

Science in Classics

经典中的科学

First Meeting

Think about it (15 seconds)

- Why does the School of Aerospace Science and Technology require you to take this course? Is this just a science course?



Two main reasons

1. To familiarize yourself with English as a working language:
 - to connect to the knowledge of space science and technology, which is still largely in English,
 - to contribute to the international community of space science and technology by communications.
2. To gain experience in tackling science-related problems of different levels:
 - basic questions on scientific knowledge,
 - big questions of the level of meaning (意义) and values (价值).



Children: why why why?

Why should we eat vegetables?
The taste is bad!

Vegetables contain nutrients (营养) that make you healthy!

Why should I have good health?

If you are not healthy, you won't be happy.

Why should I be happy?

Hm, yes, of course, everyone should be happy.

Why should everyone be happy?

.....



Children: why why why?

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Hm, yes, of course, everyone **should be happy**.

Why should everyone be happy?

.....

Questions of different levels



Technical science

观察 • **Observation:** What is A?

推论 • **Inference:** If B happens,
what would happen?

意义 • **Meaning:** What does C
mean?

价值 • **Value:** Do I accept D?
General education science

Vegetables contain **nutrients** that
make you healthy!

If you are not healthy, you won't
be **happy**.

Hm, yes, of course, everyone
should be happy.

Big and particular questions

- Technical and GE sciences are about observation, ..., value.
- Technical science focuses on
 - Observation, Inference
 - *Particular questions*
- GE science focuses on
 - Meaning, Value
 - *Big questions*

Technical science

- **Observation:** What is A?
- **Inference:** If B happens, what would happen?
- **Meaning:** What does C mean?
- **Value:** Do I accept D?

General education science

First meeting

- Course outline
- Read the first text with hands on (10 minutes)
- Introduction to the course
- Learning aid
 - Reading guides
 - Mini-dictionaries

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| Para ⁸ | Side notes ⁹ | BOOK VII | Remarks ¹⁰ |
|-------------------|---|---|--------------------------|
| 45 | Republic VII. SOCRATES, GLAUCON. The den, the prisoners; the light at a distance; | AND now, I said, let me show in a figure how far our nature is enlightened or unenlightened:—Behold! human beings living in a underground den, which has a mouth open towards the light and reaching all along the den; here they have been from their childhood, and have their legs and necks chained so that they cannot move, and can only see before them, being prevented by the chains from turning round their heads. Above and behind them a fire is blazing at a distance, and between the fire and the prisoners there is a raised way; and you will see, if you look, a low wall built along the way, like the screen which marionette players have in front of them, over which they show the puppets. | 想象课堂的情境。同学看着投影幕，投影机在后上方。 |
| 46 | the low wall, and the moving figures of which the shadows are seen on the opposite wall of the den. | I see. And do you see, I said, men passing along the wall carrying all sorts of vessels, and statues and figures of animals made of wood and stone and various materials, which appear over the wall? Some of them are talking, others silent. | |
| | | You have shown me a strange image, and they are strange prisoners. | |

47

Like ourselves, I replied; and they see only their own shadows, or the shadows of one another, which the fire throws on the opposite wall of the cave?

True, he said; how could they see anything but the shadows if they were never allowed to move their heads?

48

And of the objects which are being carried in like manner they would only see the shadows?

Yes, he said.

49

And if they were able to converse with one another, would they not suppose that they were naming what was actually before them¹¹?

Very true.

50

The prisoners
would mistake
the shadows for
realities.

And suppose further that the prison had an echo which came from the other side, would they not be sure to fancy when one of the passers-by spoke that the voice which they heard came from the passing shadow?

声音在墙壁上反射。

No question, he replied.

51

To them, I said, the truth would be literally nothing but the shadows of the images.

That is certain.

Draw the den (5 mins)

- Write your group number and names.
- Draw on the blank sheet provided:
 - human beings
 - fire
 - shadows
 - vessels
 - wall
 - way
 - etc.
- Take a picture and share on the WeChat group.

