

(2) Follow basic principles **while** you are writing. 基本原则

Some templates may help. 模板

(3) Self-revision and peer review ***after*** completing a draft.

** Revision changes context, order of subsections/paragraphs.

II. General Guidelines

(1) Take steps ***before*** writing. 写作前的几步

(2) Follow basic principles **while** you are writing.

Some templates may help.

(3) Self-revision and peer review ***after*** completing a draft.

II.1. Steps before writing – (a) Literature. 文献调查

(a) Research how your work fits into existing literature

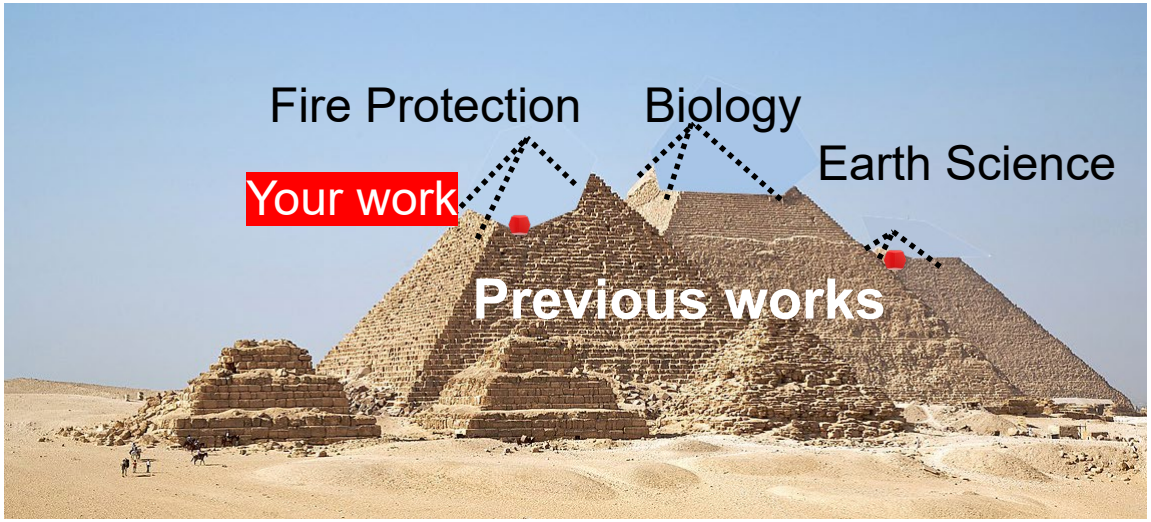
研究你的工作如何与现有文献相适应

(a-1) Understand previous studies.

Purpose: Clarify what is known and what remains unknown.

「子曰　由　誨女知之乎　知之爲知之　不知爲不知　是知也」

(論語　為政二第十七)



II.1. Steps before writing – (a) Literature. 文献调查

(a) Research how your work fits into existing literature

研究你的工作如何与现有文献相适应

(A-1) Understand previous studies.

Purpose: Clarify what is known and what remains unknown until now.

How? Literature Search : ***Google Scholar, Web of Science*** etc..

Citation index (SCI) helps judging relative importance

II.1. Steps before writing – (a) Literature. 文献调查

(a) After the literature survey:文献调查后

(a-2) Ask following questions to yourself! 向自己提出以下问题!

- *What is known until now?* “**knowledge gap**”.*到现在为止已知的情况是什么？*
- *What open questions remain?* *还有哪些未解决的问题？*
- *What knowledge do we not yet know?*
- *Why is this information important?*

Your paper must fill a “**knowledge gap**”. 知识差距
Otherwise, little chance to be published on a journal.

Pin-point the position of your paper. 准确定位你的论文的位置

II.1. Steps before writing – (b) Readers

(b) Understand your readers (and write to them). 理解你的读者

Readers of academic journals: expert scientist. 科学家专家

No need to explain general knowledge
(such as what Plate Tectonics is) in detail.
Just citing literature is enough – literature search.

Pay little attention to second-hand results. 不太关注二手的结果
--- Filling a knowledge gap required.

II. 1. Steps before writing – (c) Formal style. 正式的风格

(c) Casual vs Formal. 休闲与正式。

Choice depends on situation: Daily life, or Wedding ceremony?

II. 1. Steps before writing – (c) Formal style.

(c) Understand formal style of wording.

	Bad	**Proper**
1) No Contraction 简短表格	isn't; can't; what's	is not; cannot; what is
2) Conjunction 连接词	And; But; So;	Moreover; Furthermore; However; Nevertheless; Therefore; Consequently
3) No colloquialism, but formal words. 正式词, 没有俗语 No slang 没有俚语	get, give,..	obtain, provide

II. 1. Steps before writing – (c) Formal **structure**. 正规的结构

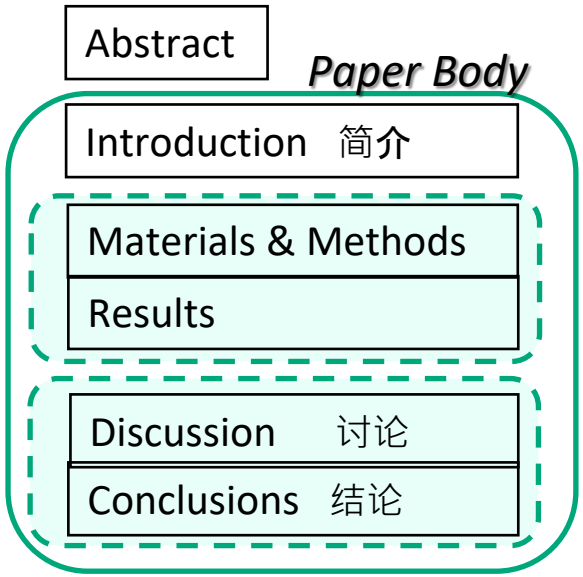
(c) Understand formal structure of scientific article.

