技術英語

Technical English

CUTURI, 吉井, 中澤

Source for today's slides: *Science research writing for non-native speakers of English* by Hilary Glasman-Deal, an **excellent book that I recommend.**

Abstract: Assignment

Table 1. Characteristics of a well-written abstract.
Stands on its own without need to read the paper
States the hypothesis, question, or objective of the study
Completes the story by answering the hypothesis, question, or objective
Contains the same key words and terms as the title and the introduction
Follows the correct style and format
Follows the order of the main text (e.g., IMRAD)
Stays within the allowed word count
Does not contain information absent in the paper
Does not make conclusions unsupported by the data
Limits the use of abbreviations
Does not include references
Does not cite tables or figures

Abstract: Assignment

John Warner Backus.

He co-invented the programming language Speedcoding, FORTRAN, ALGOL, FP, and FL and helped create the Backus - Naur form (BNF) to formally specify the syntax of programming languages.

References:
René Gabriëls, Dirk Gerrits, Peter Kooijmans. John W. Backus

what problem did he solve?

Abstract: Assignment

I chose Edsger Wybe Dijkstra(1930~2002)

Edsger Wybe Dijkstra(1930~2002) was known as achievements of Dijkstra's algorithm. Dijkstra's algorithm is the algorithm that calculate effectively the shortest path between two points on a graph. In computer science, this algorithm is used for internet rooting protocol. In real world, this algorithm is used for route-search of car navigation system and pedestrian route guidance of railroad. This algorithm makes our life more comfortable.

Abstract: Assignment

In 1942, the world-first electric computer 'ABC' is developed in America but this computer has a serious flaw. When people want to process another program, they must change all wires' connection in computer. John von Neumann (1903-1957) thought of a computer which read programs from external hardware. And he invented stored-program computer, which stores program in memory as datum and carry out this program by reading from memory one by one from top. To use this computer, people don't have to change wires' connection. That computer is called 'Neumann architecture' too. It goes without saying that this is a fundamental architecture of most computers and is essential for computer society today.

20/20

Abstract: Assignment

(2) Douglas Carl Engelbart

Just after the WWII, computers are regarded as the machines which just handle the numeric data and it seemed professional machine which has nothing to do with ordinary people until Engelbart made a breakthrough. He works hard to make the computer more have a lot to do with humans' activity and the part of his work is known as "mouse" we use today. Besides the invention of the mouse, he and his team named "ARC" developed many elements of graphical user interface, GUI, such as bitmap screen, hypertext, groupware. So, it can be said that he removed the barrier between human and computer, and among computers. He also participated in the develop of ARPANET, which is the former style of the internet today. As I showed above, his inventions in or contribution to GUI or networks are very fundamental ones in the progress of the use of computers.

Abstract: Assignment

Edsger. W. Dijkstra.
The biggest concept due to Dijkstra in the field of distributed computing is that of self-stablization — an alternative way to ensure the reliability of the system.
The most famous contribution is shortest-path algorithm, which is known as "Dijkstra's algorithm".