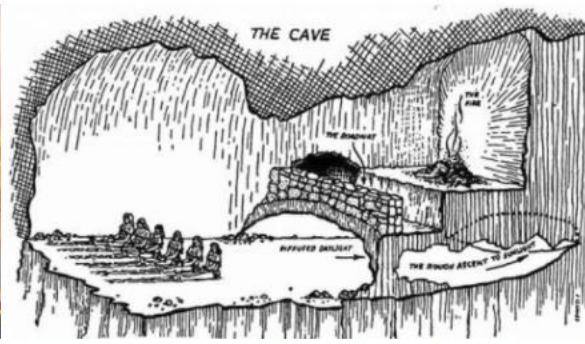
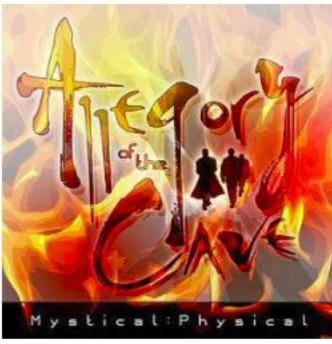
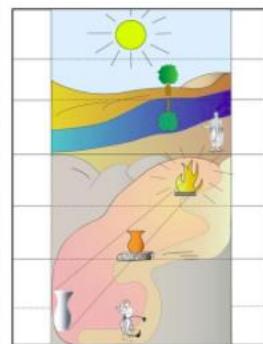
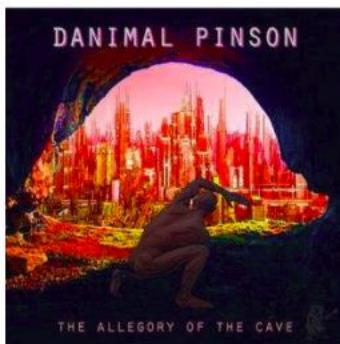


allegory of the cave

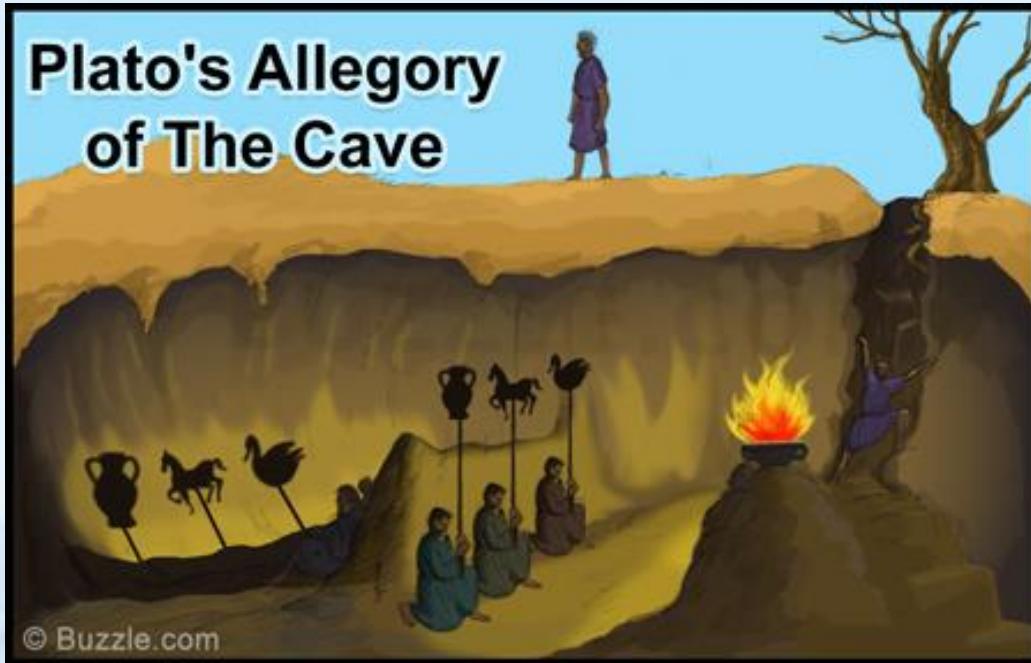


百度一下

图片筛选 >

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Plato's Allegory of The Cave



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The first two steps into classics

1. Don't be afraid.
2. Relate the text to your life.

Para⁸

Side notes⁹

45

Republic VII.