Title
Author(s)
Affiliation(s) 机构
Abstract 摘要

<< Paper Body >>

Acknowledgments 鸣谢
References 参考文献
Appendix 附录

Paper body has "IMRaD" structure



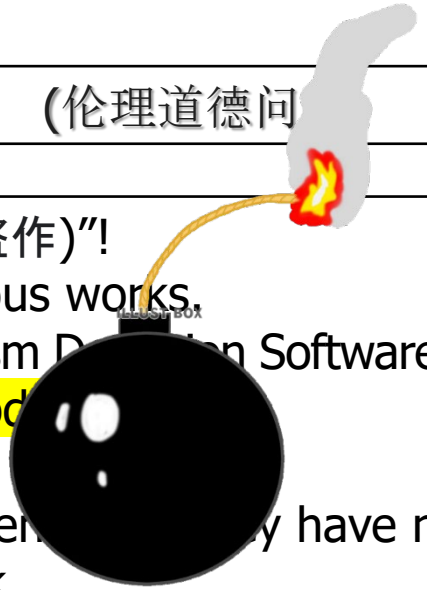
IMRaD: an acronym of 缩略语
Introduction, **M**aterials & Method, **R**esults, **a**nd **D**iscussion

Section name "Materials & Methods" is used in most biomedical articles.
In other disciplines, specific section name (such as "Basic Geology of Tibet")is used instead of "M & M".

"Discussion" and "Conclusions" are often combined to form one section.

II. 1. Steps before writing – (d) Ethics.

(d) Understand Ethical Issues. (伦理道德问



- "**Plagiarism** (抄襲 ,盗作)"!
  "Copy & paste" of texts in previous works.
  Warning: Publishers use Plagiarism D n Software Remark: not allowed even in "Introd
- "**Gift authorship**":
  Adding persons to coauthors even y have not actually made a contribution to the work.
- "**Duplicate submission/publication**": 重复提交
  Submitting an article to 2+ journals simultaneously.
  Publishing 2+ articles without major difference.
  Publishing 2+ articles in different languages.

II. 2 General Guidelines

(1) Take steps ***before*** writing.

(2) Follow basic principles while you are writing. 基本原则

Some templates can help you. 模板

(3) Self-editing and peer review ***after*** completing a draft.

II. 2. Principles for writing a scientific paper.

a) Focus.专注 b) Story. c) Modular writing. 模块

II. 2 (a) What is "Focus" in writing? 专注?

a)Focus: **Choose** "one" key point to be shown to readers. 关键点

… **Discard** non-essential results even if it is painful to you. **摒弃非必要的结果**

Key point test-1(试验1): Can you describe it in one or two sentences using simple, concise and clear words? 你能用一两句话描述一下吗？

Good examples from Nobel prize winners. 例证

- Space-time is curved by mass (Einstein).
- DNA has a structure with two helical chains, suggesting a possible copying mechanism for genetic material (Watson & Crick)

II. 2 (a) What is "Focus" in writing? 专注?

1) Focus. 2) Story. 3) Modular writing.

Test-2 : Is the result surprising, funny or unexpected? 惊喜、有趣或意外?

Test-3 : Does the result solve any known, open problems? 解决任何问题?

Test-4 : Does the result open any new problems? 打开任何的新问题?

(*Problem setting is more valuable than solving!)*

Test-5 : Does the result have any "elegance" or "beauty"? 雅致或美丽?

Good example: $E=mc^2$ (Einstein).

If "Yes" to any of the tests, it can be ***a key point***. Move on. "是"…关键点

If "No" to all, it is not time to write a paper. "不", 那就不是写论文的时候了

Continue your research until you find one whatever small.

Principles for writing a scientific paper (2).

a) Focus. b) Story. 3) Modular writing.

Key-point is found.

Then, create its compelling (persuasive) story, like film/movie.

令人信服的(说服力)故事 电影

Just listing “what you did and found” does NOT make it a *readable* paper.

枚举是不好的

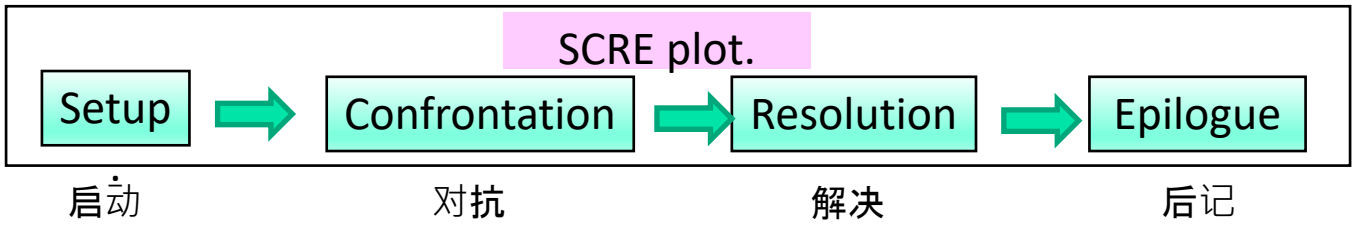
Scenario or plot is necessary.

情景或情节是必要的

What is a *compelling (persuading) story?*

令人信服的(说服力)故事?

Compelling story has a plot (novel/film/movie).



What is a *compelling (persuading) story?*

令人信服的(说服力)故事?

Compelling story has a plot (novel/film/movie). 情节

SCRE plot. SCRE情节

Setup → Confrontation → Resolution → Epilogue

启动 对抗 解决 后记

Example:

Snow White and Seven Dwarfs

白雪公主

Setup phase (film) 启动(电影)

Example: Snow White and Seven Dwarfs *白雪公主*

Setup

Introduce characters, backgrounds, suggestions. 背景描述

Purpose: Share common understanding with audience 共同理解

Example)

Snow White: Innocent princess. Her mother died when she was a baby….Go to forest to escape from stepmother.

Stepmother: Evil and vain. Asks magic mirror, "Who is the most beautiful in the world?". Try killing Snow White when the mirror…..

Dwarfs: Help Snow White ….

Confrontation phase (film)　　对抗(电影)

Confrontation.

Characters are put into trouble, danger…　麻烦，危险

Purpose: ***Build up mental tension***.　　形成精神紧张

Example)

Stepmother visits Snow White several times in disguise to kill her. Almost every time, Snow White narrowly revived with the Dwarfs' help.

But, at last, eating poisoned apple, even Dwarfs could not get her revived.

Resolution phase (film) 解决(电影)

Resolution.

Troubles are fixed and overcome.

Purpose: ***Relax the tension (confrontation)***, 放松紧张

Long-lasting tension imposes mental pain/anxiety. Its removal gives you a sense of pleasure/relief.

Example)

Strayed prince found a castle in the forest, where he found Snow White in a glass coffin.

Miraculously, Snow White got revived when the prince kissed her.

Epilogue phase (film) 后记

Epilogue.

Aftermath of the result, what follows after the main result. Ending and completing the story.

Example)

Prince and Snow White got married and they lived happily for a long time.

Wicked stepmother was destroyed.

