

Technical English Writing

Dos and Don'ts

2011/9/11



参考资料

- **Dennis R. Morgan, Dos and Don'ts of Technical Writing, *IEEE Potentials*, Aug./Sep. 2005, 22-25**
- **Victor O. K. Li, Hints on Writing Technical Papers and Making Presentations, *IEEE Transactions on Education*, vol. 42, no. 2, May 1999, 134-137**
- **R. T. Compton, Jr., Fourteen Steps to a Clearly Written Technical Paper, Reprinted by *IEEE Circuits & Device Magazine*, September 1992**
- **Norman Fenton, Improving Your Technical Writing Skills, Version 4.1, 25 September 2003**



Nothing clever about long sentences

- **The English school system produces students who feel ashamed to write short sentences. In my view this is a great failing of our education system. There is nothing clever about writing long, complex sentences. For technical writing it is simply WRONG. You must get used to the idea of writing sentences that are reasonably short and simple.**

Norman Fenton, General principles of good writing

13 July 2000

http://www.dcs.qmul.ac.uk/~norman/papers/good_writing/general_principles.html#Words%20to%20avoid



提倡短句，避免并列复合句

- A sentence should contain a single unit of information.
Therefore, **avoid compound sentences wherever possible.**
 - Words like **AND, OR, WHILE** are often used **unnecessarily to build a compound sentence.**
- **Incorrect use of commas is a common cause of poorly constructed and excessively long sentences.**
- **Use parentheses sparingly.**
 - **Most uses can be avoided by breaking up the sentence.**
 - **NEVER use nested parentheses.**



过长的句子可拆分

Time division multiplexed systems are basically much simpler, the combination and separation of channels being affected by timing circuits rather than by filters and inter-channel interference is less dependent on system non-linearities, due to the fact that only one channel is using the common communication medium at any instant. [Fog index: 28]

Systems multiplexed by time division are basically much simpler. The channels are combined and separated by timing circuits, not by filters. Inter-channel interference is less dependent on system non-linearities, because only one channel is using the common communication medium at any time. [Fog index: 12.8]



段落不宜太长，也不要太短

- A paragraph should contain a single coherent idea.
- To make a text easier to read:
 - Always keep paragraphs less than half a page.
- Successive short paragraphs may also be difficult to read.
 - Such an approach is often the result of poorly structured thinking.
- To write a sequence of sentences each expressing a different idea:
 - It is best to use itemized or bulleted lists.
 - The fact that the sentences need to be in sequence suggests that there is something that relates them.



应尽量避免使用的单词

- The golden rule: *Never use a difficult word or phrase when there is a simple alternative.*

- If you mean 'make' then just write 'make' not 'render':

The testing strategy **rendered** it impossible to find all the faults.

The testing strategy **made** it impossible to find all the faults.

Bad words and good words

NOT SO GOOD	GOOD	NOT SO GOOD	GOOD
endeavor	try	ascertain	determine
terminate	end, stop	essentially	generally
transmit	send	generate	produce
demonstrate	show	portion	part
initiate	begin	ongoing	current
assist	help	signature	characteristics
necessitate	need	commence	start
utilize	use	initiate	begin
facilitate	help	dwelling	house
at this time	now	in respect to	about



删除冗余成分

BAD	GOOD
<u>absolutely</u> critical	critical
<u>considerable</u> difficulty	difficulty
<u>utterly</u> wrong	wrong
The product is not of a satisfactory <u>nature</u> .	The product is unsatisfactory.
The product is not of a satisfactory <u>characteristic</u> .	The product is unsatisfactory.
After specification we are <u>in a position</u> to begin detailed design.	After specification we can begin detailed design.
We are now <u>in the situation of</u> being able to begin detailed design.	We can now begin detailed design.
The printer is <u>located</u> adjacent to the computer.	The printer is adjacent to the computer.

删除冗余成分



BAD	GOOD
The user can <u>visibly</u> see the image moving.	The user can see the image moving.
The input is <u>suitably</u> processed.	The input is processed.
This is done by <u>means of</u> inserting an artificial fault.	This is done by inserting an artificial fault.
<u>The reason for the increase</u> in number of faults found <u>was due to</u> an increase in testing.	The number of faults found increased because of an increase in testing.
<u>It is likely that</u> problems will arise <u>with regard</u> to the completion of the specification phase.	You will probably have problems completing the specification phase.
<u>Within a comparatively short period</u> we will be able to finish the design.	Soon we will be able to finish the design.