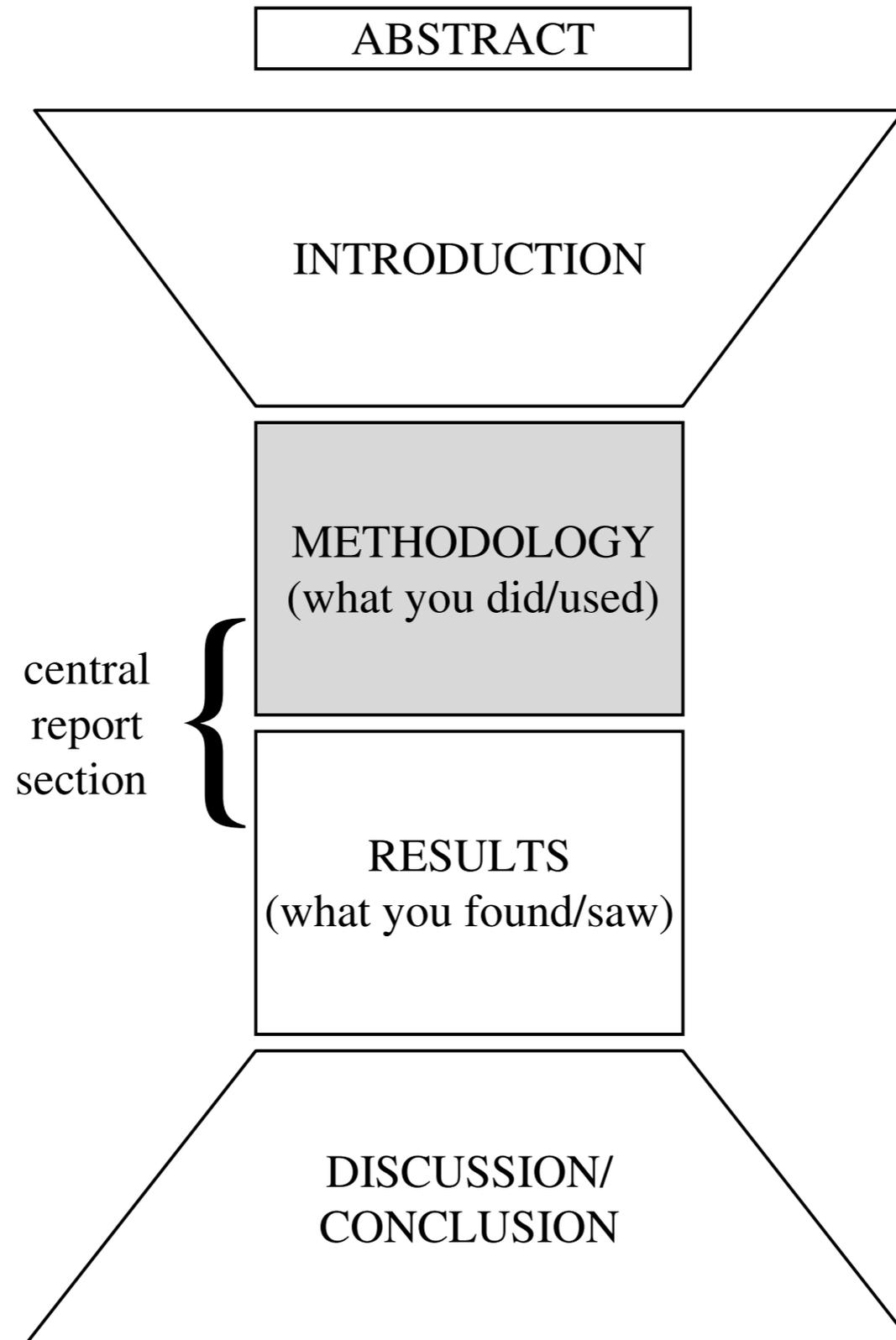✳ http://en.wikipedia.org/wiki/Edsger._W._Dijkstra.

alternative
~~the~~ to what?

why is this a problem?

what does this

what is self-stabilization??

Methodology: *Your Work*

ABSTRACT

INTRODUCTION

METHODOLOGY
(what you did/used)

central
report
section

RESULTS
(what you found/saw)

DISCUSSION/
CONCLUSION

Your Work as a Student

- Up to now, you have mostly written about science to **prove that you have understood known concepts**.

- **Your professor knows how to fill the gaps,** understand what you write even if it's not clear.

Work as a Scientist/Engineer

- Writing a scientific paper is different: **you will be the professor, the teacher**.

Work as a Scientist/Engineer

- Writing a scientific paper is different: **you will be the professor, the teacher**.

- Becomes crucial that you can provide **all necessary** information

who what when where how & why

Who	
	Who maintained the records? Who reviewed the data? Who collected the specimens? Who enrolled the study participants? Who supplied the reagents? Who made the primary diagnosis? Who did the statistical analyses? Who reviewed the protocol for ethics approval? Who provided the funding?
What	
	What reagents, methods, and instruments were used? What type of study was it? What were the inclusion and exclusion criteria for enrolling study participants? What protocol was followed? What treatments were given? What endpoints were measured? What data transformation was performed? What statistical software package was used? What was the cutoff for statistical significance? What control studies were performed? What validation experiments were performed?

who what when where how & why

When
When were specimens collected? When were the analyses performed? When was the study initiated? When was the study terminated? When were the diagnoses made?
Where
Where were the records kept? Where were the specimens analyzed? Where were the study participants enrolled? Where was the study performed?

who what when where how & why

How

How were samples collected, processed, and stored? How many replicates were performed? How was the data reported? How were the study participants selected? How were patients recruited? How was the sample size determined? How were study participants assigned to groups? How was response measured? How were endpoints measured? How were control and disease groups defined?

Why

Why was a species chosen (mice vs rats)? Why was a selected analytical method chosen? Why was a selected experiment performed? Why were experiments done in a certain order?

Grammatical Rules

- Use *a* or *the* ??

    - Making a mistake when choosing *a or the* is the **most frequent mistake** I know Japanese speakers (and many other languages) do.

- **Tenses** again

A or *THE* ?

- A determiner is a word like
  the, a, my, this, one, some.