(END)

What is a *compelling (persuading) story?*

Compelling story has a plot (novel/film/movie).

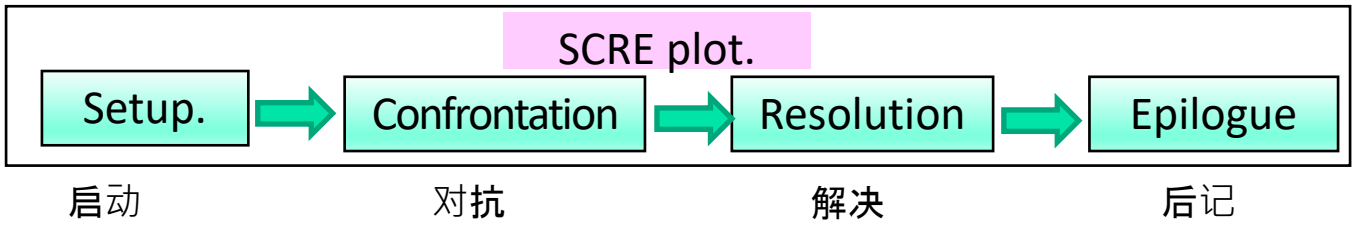
SCRE plot.

Setup → Confrontation → Resolution → Epilogue

Example: Snow White and Seven Dwarfs *白雪公主*

Story - coming back to scientific paper.

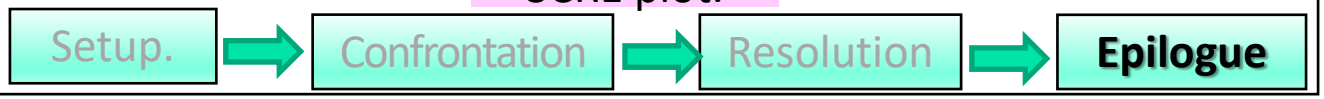
Flow (structure) of a story



Can we use SCRE plot for scientific writing?

SCRE plot for scientific writing

SCRE plot.



S) Background (knowledge gap), objectives, result's importance.

Describe what your specific target is.

C) Your methods and results. **Compare** them to previous works;

Some disagreement (?).

R) Your **own interpretation** on the new findings

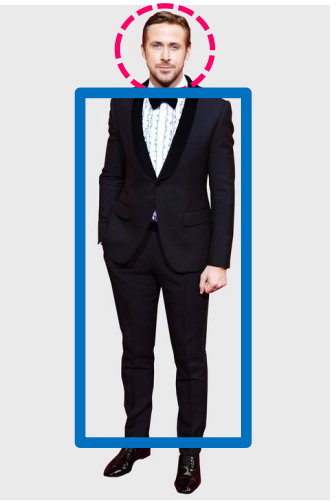
E) Conclusions. Describe **your key-point** and its **impact** on your research field (in a broad sense). 描述你的关键点和它的影响

“Abstract first” : a good choice. 先写摘要

Draft your ”Abstract” before “Paper body”.

Reasons:

1. Important.
   - First impression to journal editors and ordinary readers. 第一印象很重要
   - (decision making) 决策是否阅读
2. Design the overall SCRE plot. 设计整体SCRE



No monotonous listing of what you did.

Be a good “appetizer” or “movie trailer”

电影预告片

Example –
epidemic problem as COVID-19.

15 minutes

(1) Read the abstract and introduction of sample text (already given to you yesterday) Altarelli et al., "Baysean Inference of Epidemics on Networks via Belief Propagation", Phys. Rev. Lett. 112, 118701 (2014)

(2) Find/locate "set-up", "confrontation", "resolution" and "epilogue" phases in the abstract

S) Background (knowledge gap), objectives, result's importance. Describe what your specific target is.

C) Your methods and results. **Compare** them to previous works; **Some disagreement** (?).

R) Your **own interpretation** on the new findings

E) Conclusions. Describe **your key-point** and its **impact** on your research field (in a broad sense)

Example (abstract) – ***epidemic problem as COVID-19***.

S

C

R

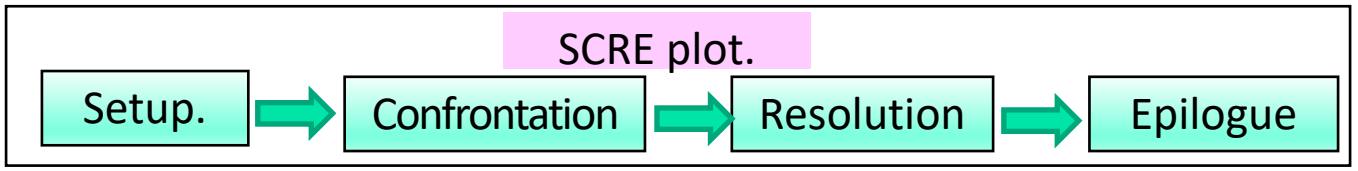
E

We study several ..epidemic models… from a statistical physics viewpoint. We derive equations which allow us to accurately compute …*At difference with* most existing methods, we allow very general observation models, including …… Our method, which is based on the belief propagation algorithm, is efficient, naturally distributed, and exact on trees. As a particular case, we consider …… Numerical simulations show that our method outperforms previous ones on both synthetic and real networks, often by a very large margin.

(Altarelli et al., Phys. Rev. Lett. 112, 118701 (2014)

SCRE plot for “Introduction”.

Flow (structure) of a story



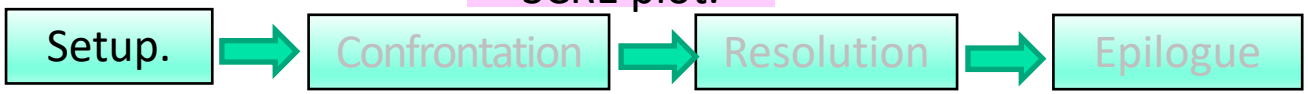
How does SCRE plot work for writing “Introduction”?

SCRE情节如何用于写作 "介绍" ?

4-paragraph template. 模板

Sample template – Introduction (1).

SCRE plot.



Paragraph 1: Defining the research area (in broad sense). 定义研究领域(从广义上)

a) Introduce problem area (in broad sense) and knowledge gap. 从广义上介绍问题领域

b) Overview of the state-of-the-art (literature survey): what is ***known***. 最先进的知识概述

c) State what is ***not*** understood. 提及未被理解的内容

(Example of (c)) "However, the role of X remains an open question".

"Despite all this, we do not understand Y".