SOCRATES,
GLAUCON.

The den, the
prisoners; the
light at a distance;

BOOK VII

AND now, I said, let me show in a figure how far our nature is enlightened or unenlightened:—Behold! human beings living in a underground den, which has a mouth open towards the light and reaching all along the den; here they have been from their childhood, and have their legs and necks chained so that they cannot move, and can only see before them, being prevented by the chains from turning round their heads. Above and behind them a fire is blazing at a distance, and between the fire and the prisoners there is a raised way; and you will see, if you look, a low wall built along the way, like the screen which marionette players have in front of them, over which they show the puppets.

I see.

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Like ourselves, I replied; and they see only their own shadows, or the shadows of one another, which the fire throws on the opposite wall of the cave?

True, he said; how could they see anything but the shadows if they were never allowed to move their heads?

The prisoner is set free

And when released, they

And now look again, and see what will naturally follow if the prisoners are released and disabused of their error. At first, when any of them is liberated and compelled suddenly to stand up and turn his neck round and walk and look towards the light, he will suffer sharp pains; the glare will distress him, and he will be unable to see the realities of which in his former state he had seen the shadows; and then conceive some one saying to him, that what he saw before was an illusion, but that now, when he is approaching nearer to being and his eye is turned towards more real existence, he has a clearer vision,—what will be his reply? And you may further imagine that his instructor is pointing to the objects as they pass and requiring him to name them,—will he not be perplexed? Will he not fancy that the shadows which he formerly saw are truer than the objects which are now shown to him?

First meeting

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- Learning aid
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Science in Classics

经典中的科学

An Introduction

Big and particular questions

- Both sciences are about
 - observation, inference, meaning and value.
- Technical science focuses on
 - Observation, Inference
 - *Particular questions*
- GE science focuses on
 - Meaning, Value
 - *Big questions*

Technical science

- **Observation:** What is A?
- **Inference:** If B happens, what would happen?
- **Meaning:** What does C mean?
- **Value:** Do I accept D?

General education science

Big questions

- Big questions are usually
 - beyond majors,
 - across majors.
- About: meaning, value.
- We need **reflection**.

【新华社快讯】李克强总理16日下午在天津“8·12”瑞海公司危险品仓库特别重大火灾爆炸事故现场。

16 August 2015

Great explosion in Tianjin
Prime Minister Li Keqiang

↑ 收起 | Q 查看大图 | ⌂ 向左旋转 | C 向右旋转





12 hrs · E

新本
聞
LOCAL PRESS

據說：
古代后羿射日的時候
有超過一個太陽

Share

40 people like this.

875 shares

人喺強國噃，有兩個太陽好奇
以前后羿九個太陽
啦，兩邊溫溫鋒。

好眼力

多個影唔奇

舊曆七月

室內打燈，然後key相

真開心可跟你對望 內心閃

1 - 4 hrs

One light source



Content

1. “Who am I?” and classics
2. Science in Classics (Idea, outcomes)

1. *Who am I?* \Rightarrow *a tradition of dialogue*

- In the past thousands of years, nearly all things changed.
- What has never changed?
 - The question about ourselves:

Who am I?



A statue at Columbia University

My identity
determines
the values.

Who am I?

Values

*Honesty
Loyalty
Piety
...
...*

The values
are applied to
the situation.

Situation

The values (after
my reflection)
reshape my
identity.

The situation
challenges our
understanding of
the values.

Questions of values: Big Questions

- We encounter these questions very often.
 - What is life?
 - What do I know?
 - How do I know?
 - What values should I hold?
 -

Dialogue: Q & A & Q & A ...

