

总序

习近平总书记在十九大报告中指出：“创新是引领发展的第一动力，是建设现代化经济体系的战略支撑。”因此，要“加强国家创新体系建设，强化战略科技力量”。在人才培养上，“培养造就一大批具有国际水平的战略科技人才、科技领军人才、青年科技人才和高水平创新团队”。

学术英语改革服务于国家宏观的人才培养战略，正在成为最近几年高校英语教学改革热点之一。学术英语课程的设置、开发、构建、实施和推广已成为高校外语课程改革的重要选择。

作为“中国科学院大学研究生教材系列”之一的“果壳学术英语系列教程”着力于学术英语课程的体系化建设，明确学术英语课程之间的层次感，区分基础学术英语能力和更高层次学术英语能力的培养，细化不同类型的学术英语能力，并注重不同类型学术英语能力之间的相互促进。学术英语能力本身是一个十分复杂的体系：从语言使用的角度看，包括学术英语的听、说、读、写等能力；从语言情景的角度看，包括参与学术讨论的能力、撰写学术申请的能力等；从学术思维的角度看，包括批判性思维能力、提出并解决问题的能力、创新思考能力等。学术英语教学应该是系统的、持续的、战略性的工程，唯有系统性地开展学术英语教学，才能更为有效地培养学生的学术英语能力。

“果壳学术英语系列教程”着力于培养有情怀的科学家。学术英语教学不应仅仅止于各项语言技能的传授，还应在提高学术素养、激发学术兴趣、明晰科学伦理意识、注重人文关怀、引发哲学思辨等方面培养具有一定知识广度和思想深度的科技人才。知识广度有助于激发创新性思维，思想深度有助于产生创新性成果。语言教育在充分展示工具性特征的同时，还需兼具开拓崭新视域、融合多维思考、审视固有模式的作用，从而鼓励创造性地提出问题和创造性地解决问题。新时代的新使命呼唤高水平科技人才和科技领军人才，科技人才需要具有国际视野，通晓人类共同关心的普遍问题，展现出不拘于专业领域的知识广度和思想深度，从而具备带领中国科技引领未来世界的能力。

我们认为，学术英语教学应确立人才培养的长期目标，在最初阶段为学生播下学术英语的种子，在接下来的培养过程中持续灌溉，最终助力学生成长成根基扎实的大树，即为国家新时代的新使命做出自己贡献的创新型科技领军人才。

前言

在建设世界科技强国的背景下，研究生英语教学迎来了新的机遇与挑战。这也赋予了研究生英语教学新的使命：培养学生的学术意识与素养，加强学生的思辨能力，提高学生用英语进行学术研究和学术交流的能力，从而提升我国科研人才的核心竞争力。《研究生学术英语读写教程》在这样一个时代背景下应运而生。

《研究生学术英语读写教程 教师用书》与《研究生学术英语读写教程》（学生用书）同为“果壳学术英语系列教程”，遵循“以读促写、读写并重”的教学理念，旨在培养学术英语阅读和学术英语写作能力，以期提高学生学术表达的规范性，强化学术素养和学术意识，为研究生阶段的专业学习和学术研究打好语言基础。《研究生学术英语读写教程 教师用书》旨在方便教师备课和安排教学，把握学生用书的特点，适当拓展学生的知识。

本教程以学科为基础，共包括十个单元，每个单元主题围绕一个学科或专业内容，包括心理学、地学、物理、数学、计算机科学、生物、材料学、化学、管理学和医学十大与理工科研究生专业密切相关的学科内容。每单元课文选材和练习设计既体现了本单元的学科内容，又直接与本单元的学术阅读技能或学术写作技能相关。这两项技能的讲解与练习贯穿每个单元，并且在十个单元的整体编排上循序渐进、环环相扣、前后呼应。

本教程单元结构如下：

一、学术阅读板块（Academic Reading）

- 1.1 背景知识（Supplementary Information）
- 1.2 主题阐释（Theme of Text A）
- 1.3 结构梳理（Organisation of Text A）
- 1.4 重点难点句子翻译（Sentence Translation）
- 1.5 文后练习参考答案（Keys）
- 1.6 延伸阅读（Supplementary Reading）
- 1.7 学术阅读技能拓展及练习参考答案（Academic Reading Skills）

二、学术写作板块（Academic Writing）

- 2.1 背景知识（Supplementary Information）
- 2.2 学术写作技能拓展及练习参考答案（Academic Writing Skills）

本教程希望培养学生学习的自主性、积极性和团队合作精神，建议教师在使用本教程的过程中结合“微课”“翻转课堂”“项目研究教学法”等多种教学模式，鼓励学生多思考，多交流，多合作。