(***your specific target*** problem). 你的具体目标问题

(a) is broad, ***(c) is specific.*** Focusing on. 集中精力进行

Example of "Setup" (in Introduction)

Broad Problem 广义的问题

"Tracing epidemic outbreaks in order to pin down their origin is a paramount prob... epidemiology. Compared to the work of ... London's cholera hit, modern computational epidemiology can rely on computers to run large-scale simulators. However, like most inverse epidemic problems, identifying the origin remains challenging problem..."

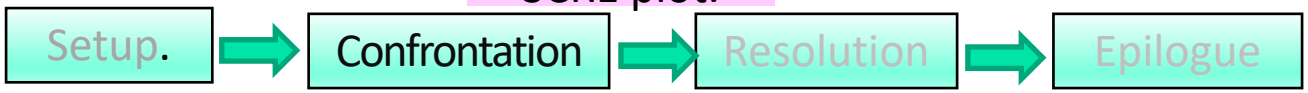
(Altarelli et al., Phys. Rev. Lett. 112, 118701 (2014)

Current overview
现今概述

Specific target: what is ***not*** known
具体目标: 不知道的东西

Sample template – Introduction (2).

SCRE plot.



Paragraph 2: ***others vs yours***. 其他人和你

a) If you are the first to attack the problem, explain why your target problem is important, or why it remains unsolved, or feasible approach for solving it.

如果你是第一个攻击该问题的人.....请解释为什么你的目标问题是重要的,为何仍未解决

b) If others have already attacked the similar problem, state how they approached, what they have missed, how you contribute to solving the problem.

如果其他人已经攻克了类似的问题, ... 说明他们是如何处理的, 他们所错过的东西, 您的贡献

State the research question clearly and explicitly in your paper.

Not broadly ***but specifically***.

在你的论文中清楚明确地说明研究问题. 不是广义的而是具体的

Example (Confrontation).

SCRE plot.

Setup. → Confrontation → Resolution → Epilogue

Example

Summarizing others

"Several studies have recently proposed maximum likelihood estimators …

the estimator in [8] is optimal for trees….

Criticizing others 批评他人

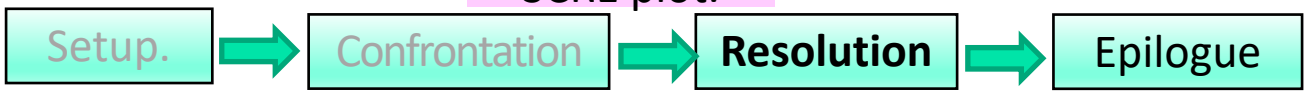
However, as noted by the authors, it has two *drawbacks*. First…..Second, .."

Specific research Q.
具体问题

(Altarelli et al., Phys. Rev. Lett. 112, 118701 (2014)

Sample template – Introduction (3).

SCRE plot.



Paragraph 3: From "what ***others*** have done" to "what ***you*** have done".

(1-st sentence): Describe what you have done to answer the research question in the previous paragraph (*broadly*)

描述你为回答研究问题所做的工作(广泛意义)

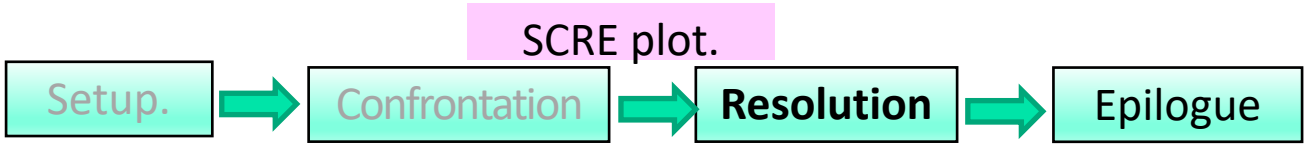
"In this paper, we investigate the relationship between X and Y with the help of…"

"To this end, we carry out an experiment where .."

(rest of paragraph): Describe overview (not in detail) of your approach and achievement . ** "Detail" must be reserved for section "Results"

描述你的方法和成就的概况(不详)

Example ("Resolution")



Example

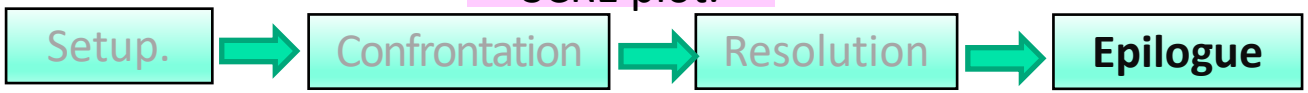
Your result (broad)

"In this Letter we derive the (BP) equations. BP only relies on a decorrelation assumption ...and is therefore exact on trees. Extensive numerical simulations show that it is typically a very good approximation on general graphs .."

(Altarelli et al., Phys. Rev. Lett. 112, 118701 (2014)

Sample template – Introduction (4).

SCRE plot.



Paragraph 4: From approach to your findings. 从方法到你的发现

Reveal the outcome of your research and briefly summarize your result (Shortly!!)
揭示你的研究结果，并简要总结你的成果

Leave enough "unsaid" to motivate readers for reading the rest of the paper; you are still writing *Introduction*. 留下足够的"未说"。

outcome

Example "BP can be used to identify the origin of an epidemic outbreak in the SIR, SI, and similar models, even with multiple infection seeds and incomplete or heterogeneous information."

(Altarelli et al., Phys. Rev. Lett. 112, 118701 (2014)

Section “Material and Methods”

Intro. → **M. &Methods**

Purpose:

a) Let other researchers assess your result’s credibility

by showing your data, procedure, techniques, etc..

让其他研究人员评估你的结果的可信度….通过展示你的数据、程序、技术

b) Enable other researchers to replicate your results: repeatability.

使其他研究人员能够复制你的成果…可重复性

Sample template – Materials and Methods.

No SCRE plot.

Intro. → **M. &Methods**

Style depends on research field: biomedical or non-biomedical.

- No story, but precise procedure.
- No SCRE plot.

Example template:

"Next, we investigated X, and to do that , we needed to do Y. The procedure for doing Y was .....The result of this processing was..."

Section "Results" – (1) figure. 图

Intro. → M. &Methods → **Results**

Figure first! **图第一!**

1) Place figures in **good order**, and 将图纸按顺序排列,

2) draft ***self-contained*** captions, 起草自成一体的标题,

so that readers can get your message ***without*** reading main text.

Reason: Many readers skim (browse quickly) figures to decide if they proceed to intensive reading or not. 许多读者略过(快速浏览)图

Self-contained caption. 自足的说明

Bad caption : "Here, Y is plotted against X" (obvious from axis labels).