- *a* / *the* are **determiners**

- A very basic english rule is that

SINGULAR COUNTABLE NOUNS NEED A DETERMINER

countable | ˈkoʊntəbəl |
adjective
able to be counted.

A or *THE* ?

- Deciding which nouns are *countable* nouns and which are *uncountable* is not always easy.

- Many nouns which are *often* considered uncountable can actually be used 'countably'.

A or *THE* ?

- Nouns like death or childhood, for example, can occur in the plural.

*There have been three **deaths** this year from pneumonia.*
*Our **childhoods** were very different; I grew up in France and she grew up in China.*

*Some **steels** are used in the manufacture of medical instruments.*

A or *THE* ?

- Quizz: among the following words, which ones **cannot** appear in countable form?

absence	access	analysis	advice	age
agriculture	cancer	art	atmosphere	beauty
behaviour	duty	capacity	childhood	calculation
concern	economy	death	democracy	depression
design	environment	earth	education	electricity
energy	evidence	equipment	existence	experience
failure	fashion	fear	fire	health
food	freedom	history	growth	independence
heat	help	insurance	ice	knowledge
industry	information	machinery	intelligence	light

A or *THE* ?

- red : **cannot** appear in countable form

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A or *THE* ?

- Using *a* or *the* should be guided by the following important principle:

> USE **THE** IF OR WHEN YOU AND YOUR READER BOTH KNOW WHICH THING/PERSON YOU MEAN.

*I had **a** cheese sandwich and **an** apple for lunch. **The** sandwich was fine but **the** apple had a worm in it.*

A or *THE* ?

USE **THE** IF THERE IS ONLY ONE POSSIBLE REFERENT

We removed **the** softest layer of membrane.

Cairo is **the** capital of Egypt.

The opening was located in **the** centre of each mesh.

Government policy is committed to protecting **the** environment.

The sun's altitude is used to determine latitude.

A or *THE* ?

USE **A** IF IT DOESN'T MATTER *or* YOU DON'T KNOW
or YOUR READER DOESN'T KNOW WHICH THING/
PERSON YOU ARE REFERRING TO.

A 35 ml brown glass bottle was used to store the liquid. (It doesn't matter which 35 ml brown glass bottle was used.)

The subject then spoke to an interviewer. (It doesn't matter which interviewer/I know which one but you don't.)

It works on the same principle as a combustion engine. (It doesn't matter which combustion engine.)

A or *THE* ?

- Deciding whether to use *A* or *THE* is extremely important in science, because it can **change the meaning of a sentence completely:**

(a) *This effect may hide **a** connection between the two.* (There may possibly be a connection between the two but if there is, we cannot see it.)

(b) *This effect may hide **the** connection between the two.* (There is definitely a connection between the two but we may not be able to see it because of *this effect*.)

A or *THE* ?

- Deciding whether to use *A* or *THE* is extremely important in science, because it can **change the meaning of a sentence completely:Ø**

(a) *The nodes should be attached to Ø two adjacent receptor sites.* (There are many receptor sites and any two adjacent ones will do.)
(b) *The nodes should be attached to **the** two adjacent receptor sites.* (There are only two receptor sites.)

- The empty sign Ø means here the plural of *a*.

A or *THE* ?

- An important point for science, is that *a, the, Ø* can all be used when expressing a general truth.

The electroencephalograph is a machine for measuring brain waves.
An electroencephalograph is a machine for measuring brain waves.
Electroencephalographs are machines for measuring brain waves.

Visible and Invisible Errors

- There are two kinds of errors.

  - visible grammatical errors

      The algorithm needs input sequence

  - Invisible errors that change the meaning

    The algorithm needs an input RNA sequence

    (when you meant:) *The algorithm needs the input sequence*

Careful with Adverb Location

- Making mistakes when placing adverbs results in **invisible** mistakes

The patient was discharged from hospital after being shot in the back with a 9 mm gun.

Did the doctors shoot her?

He gave a lecture about liver cancer at the hospital last January.

Was the lecture in the hospital — or the cancer? Did the lecture refer to cancer cases occurring in January or did the lecture itself occur in January?

Adverb Location

- Always clarify as much as possible, avoid ambiguities, break down sentences:

Last January he gave a lecture about liver cancer at the hospital

Last January he gave a lecture at the hospital; his subject was liver cancer

And now, some exercises

- The sentence is the fundamental unit of expression in professional writing.

- We will try to avoid making mistakes when building sentences in the following exercises.

And now, some exercises

- Common mistakes:

  - **fragments** of sentences: sentences which are incomplete.

  - **Run-on**: a run-on is a sentence in which two or more independent clauses (i.e., complete sentences) are joined without appropriate punctuation or conjunction. For example:

    It is nearly half past five we cannot reach town before dark.