- Questions of values wait for answers.
- The **answers** are **questioned**.
- New questions give rise to new answers.
- ...
- These are dialogues
 - between individuals (个人).
 - between texts (文本).
 - between individuals and texts.

- Dialogues may not lead to perfect answers.
- Dialogues keep going on.
- They initiate the pursuit (追尋) of knowledge.
- Knowledge cannot be value-free.

2. *A tradition of dialogue* ⇒ *classics*

- The most efficient way for a university student to go into the tradition of dialogue.
- Classics: records of the thoughts of great minds on the big questions.
 - small groups of students.
 - reading classics, discussions, writing.

What do we read in this course?



Content

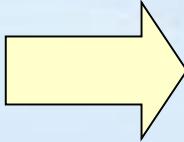
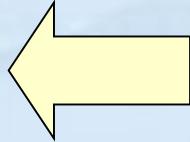
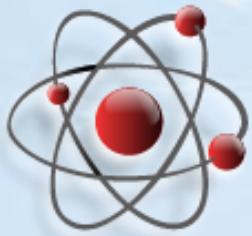
1. “Who am I?” and classics
2. Science in Classics (Idea, outcomes)

Course design

- An intellectual expedition starting from “Who am I?”
- We are invited to investigate the world.



What can the
world tell me
about who I am?



$$\begin{aligned} \frac{1}{V} \int z \, dV &= \frac{\pi r^2}{V H^2} \int_0^h z \, dz = \frac{\pi r^2}{V H^2} \left[\frac{z^2}{2} \right]_0^h = \\ &= \frac{\pi r^2}{V H^2} \int_0^h (z^2 - 2z^2 H + z^2 H^2) \, dz = \\ &= \frac{\pi r^2}{V H^2} \left[\frac{z^4}{4} - \frac{2z^3 H}{3} + \frac{z^2 H^2}{2} \right]_0^h = \\ &= \frac{\pi r^2 h^4}{V H^2} \left[\frac{1}{4} - \frac{2H}{3} + \frac{H^2}{2} \right]. \end{aligned}$$

The physical universe

Part I of the course



www.uva.nl/onderwijs

The world of life

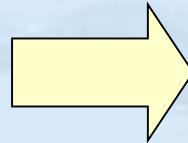
Part II of the course





Now I begin to know
more about myself.

Understanding



Understanding

- We have gained some knowledge.
- We can start the journey again,
- but wait ...

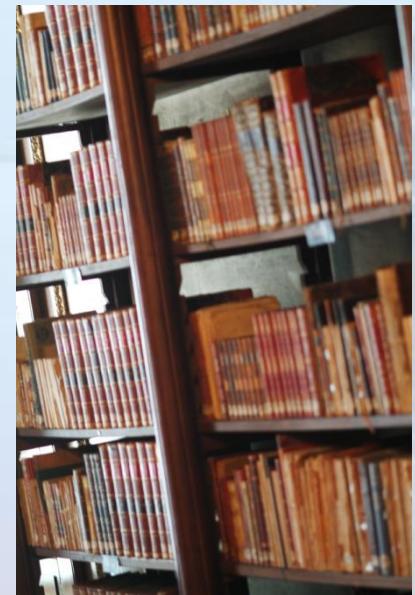
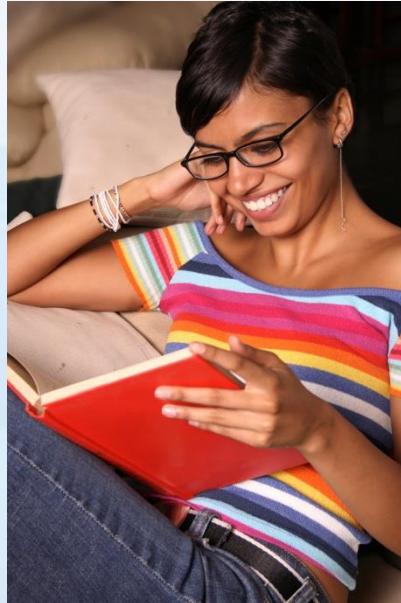
But wait! What is my
understanding of my
understanding?