避免复杂结构

BAD	GOOD
There is a reasonable expectation that ...	Probably ...
Owing to the situation that ...	Because (Since) ...
Should a situation arise where ...	If ...
Taking into consideration such factors as ...	Considering ...
Prior to the occasion when ...	Before ...
At this precise moment in time ...	Now ...
Do not hesitate to ...	Please ...
I am in receipt of ...	I have ...



避免法律用语和炫耀 (avoid pomposity)

- For some strange reason people often think they are being very clever by using legal expressions in writing. Do not fall into this trap. Avoid legal words like the following:

forthwith	hereof	of the 4th instance	thereof
henceforth	hereto	thereat	whereat
hereat	herewith	therein	whereon

- Also avoid nonsensical legal references:
 - “The said software compiler ...” ⇒
“The software compiler ...”
 - “The aforementioned people have agreed ...” ⇒
“A and B have agreed ...”



优先使用动词，而不是抽象名词

- The following examples show the major improvements you can achieve by getting rid of nasty noun constructions:

BAD	GOOD
He used to help in the specification of new software.	He used to help specify new software.
Measurement of static software properties was performed by the tool.	The tool measured static software properties.
Clicking the icon causes the execution of the program.	The program executes when the icon is clicked.
The <u>analysis of the software</u> was performed by Fred.	Fred analyzed the software.
The <u>testing of the software</u> was carried out by Jane.	Jane tested the software.
It was reported by Jones that method x <u>facilitated the utilization of inspection techniques</u> by the testing team.	Jones reported that method x helped the testing team use inspection techniques.



优先使用主动语态

- Many scientists routinely use the passive style because they believe it is more 'formal' and 'acceptable'. **It is not.**
- Using the passive style is the most common reason for poorly structured sentences and it *always* leads to longer sentences than are necessary.

BAD	GOOD
The report was written by Bloggs, and was found to be excellent.	Bloggs wrote the report, and it was excellent.
The values were measured automatically by the control system.	The control system measured the values automatically.
It was reported by the manager that the project was in trouble.	The manager reported that the project was in trouble.
The precise mechanism responsible for this antagonism cannot be elucidated.	We do not know what causes this antagonism.
The stability of the process is enhanced by co-operation.	Co-operation improves the stability of the process.



关于人称

- Whether to use personal (first person) or impersonal (third person) style is a subject that causes fierce debate.
- There are now very few scientific journals that still insist on third person writing.
- Advantage of using personal style:

- More natural, and resulting in simpler sentences

- In many situations avoiding the first person can introduce ambiguity or uncertainty. For example:

Recent experiments involving formal inspections have resulted in ...

Who did the experiments? The author, or other people?

It is not possible to state the exact mode of operation of the drug.

It might mean that the author does not know the operation of the drug, or the operation of the drug is impossible.

关于人称



BAD	GOOD
The current research work of the author of this report is also described.	We also describe our current research work.
In the previous report of the authors the rationale for the proposed method was discussed in detail.	In our previous report we discussed in detail the rationale for the proposed method.
However, it is the writer's belief that this situation should not have occurred.	However, we believe this situation should not have occurred.
Examination and discussion of the results obtained are necessary before a decision can be taken.	We must examine and discuss the results before we decide.

More examples of word usage



避免使用	建议使用	避免使用	建议使用
a majority of	most	due to the fact that	because, due to
a number of	many	during that time	while
a small number of	a few	during the course of	during, while
all of	all	fall off	decline
along the line of	like	first initiated	initiated
are found to be	are	for a distance of 10 km	10 km
are in agreement	agree	for the purpose of	for, to
are known to be	are	for the reason that	because
as a consequence of	because of	future plans	plans
at the present time	now, at present	give rise to	cause
by means of	by, with	goes under the name of	is called
definitely proved	proved	has been shown to be	is
despite the fact that	although	has the capability of	can, is able