Good caption: "Increase of Y as X grows means that Z is the governing process…(interpretation 解释)

Section “Results” – (2) text.

Step 1- Subsection headings (Signposting). 分节标题

How?

- Divide your results into subcategories. 将你的结果分为小类
- Condense each result into ***a single*** short sentence. 将每个结果浓缩为一个简短的句子
- Use the sentence for headings of each **subsection.** 使用该句子作为各分节的标题

Reason) : Reader often ***scan*** subsection headings and figure captions to get a quick overview.

读者经常扫视分节标题

(Signposting technique). 快速概览

Section "Results" – (2) text.

Step 2- Write each ***subsection*** using the ***SCR(***E) plot.

S): ***Pure*** data, analysis output,…; **no interpretation.** 纯粹数据，分析结果; **没有解释**

C): Surprising results; unambiguous to everyone 令人惊讶的结果

R): Your **original interpretation**.(opinion, finding, proposal…) 你**原来的解释**

Sample template.

S): "We show X under conditions of A, B, to C in Table 1….. "

C): "Contrary to expectation from the standard theory, the mean value of X is clearly lower than that of Y …(Fig. 1)……)

R): "These results can be interpreted as follows. No.1…, No. 2… "

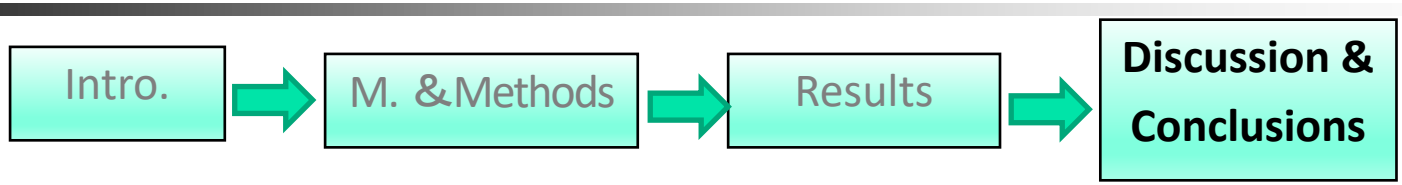
Example –
epidemic problem as COVID-19.

10 minutes

Read the Result & Discussion of sample text
in Page 118701-3.(Lower left to Upper right).

(1) Check most of the figures are mentioned in Section Result & Discussion .
(2) What about the signposting?
Do "subsection headings" represent condensed results?
(3) Analyze the first two subsections ("*Identification of a single seed*", and "*Incomplete Information*"
Do they follow the "SCR" plot?

Section "Discussion and Conclusions".



- Introduce "new" points and insights. 新的观点和洞察
- Show how your findings relate to the broader issue. 显示你的发现与更广泛的问题的关系

SCRE plot again. ***Enlarge "Abstract"*** with in-depth argument. 放大 摘要

S) Remind the broader knowledge gap and the specific question of your paper.

提醒更广泛的知识差距和你论文的具体问题

C) Mention specific results one by one. 逐一提及具体结果

Show different points of view (citing literatures). 展示不同的观点

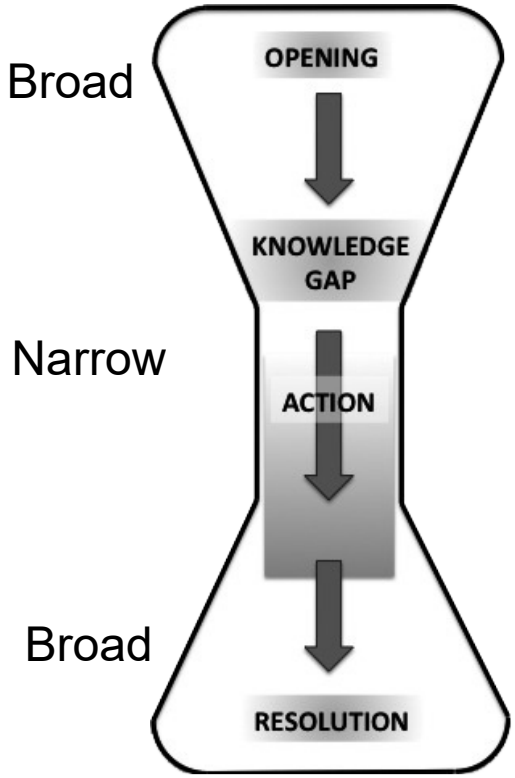
R) Summing up all evidence to arrive at your final conclusion.总结所有证据，得出你的最终结论

E) Relate to broader issues. 将你的结果与更广泛的问题联系起来

Broad → Narrow (specific) → Broad

One more tactic -- Hourglass (沙子时钟) structure

Broad → Narrow (specific) → Broad



Applicable sections.

- ✓ Abstract
- ✓ Introduction
- ✓ Materials and Methods
- ✓ Results
- ✓ Discussion
- ✓ Conclusions

One more tactics -- Hourglass (沙子时钟) structure

Broad → Narrow (specific) → Broad

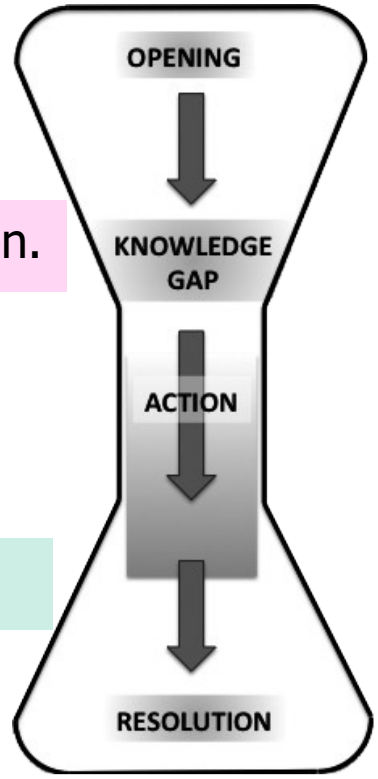
Broad
(reviewing past results, to draw attention/interest)

Increasing mental tension.

Narrow
(Focusing, Specific target)

Relaxing mental tension.

Broad
(Wide perspective)



Paragraph 1:

(a) Background problem (in broad sense).

(b) Mention what is ***known*** and what is ***not*** understood

Paragraph 2: ***others vs yours.***
State the research question, not broadly ***but specifically***.