- Part III of the course: a reflection on our understanding.

Reading classics

- We retrace the journeys of giants like Plato, Newton, Darwin,
- nurture a good habit of reading --- lifelong.
- develop a personal taste of reading classics.



Writing



- Express your own personal view on the physical world, the world of life and our reflections.

Learning Outcomes

Ability



comprehend and discuss science-related texts.



Intellectual





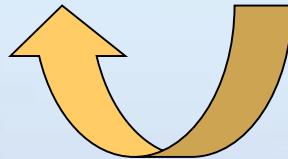
identify the essential characteristics of how human beings view Nature.

world (世界)



identify various societal implications of scientific explorations.

society (社会)

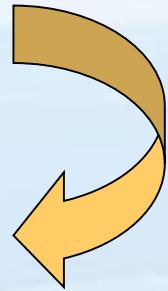


relate the developments in natural sciences highlighted in the course to contemporary human condition.

individuals (个人)



Science



evaluate the scopes of application, achievement and limitations of highlighted scientific methods using multiple perspectives.

science (科学)

Learning Outcomes

- comprehend and discuss science-related texts. (ability/能力培养)
- identify the essential characteristics of how human beings view Nature. (world/世界)
- identify various societal implications of scientific explorations. (society/社会)
- relate the developments in natural sciences highlighted in the course to contemporary human condition. (individuals/个人)
- evaluate the scopes of application, achievement and limitations of highlighted scientific methods using multiple perspectives. (science/科学本身)

Our class motto

omega

omicron

γνῶθι σεαυτόν

[*'no-thi se-au-'ton*]

- Know thyself!