More examples of word usage



避免使用	建议使用	避免使用	建议使用
in our opinion	we think	in view of the fact that	because
in all cases	always	is in a position to	can, may
in case	if	is known to be	is
in close proximity to	near	it appears that	apparently
in connection with	about	it is clear that	clearly
in order to	to	it is likely that	likely
in spite of the fact that	although	it is often the case that	often
in the case of ...	in ..., for ...	it is possible that	possibly
in the course of	during, while	it is worth pointing out	note
in the event that	if	it would appear that	apparently
in the near future	soon	large amount of	much
in the vicinity of	near	large in size	large
in those areas where	where	large number of	many

More examples of word usage



避免使用	建议使用	避免使用	建议使用
located in	in	take into consideration	consider
look after	watch	the fish in question	this fish
of great importance	important	the majority	most
on account of	because	through the use of	by, with (not via)
on behalf of	for	two equal halves	halves
on the basis of	from, because	was of the opinion that	believed
on the grounds that	because	with a view to getting	to get
original source	source	with the result that	so that
owing to the fact that	because, due to	...	
past history	history		
prior to (in time)	before		
referred to as	called		
subsequent to	after		



缩写和省略

- 不要为了简便而随意使用缩写。要把单词全拼出来：
 - Never write ‘approx.’ for approximately. (宜用**about**)
 - Univ.
 - &
- 关于用‘etc.’表示省略，下面的 J. Gibaldi, *MLA Handbook for Writers of Research Papers*, 上
– He eats lots of fruits, **such as** apples, oranges, and bananas. (such as和etc.不可同时使用) 海外语出版社, 5th Ed., p.125, p.205
– Jones, etc., proposed a different method. (要用**et al.**)
- 关于‘et al.’，错误用法也很多：
 - H. Morgan, G. Lee, et al. (不可列举多人再用**et al.**)
 - et. al. 或 et al (et al. = and others, 拉丁文et alii缩写)

I. Title

1. 论文标题

2011/9/11



关于科技论文标题的标准

- 科技论文标题字数的国家标准：标题字数一般不超过**20**个汉字，外语不超过**10**个实词。（**GB7713-87**）
- **ISO 215**规定：每条标题不超过**8**个词，除各国通用的缩写词和特殊符号外，标题内不得使用缩写词和特殊符号。
- 目前大多数中文刊物的英文题目与国际/国家标准相差甚远。标准化问题应引起重视。
- 好的标题应确切、扼要、鲜明地概括全文，使读者能迅速准确地判明论文基本内容，决定是否阅读摘要和正文。



删除冗词

- 标题过长的主要原因是包括了不含学术信息的冗词。
 - **Discussion on Several Academic Problems in the Book *The Modern History of Chinese Paper Money*** (《中国近代纸币史》中几个学术问题的探讨) ⇒
 - **Questions in *Modern History of Chinese Paper Money***
- 中文标题中喜用“试论”、“初探”、“浅论”、“浅谈”、“考略”、“管窥”等谦语，译成英文时应一概删去。
- 标题中惯用的**A Study of, The Exploration of**等无用词语在早期较常见，但70年代以来已在国际期刊中基本绝迹。



标题中尽量多用关键词语

- 尽量在标题中使用论文中的关键词语：
 - 有助于概括论文的基本思想并减少标题用词数量。
 - 增加论文的被检次数，增加被引次数，因为用机器检索时只显示标题中的关键词语而不是整个标题。
- 例： **Action Minimizing Solutions of the Newtonian n-Body Problem: From Homology to Symmetry** （牛顿n-体问题之作用极小化解 — 从同调至对称）



副标题

- ISO建议采用主标题加副标题的办法解决标题过长问题：
 - **Why Is Chinese Modal Logic Different from Its Western Counterpart**
中国模态逻辑为何不同于它的西方对应物
 - 可改为主、副标题样式（主副标题之间用冒号）：
Chinese and Western Modal Logic: The Difference and Its Cause
中西模态逻辑的差异及其成因



缩短标题

■ Methodological Principles of Solving Linguistic Problems

Relating to Artificial Intelligence ⇒

Methodological Principles of Solving Linguistic Problems of AI

解决与人工智能有关的语言问题的方法论原则



缩短标题

- **Some Results of Handling Metalogical Problem of Entailment System C_m by Computer \Rightarrow**