Paragraph 3: From "what ***others*** have done" to "what ***you*** have done".

Paragraph 4: Reveal the outcome and briefly summarize your result.

Leave enough "unsaid" to motivate readers for reading the rest of the paper.

II. 2 Principles for writing a scientific paper (c).

a) Focus. b) Story. c) Modular writing.

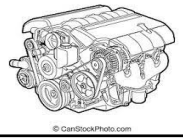
What is **module**? 模块

Parts (with specific functions) to form a body.具有特定功能的部件

Example:.

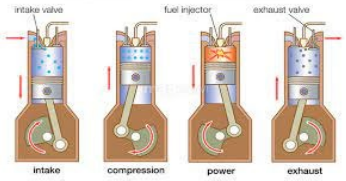
Modules: Engine, Wheel, Transmission, Brake, …

Engine:



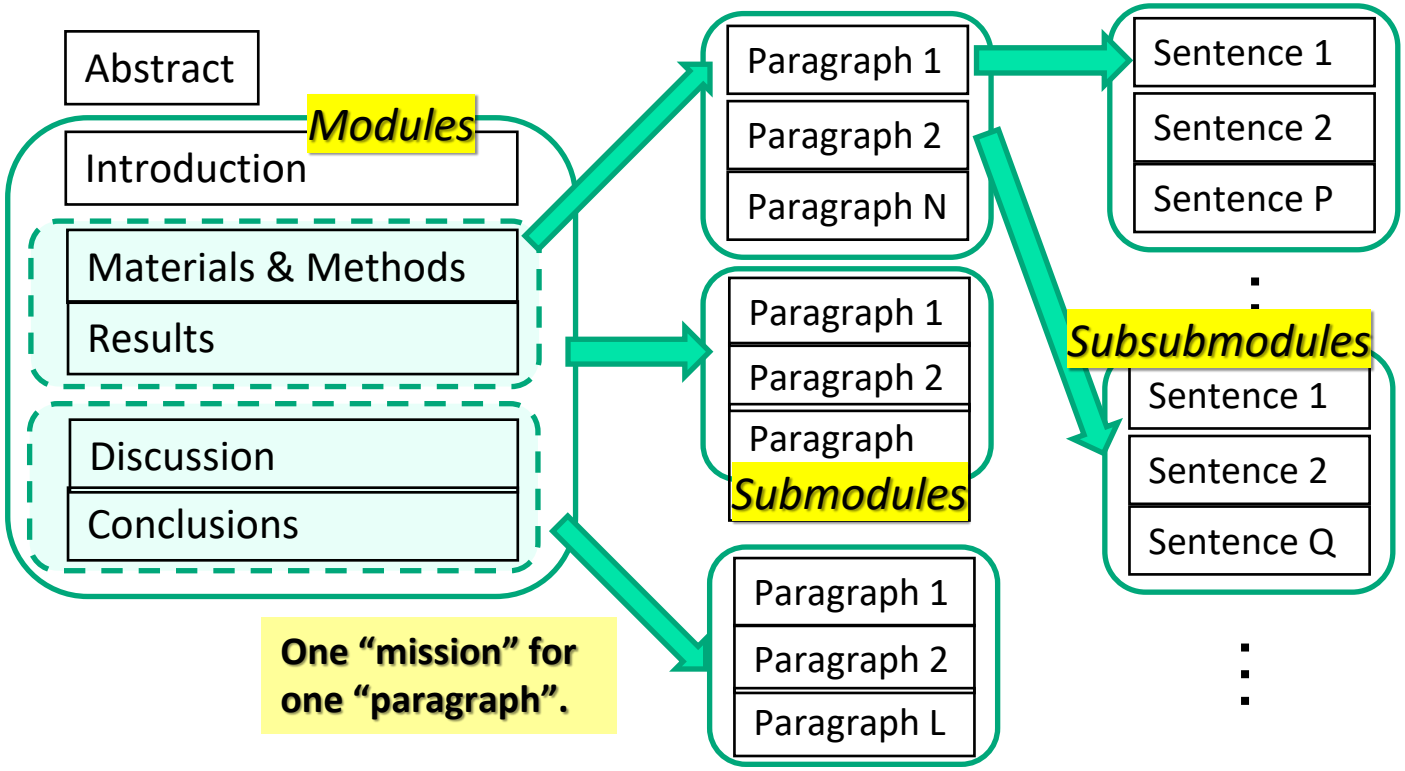
Sub-Modules: Piston, Cylinder….

Piston/Cylinder:

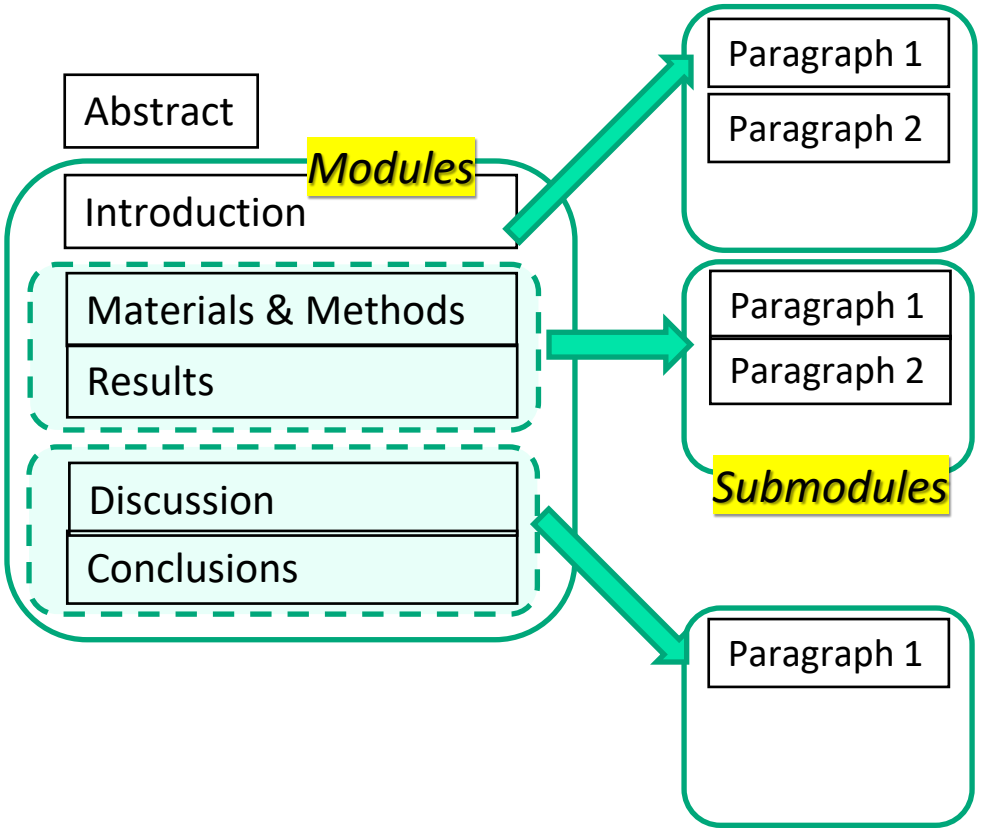


Sub-Sub-Modules:…..