through

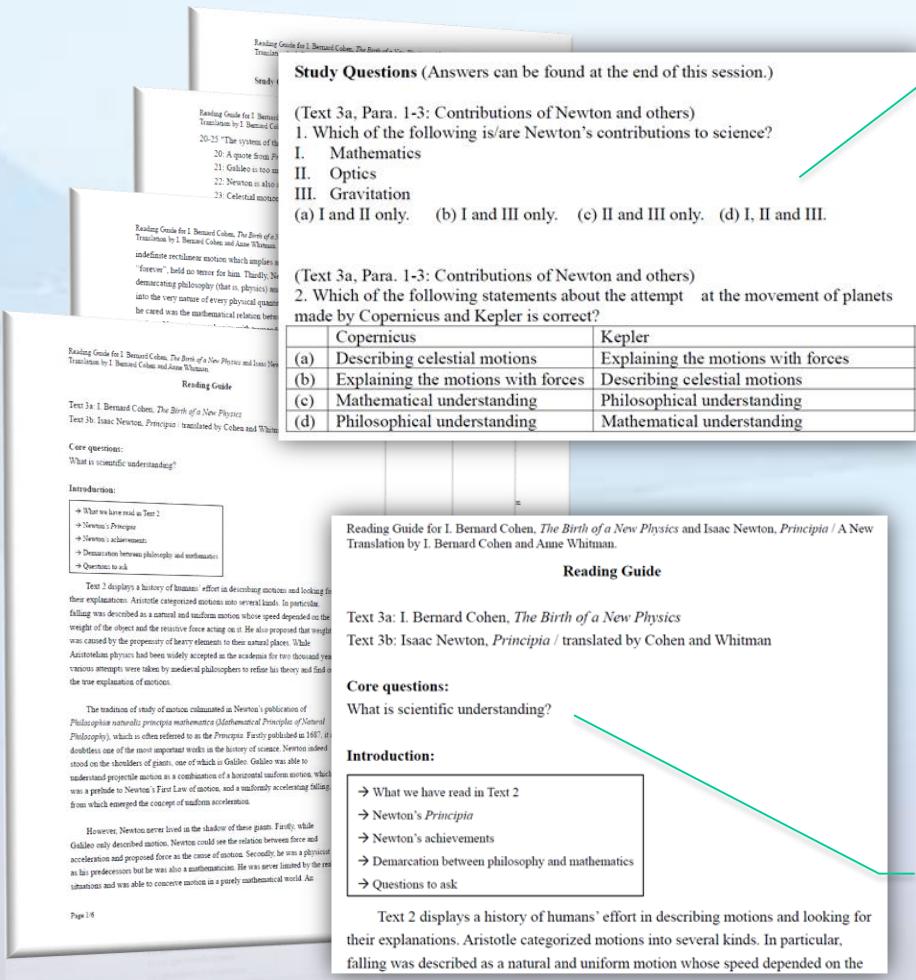
diagnosis

ignorance

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Reading guides



Study questions

Outline

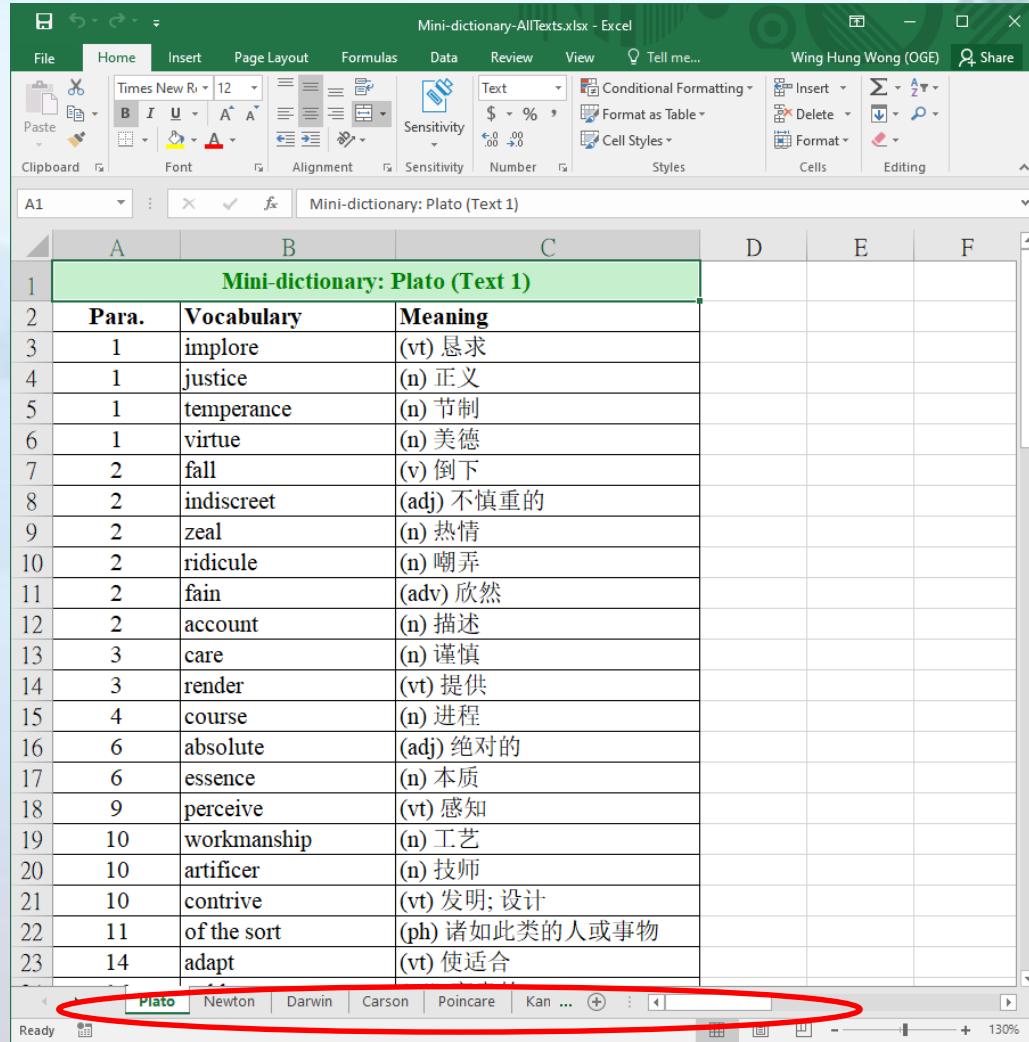
Suggested outlines of the texts:

Text 3a:

- 1: Great contributions of Newton
 - 2: The scope of this chapter
 - 3: A summary of the contributions of other scientists
 - 4-6 Newtonian anticipations
 - 4: The background of the discovery of the law of gravitation
 - 5: Halley's visit to Newton and Newton's response
 - 6: Newton's contributions to dynamics

Focus questions and background

Mini-dictionaries



The screenshot shows a Microsoft Excel spreadsheet titled "Mini-dictionary-AllTexts.xlsx" with the file name "Wing Hung Wong (OGE)". The active sheet is "Plato (Text 1)". The table has three columns: "Para.", "Vocabulary", and "Meaning". The first row contains the header "Mini-dictionary: Plato (Text 1)". The "Para." column lists numbered entries from 1 to 23. The "Vocabulary" column lists words like "implore", "justice", "temperance", "virtue", "fall", "indiscreet", "zeal", "ridicule", "fain", "account", "care", "render", "course", "absolute", "essence", "perceive", "workmanship", "artificer", "contrive", "of the sort", and "adapt". The "Meaning" column provides definitions such as "(vt) 恳求", "(n) 正义", "(n) 节制", "(n) 美德", "(v) 倒下", "(adj) 不慎重的", "(n) 热情", "(n) 嘲弄", "(adv) 欣然", "(n) 描述", "(n) 谨慎", "(vt) 提供", "(n) 进程", "(adj) 绝对的", "(n) 本质", "(vt) 感知", "(n) 工艺", "(n) 技师", "(vt) 发明; 设计", "(ph) 诸如此类的人或事物", and "(vt) 使适合". The bottom of the screen shows the Excel ribbon and a red circle highlighting the tabs at the bottom.

| | A | B | C | D | E | F |
|----|---------------------------------|-------------|----------------|---|---|---|
| 1 | Mini-dictionary: Plato (Text 1) | | | | | |
| 2 | Para. | Vocabulary | Meaning | | | |
| 3 | 1 | implore | (vt) 恳求 | | | |
| 4 | 1 | justice | (n) 正义 | | | |
| 5 | 1 | temperance | (n) 节制 | | | |
| 6 | 1 | virtue | (n) 美德 | | | |
| 7 | 2 | fall | (v) 倒下 | | | |
| 8 | 2 | indiscreet | (adj) 不慎重的 | | | |
| 9 | 2 | zeal | (n) 热情 | | | |
| 10 | 2 | ridicule | (n) 嘲弄 | | | |
| 11 | 2 | fain | (adv) 欣然 | | | |
| 12 | 2 | account | (n) 描述 | | | |
| 13 | 3 | care | (n) 谨慎 | | | |
| 14 | 3 | render | (vt) 提供 | | | |
| 15 | 4 | course | (n) 进程 | | | |
| 16 | 6 | absolute | (adj) 绝对的 | | | |
| 17 | 6 | essence | (n) 本质 | | | |
| 18 | 9 | perceive | (vt) 感知 | | | |
| 19 | 10 | workmanship | (n) 工艺 | | | |
| 20 | 10 | artificer | (n) 技师 | | | |
| 21 | 10 | contrive | (vt) 发明; 设计 | | | |
| 22 | 11 | of the sort | (ph) 诸如此类的人或事物 | | | |
| 23 | 14 | adapt | (vt) 使适合 | | | |

Choose different texts.

End of the First Part