Machine-Proving of Metalogical Problems of Entailment System C_m

用计算机处理制约系统 C_m 的元逻辑问题的若干结果



标题要简洁

- **Effect of Additional Phaseshift Induced by Loss of the Coupler upon the Characteristics of the Fiber-Optic Ring Resonator ⇒**

Effect of Phaseshift Induced by Coupler Loss on Fiber-Optic Ring Resonator

耦合器损耗引起的附加相移对光纤环形腔特性的影响



删除冗词

- Method of Character Recognition Based on Independent Component Analysis ⇒
Character Recognition Based on Independent Component Analysis

基于独立分量分析的字符识别方法



删除冗词

■ Research and Developments of Open Channel Discharge

Calculation ⇒

Advances of Open Channel Discharge Calculation

明渠流量计算的研究现状和进展



删除 Study on, Study of

- **Study of Nucleating Mechanism of TiO_2 to the Fabrication of Nano-crystalline Spinel Glass-Ceramics \Rightarrow**

Nucleating Mechanism of TiO_2 in Fabricating

Nanocrystalline Spinel Glass-Ceramics

TiO_2 在纳米相微晶玻璃制备中的成核作用研究



省略冠词

- **The Influence of Diluent on the Extraction behavior of Uranium (VI) from Nitric Acid Solutions with DMPHL and TBP** ⇒

Influence of Diluents on Uranium Extraction from Nitric Acid Solutions with DMPHL and TBP

N-癸酰吗啡啉（DMPHL）与磷酸三丁酯（TBP）在不同稀释剂中协同萃取铀(VI)的研究 ⇒

稀释剂对N-癸酰吗啡啉与磷酸三丁酯中协同萃取铀的影响



■ Performance Analysis and Improved Receive Arithmetic of

OFDM Signal in Time-Varying Channel \Rightarrow

OFDM Signal in Time-Varying Channel and Improved

Receiving Algorithm

OFDM信号在时变信道中的性能分析与改进接收算法



■ Research on Points Triangulation Based on 3D-grid

Reducing ⇒

Point Triangulation Reduction Based on 3D-Grid

基于3D栅格的点云三角网格模型重构研究



适当使用缩写词

- **High Gain and Low NF All Optical Gain-clamped EDFA ⇒**

All Optical Gain-Clamped EDFA with High Gain and Low

Noise Factor

高增益低噪声全光增益箝制EDFA

(EDFA: Erbium-Doped Fiber Amplifier)



克服语病

- The Usable Research of Turbulent Models on the Simulation of Internal Flow within Axial Flow Pump ⇒
Applicability of Turbulent Models in Simulation of Internal Flow within Axial Flow Pump

轴流泵内部流动数值模拟中湍流模式可用性的研究



简化，理顺关系

■ The Similarity Computation for the Face Recognition

Technology (FRT) Based on Variation ⇒

Face Recognition Based on Variance Similarity

基于方差相似度计算的人脸识别技术



删除冗词

- **A Research of Efficient Feature Abstraction in an Attendance System Based on Face Recognition ⇒ Feature Extraction in Attendance System Using Face Recognition**

人脸识别考勤系统中有效人脸特征提取研究



用词要恰当

- **Fabrication of Transparent Alumina Ceramics and Application of Stereology to analyse its optical Transmittance ⇒**

Fabricating Transparent Alumina Ceramics and Application of Stereology to Its Characterization

- 透明氧化铝陶瓷的制备和体视学在其性能表征中的作用



注意词序

- Research of Information Exchange System Based on XML
among Medical Establishments ⇒

**Information Exchange among Medical Institutions Based
on XML**

基于XML的医疗机构信息交换系统的研究



选词适当，注意词间关系

- **An Improvement on the Reachability Analysis Algorithm of Real-Time System \Rightarrow**

Improved Algorithm for Analysis of Real-Time System

Accessibility

一种改进的实时系统可达性分析算法



注意用词

- **An Exact Method for 0-1 Polynomial Knapsack Problem** ⇒

Rigorous Solution to 0-1 Polynomial Knapsack Problem

0-1多项式背包问题的一种精确算法



简化题目，删除非必要的单词

- Grey relational analysis on chromatographic fingerprint of *Gentiana straminea Maxim* from Qinghai traditional Chinese drugs ⇒

Gray Relation of Chromatographic Fingerprint of *Gentiana Straminea Maxim* from Qinghai