Modules in scientific papers .



Modules in scientific papers .



One "mission" for one "paragraph".

Modular writing

Modular writing:

1) Choose any module (paragraphs) at will. 选择任何模块

2) Draft all modules. 起草所有模块

(Never mind incomplete English at this stage) 不要在意不完整的英语

3) **Order modules to see the outline.** 订购模块，查看大纲

4) Missing piece? Unnecessary piece?

Add or remove modules, if necessary. 添加或删除模块

Repeat the whole process from 1) to 4). 重复整个过程

Better than "linear writing" (sequentially from top to bottom).

1) Time-saving; 节约时间

2) Clear and smooth logics . 清晰而流畅的逻辑

Link modules for smooth logics 平滑逻辑的链接模块

Abstract

Paper Body

Introduction

Materials & Methods

Results

Discussion

Conclusions

Paragraph 1
Paragraph 2
Paragraph N

Paragraph 1
Paragraph 2
Paragraph M

Paragraph 1
Paragraph 2
Paragraph L

Sentence 1
Sentence 2
Sentence P

Sentence 1
Sentence 2
Sentence Q

Conjunctive word/phrase,
Transitional words;
screw bolt/nut.
连接词/短语,过渡词, 螺钉 螺栓/螺母。

Link modules for smooth logics 平滑逻辑的链接模块

Conjunction(连词) , Conjunctive adverb, Transitional words.
bind two sentences/paragraphs logically.

	Conjunction, Conjunctive adverb, Transitional words
A ➡ B	because; since; as; Therefore; Consequently; thus; Hence; As a result; it results in..; It follows.; In this way; ~~So,..~~
A ➡ $\overline{B}$	although; in spite of; despite; However; nonetheless ; Even so..; On the contrary; Whereas; ~~But,...~~
A ⟷ B	On the other hand; while;
A ➡ A′	As mentioned earlier; As discussed previously, Furthermore; Moreover; In other words,.~~And ...~~
A ➡ a	In particular; To be more specific;,

Summary of II. 2 (Principles while writing)

1)Focus!

Choose "a" key point. 选择 "一个 "关键点

Discard non-essential results even if it is painful to you.

摒弃非必要的结果，即使这对你来说是痛苦的。

2) Story telling as making a movie. 讲述故事

SCRE plot: Abstract and Paper body (except M&M)

3) "Modular" writing.

Order modules logically and Check outline. 按逻辑顺序排列模块，检查大纲

Use conjunctive word/phrase effectively. 有效使用连接词/短语

III. Editing – grammatical issues. 语法问题

I. ***Some steps before*** writing.

II. ***General guidelines*** for better writing.

III. ***Tips for Editing*** (grammatical issues)

- 1. Length of sentence; how many words in a sentence? 一句话多少字
- 2. “Active voice(主动语态)” vs “Passive voice(被动语态)”
- 3. “Past tense(过去时态)” vs “Present tense (现在时态)”

How many words in a sentence?

1. Short sentence.

Length: As an average, 12 to 17 words (max ~20).
If more than 20 words, consider **splitting** into 2 or more.

Bad example (78 words in a sentence)
… Conversely, applying M-AMBI the explained variability reaches until 43.4%, for linear regression, and 53.8% for logarithmic regression, ~~and~~ the highest explained variability was found in high and low mesohaline and polyhaline areas (53-63%), ~~whilst~~ In turn, the lowest explained variability was in the oligohaline area (6%), ~~being~~ the mismatch in the comparison of both methods in terms of degraded-undegraded equivalences was of 16.4% of the cases in M-AMBI, and 12.7% in B-IBI, with a high spatial level of agreement.

III. 2. Active voice(主动语态)" vs "Passive voice(被动语态)"

Style (preference) changes with ***time.***

Trend during the last few decades: from Passive to Active.

Passive:

Impersonal (objective, formal) tone 非个人化(客观、正式)的语气

In this study, a finite element model was used to numerically analyze the thermal responses of WEDM wire electrodes.

Active:

In this study, we numerically analyzed the thermal responses of WEDM wire electrodes using a finite element model.

III. 2. Active voice vs Passive voice (1)

1) Which is more straight, concise and easy to understand?

Passive:

Wordy; indirect

An increase in hardness was demonstrated by the brittle materials under dynamic indentations compared to measurements under static hardness.

Active:

Concise; straight

The brittle materials demonstrated increased hardness under dynamic indentations compared to measurements under static hardness.

III. 2. Active voice vs Passive voice (2)

2) Clear statement of responsibility for actions/decisions.
对行动/决定的责任

Passive:

No attempt was made to comprehensively investigate the material properties as it was beyond the scope of the present study.

Active: **Clarify author's decision 作者的决定**

We did not attempt to comprehensively investigate the material properties as it was beyond the scope of the present study.

III. 2. Active voice vs Passive voice (3)

3) Which is more important, action/target or do”er”?

Passive: **Preferred as target (insulin) is more important.**

Insulin was first discovered in 1921 by researchers at the University of Toronto. It is still the only treatment available for diabetes (糖尿病).

Active: **Not preferred as Doer (researcher) is less important.**

In 1921, researchers at the University of Toronto discovered insulin. It is still the only treatment available for diabetes.

III. 2. Which voice is preferrable in each section?

Section	Preferred Voice	Example
✓ M & Methods. ✓ Results (w/o interpretation)	Passive	*"The rock was heated up to 500K…"* **Preferred as target is more important.** *" The velocity contour lines were obtained from CFD simulations…."*
✓ Introduction. ✓ Results ✓ Discussion & Conclusions	Active	*" Previous studies have investigated ….. In this study, **we** investigate the effect …."* *" **We** found a linear relation between …".* **Clarify who is responsible for the work**

III. 3. Tense 时态 – General rule.

Place criterion on the time of writing. 将标准放在写作的时间上

Tense	Topics
Past	✓ Previous authors' work, ✓ Your experiment, methods, field observation, findings.
Present	✓ Problems to be attacked. ✓ Goals. ✓ Your interpretation, opinion, proposal. ✓ Referring to Figures/Tables.
Future	✓ Impact of your research.

III. 3. Tense 时态 - Example "Introduction"

Place criterion on the time of writing. 将标准放在写作的时间上

Category	Tense	Example
Objective of research 目的	Present 现在时态	"The goal of this paper ***is***…", "We ***measure*** offset of the fault to study…"
Facts (true). Results of past research you believe to be true.	Present	"The Earth ***revolves*** about the Sun." "The global warming ***accelerates*** during the last few decades…"
Methods of previous authors 以往的研究	Past 过去时态 [1]	"Wang ***analyzed*** the specimen with X-ray…" "Zhou ***measured*** displacement of the fault…"
Citing literature 引述文献	Past[1] (mostly) Present Perfect (fairly recent)	"The hypothesis was proposed by Wang (2013) …" "Zhou (2021) ***has recently revealed*** that…"

1. Reason: these actions have already been completed at the time of writing.

Tense - Example in "Materials & Methods"

Category	Tense	Example
Your action; procedure; what you did and how you did. **您的行**动	Past[1] 过**去**时态	"We ***used*** a computer code X to analyze Y."
Earlier stages of experiment, etc.. 实验**的早期**阶**段**	Past Perfect (only when needed) 过**去完美**时态	"Rock samples that ***had been assigned*** to a control group was heated up to 300K…" "We applied bandpass filtering to the simulation data that ***had been created*** by running a computer code Z"

1. Reason: these actions have already been completed at the time of writing.

Tense - Example in "Results"

Category	Tense	Example
Your results (experiment, field survey, computer simulation etc..) 你的成果	Past[1]	"We observed …" "We found…"
Referring to Figures, Tables & Graphs of your results 参照图,表	Present	"Fig. 3 shows that…" "Quantity Z prevails over X and Y in Table 2."
Referring to a section as a whole. 指的是一个Section	Present	"Section 3.2 discusses …"

1. Reason: these results have already been obtained at the time of writing.

Tense - Example in "Discussion and Conclusions"

Category	Tense	Example
Summarizing your findings 总结你的发现	Past[1]	"We observed …" "We found…"
Interpretation 解释 Discussion of importance your findings 讨论你的调查结果的重要性	Present[2]	"We can explain the phenomenon in terms of …" "Our result has a profound effect on ."
Future course of actions, research. 未来的课程	Future	"Application of our technique to YY will reveal the secret of…"

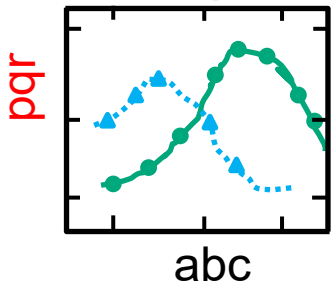
1. Reason: these results have already been obtained at the time of writing.
2. Reason: interpretation is given at the time of writing.

Figure (Graph) format.

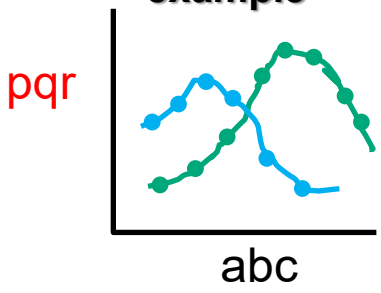
Graph format.

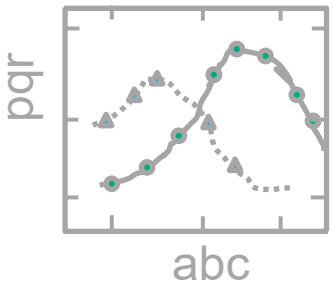
1) **Frame,** 框
2) **Tick mark on axes,** 轴上的打钩标记
3) **Orientation of y-axis label,** y轴标签的方向
4) **Friendly to color-blind readers** 对色盲读者友好
   (different line style & symbols recommended) 线条风格和符号

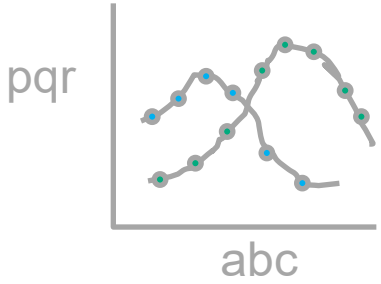
Good/proper example



Poor example







Example

Look at the figures in the sample text of Altarelli et al.

Check if the figures meets the requirements below.
(5 minutes).

Q: How do you think about the right panel of FIG. 3.

Graph format.

1) **Frame,** 框
2) **Tick mark on axes,** 轴上的打钩标记
3) **Orientation of y-axis label,** y轴标签的方向
4) **Friendly to color-blind readers** 对色盲读者友好
   (different line style & symbols recommended) 线条风格和符号

Figure (Graph) format. Example

Graph format.

1) **Frame,** 框
2) **Tick mark on axes,** 轴上的打钩标记
3) **Orientation of y-axis label,** y轴标签的方向
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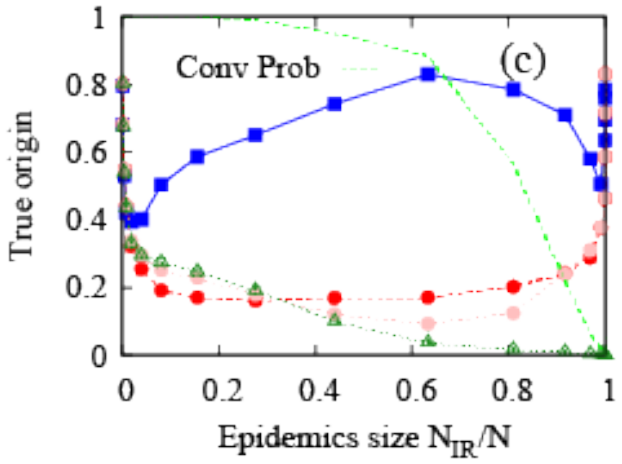

(Altarelli et al., Phys. Rev. Lett. 112, 118701 (2014)

Summary

(1) Preparatory steps.

Literature search, Readers identification, Formal style, and Ethics.

(2) Guidelines

Focus, Story (SCRE plot, Hourglass structure) and Modular writing.

(3) Editing

Length, Voice, Tense, Figure format.