青海秦艽色谱指纹图谱的灰色关联分析



注意用词

- **Use Monte Carlo for Analyzing the Induced Radiation of High Energy Electron Accelerator ⇒**

Analyzing Induced Radiation of High Energy Electron Accelerator with Monte Carlo Method

利用MONTE CARLO方法分析高能电子加速器中中子引起的感生放射性

II. Abstract

2. 摘要

2011/9/11



对摘要的一般要求

- 国家标准 BG 6447-86:
 - 摘要是以提供文献内容梗概为目的，不加评论和补充解释，简明、确切地记叙文献重要内容的短文。
- 摘要是论文的浓缩，可独立存在。好的摘要对于论文被阅读、检索、引用的作用不可忽视。
- 摘要按IMRAD结构要求撰写。
 - 研究目的、论文主题
 - 所用方法、理论、算法等
 - 结果、实验、比较等
 - 分析讨论、结论



注意事项

- 篇幅适当，参照所投期刊的要求。
- 注意完整性和独立性。传统式摘要不分段。
- 文字简洁，强调创新性，但不使用评价性语言。
- 摘要中的内容应在正文中出现，不能进行补充和修改。
- 不要详细铺叙研究的背景和意义。不叙述过去的研究细节和未来的研究计划。
- 不引用文献。只列出最关键的数据，避免数学表达式、化学结构式。不用上下标和特殊字符。
- 缩写语除同行熟知的以外，第一次出现时要有全称。



关于人称、语态、时态

- 过去流行的做法是尽量避免使用第一人称，尽量使用被动语态。这种情况已经发生变化。
 - 现在不少期刊提倡采用第一人称和主动语态，其优点是表达更准确清晰，便于阅读。
 - 被动语态和第三人称仍经常使用，优点是较为客观。
- 对时态的要求与正文相同：
 - 不受时间影响的可用现在时，如研究内容，结果等。
 - 以往研究得到的结论性内容可用现在完成时。
 - 叙述主要研究内容根据具体情况也可用过去时。对实验性内容时往往用过去时。



摘要常用表达方法举例

- 回顾研究背景: review, summarize, present, outline, ...
 - We present evidence of this view about addiction and discuss its implications for understanding the psychology and neurobiology of addiction.
 - This paper outlines some of the basic methods and strategies and discusses some related theoretical and practical issues.
 - We summarize searches for hypothetical particles such as ...
 - We also describe the conceptual background and development of ...



摘要常用表达方法举例（续）

- 阐明写作目的: **purpose, aim, attempt, ...**
 - **We attempt to recover a function of unknown smoothness from the noisy sampled data.**
 - **To investigate the mechanism of Bcl-2's effect, we examined whether Bcl-2 interacted with other proteins.**
 - **The paper aims to heighten awareness of the capabilities of the method to simulate its application ...**
 - **The purpose of this study is to find ...**



摘要常用表达方法举例（续）

- 介绍主要内容: **study, present, include, focus, ...**
 - **Here we study the dependence of ... on ...**
 - **This article includes a brief review of the physics underlining HERWIG, followed by a description of ...**
 - **This paper presents a detailed analysis of several hundred plant carbon exchange rate ...**
 - **The focus of this paper is the conversion of radiocarbon ages to calibrated ages ...**
 - **We emphasize the following points: ...**



摘要常用表达方法举例（续）

- 介绍研究过程: **study, examine, consider, analyze, ...**
 - **We present an analysis of atmospheric neutrino data from ...**
 - **We study objects with masses ranging from ... to ...**
- 说明研究方法: **measure, estimate, calculate, ...**
 - **This study presents estimates of lifetime and ...**
 - **We have developed a method to calculate ...**
- 介绍应用: **use, apply, application, ...**
 - **Our program uses a maximum likelihood approach ...**
 - **We apply the network to the source separation problem.**



摘要常用表达方法举例（续）

- 展示结果: **show, result, present, ...**
 - **We show this cell death to be dependent on expression ...**
 - **The results suggest a widespread role for ...**
 - **Recent research has shown that ...**
- 介绍结论: **summary, conclude, ...**
 - **We conclude that PQL is of practical value for approximate inference on parameters ...**
 - **We give a summary of the main physics component of the current versions, ...**



摘要常用表达方法举例（续）

- 陈述观点: **suggest, report, present, explain, expect, ...**
 - **The result suggests that abnormalities in**
 - **In this study, we describe a psychobiological model of ...**
 - **The findings explain mechanism involved in ...**
- 提议: **propose, suggest, recommend, ...**
 - **We propose that the formation of these materials ...**
 - **We propose a new framework for solving the problem ...**
- 阐明论据: **find, indicate, identify, confirm, ...**
 - **It is possible to identify constituents ...**
 - **We provide evidence from direct experiments ...**
 - **We find consistent calibration using the**

EI

Tips

一些注意事项

2011/9/11



1. Hyphenation

- **If the first word is an adjective, no hyphen is necessary.**
 - **third generation system**
- **If the first word is a noun, then you need to hyphenate:**
 - **range-limited characteristics**
- **If the second word is a gerund (participle), it is unnecessary to hyphenate:**
 - **cell splitting technique**



2. Numbers

- **Normally, integers less than ten are spelled out.**
 - write “**six cells**” instead of “**6 cells**”
- **Integers larger than ten and fractional numbers are written in Arabic digits:**
 - **12, 5.6, etc.**
- **Fractional numbers are considered plurals.**
 - **one meter**
 - **0.5 meters**



3. Article in front of symbols

- Should we say a M/M/1 queue or an M/M/1 queue?
- We pronounce it “em-em-one,” i.e., it starts with a vowel:
 - “an M/M/1” is correct.
- Compare this with a B-ISDN network. In this case, the B in B-ISDN is pronounced like “bee,” i.e., not a vowel.
- Other examples:
 - an H-field distribution
 - an HTML document
 - an FFT algorithm
 - a FIFO unit



4. Acronym

- **The first time a symbol is used, explain what it means.**
- **Usually put the symbol in brackets:**
 - **Integrated Services Digital Network (ISDN)**
 - **Subsequently, use the symbol only.**



5. Negative

- **Try to avoid negative words like “not,” “un,” “non,” etc.**
 - **Use “invalid” instead of “not valid”**
 - **Use “violating” instead of “not satisfying”**
- **Avoid double negatives as far as possible.**
 - **not invalid \Rightarrow valid**
 - **not uninteresting \Rightarrow interesting**



6. Countable and uncountable

- **Do not use “a lot of” for countable objects, use “many” instead**
 - **Say “many users” rather than “a lot of users.”**
 - **a lot of money**
 - **Much work has been done.**

- **The same goes for “a large amount.” It is also used for uncountable objects.**



7. Large, big, great

- Say “**greatly improves**” rather than “**highly improves**” or “**largely improves.**”



8. Contrary

- Say “contrary to” rather than “in contrary to.”
- “Contrary to” is the same as “in contrast to” or “as opposed to.”



9. Single and Plural

- **The word “work” is already in plural form. Thus we do not say “An existing work has been done.”**
- **“Works” may be used to mean “publications” or “papers.”**
 - **Several works have been published in this area.**

10. Spell out



- **Do not use abbreviated forms like “don’t.” They should be spelled out.**



11. Avoid multiple superlatives

- **Avoid using multiple superlatives. Use “best” rather than “very best,” “optimal” rather than “most optimal.”**



12. Proper names

- **The words “figure,” “table,” “theorem,” “lemma,” etc. may be used as proper or common nouns. Proper nouns must be capitalized. They are proper nouns when a number or some other attribute follows them. For example, we say, “Fig. 1 illustrates ” and “In this figure, we illustrate ...”**



13. Also

- **Do not start a sentence with “also.” Use words such as “Besides,” “Moreover,” “In addition” instead.**



14. Comprise and consist

- Say “comprises” or “consists of” rather than “comprises of.”



15. Semi-colon

- **Semi-colons can be used to break up groups of objects. For example, “Set A comprises numbers 1, 2, 3; Set B comprises 4, 5, 6; Set C comprises 7, 8.”**

16. Repetition



- **Avoid repeated usage. Say “The storage required in the first case is greater than that in the second case,” rather than “The storage required in the first case is greater than the storage required in the second case.”**

17. Be consistent



- **English and American spelling is sometimes different, i.e., “colour” versus “color.” Try to be consistent throughout the text.**

End of the Unit

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