本教程由中国科学院大学教材出版中心资助，提供学习和教学资源，为英语教学提供支持。

鉴于编者水平有限，教程中的不足之处在所难免，敬请广大读者批评指正。

编者

2018年11月

Contents

PBI

| Project-Based Learning | Content-Based Learning |
|--|------------------------------|
| Literature Review | Unit 1 Psychology P1 |
| | Unit 2 Geoscience P16 |
| Critical Thinking | Unit 3 Physics P32 |
| | Unit 4 Mathematics P48 |
| | Unit 5 Computer Science P63 |
| Writing Descriptively | Unit 6 Biology P82 |
| | Unit 7 Materials Science P98 |
| Writing Correctly, Properly, and Logically | Unit 8 Chemistry P116 |
| | Unit 9 Management P137 |
| | Unit 10 Medicine P156 |

| Academic Reading Skills | Academic Writing Skills |
|--|--|
| Predicting Theme and Identifying Patterns and Structures | Paraphrasing |
| Making Inferences | Summarising |
| Determining Differences Between Facts and Opinions | Reporting and Synthesising |
| Evaluating Facts or Evidence | Choosing Effective Evidence to Support a Thesis |
| Evaluating Arguments | Identifying Limitations and Indicating Research Gaps |
| Creating and Using Mental Images | Describing Processes and Procedures |
| Understanding and Analysing Data | Describing Tables and Figures |
| Analysing Unknown Words Through Context | Expressing with Nominalisation |
| Understanding Collocation | Using Hedging Expressions Properly |
| Understanding Ellipsis and Substitution | Creating Cohesion |

→ CBI

Unit 1

Psychology

I doubt, therefore I think; I think, therefore I am.

—— René Descartes

我疑故我思，我思故我在。

—— 勒内·笛卡尔

Academic Reading

1

Supplementary Information



Mini-class

Text A

1. Ubuntu (Para. 1)

It is a concept originated from the southern African region, literally meaning “humanness”, usually being translated as “humanity towards others”. However, it is often used in a more philosophical sense, representing “in a universal bond of sharing that connects all humanity”.

2. René Descartes (Para. 3)

René Descartes (1596–1650) is a creative mathematician, an important scientific thinker, and an original metaphysician. He is a mathematician first, a natural scientist or “natural philosopher” second, and a metaphysician third.

3. bystander effect (Para. 6)

The bystander effect describes a situation where the more people present, the less likely they are to help people in need.

4. cognitive development (Para. 10)

It is a theory proposed by Piaget which concerns the nature and development of human intelligence. The theory studies the nature of knowledge itself and how it is gradually acquired, constructed, and used.

Theme of Text A

This article analyses two contrasting philosophical systems on “selfhood”. One stems from Descartes’ view of “I think, therefore I am”, arguing that a human being is a self-sufficient creature, whose existence relies entirely upon the individual himself/herself, and is detached from the external world; the other features the Ubuntu philosophy which believes in a form of human existence that depends upon interacting with other human beings and the outside world. The author holds the view that the latter is more reasonable and persuasive.

Organisation of Text A

Text A can be divided into four sections.

| Sections | Paragraphs | Main Ideas |
|----------|-------------|---|
| S1 | Paras. 1–2 | According to the Ubuntu philosophy, people acquire “selfhood” through others. |
| S2 | Paras. 3–4 | Descartes held a disconcerting notion on “selfhood” and he believed in the self-sufficiency of human existence. |
| S3 | Paras. 5–7 | Some researchers, influenced by this Cartesian philosophy, agree that selfhood can be detached from the social context, which affects the way how they conduct their studies, for instance, how they consider the experimental design of memory study or illustrate “bystander effect”. |
| S4 | Paras. 8–12 | Questions are raised by the author – Does selfhood come from within or without? And how can these two conflicting views be reconciled? Finally, based on the “child” and “prisoner” examples, the author reiterates his view that humans acquire selfhood via others. |

Sentence Translation

1. Even my most private and personal reflections are entangled with the perspectives and voices of different people, be it those who agree with me, those who criticise, or those who praise me. (Para. 2)

即使是最私密、最个人的思绪，也与不同人的观点和声音纠缠在一起，无论是那些赞同我的人，还是那些批评我的人，抑或是那些赞美我的人。

2. The 17th-century French philosopher believed that a human being was essentially self-contained and self-sufficient; an inherently rational, mind-bound subject, who ought to encounter the world outside her head with skepticism. (Para. 3)

这位 17 世纪的法国哲学家认为，人类本质上是自给自足的；生而理性、受其思想约束的个体，应该以怀疑的态度面对他头脑之外的世界。

3. He wanted to find a stable point of view from which to look on the world without relying on God-decreed wisdoms; a place from which he could discern the permanent structures beneath the changeable phenomena of nature. But Descartes believed that there was a trade-off between certainty and a kind of social, worldly richness. (Para. 4)

他想要找到一种稳定的观点，而非依靠上帝赐予的智慧，来观察这个世界；由此，他可以透过自然界中变幻莫测的现象分辨出永久性的结构。但笛卡尔认为，稳定性和来自社会的、世俗的多样性之间存在权衡关系。

4. But even then, the investigation often presumes that a collective of Cartesian subjects are the real focus of the enquiry, not selves that co-evolve with others over time. (Para. 6)

但即便如此，其调查也常常做出这样的假设：探究的真正焦点是笛卡尔式议题的集合，而非随时间推移与他人共同进化的自我。

5. Genovese's murder had to be seen against a backdrop in which violence against women was not taken seriously, Cherry said, and in which people were reluctant to step into what might have been a domestic dispute. (Para. 7)

谢里认为，吉诺维斯谋杀案反映了当时的社会并不关注女性遭受的暴力困扰，人们也不愿介入一桩可能是家庭纠纷的暴力袭击中。

4 Unit 1

-
6. Think of that luminous moment when a poet captures something you'd felt but had never articulated; or when you'd struggled to summarise your thoughts, but they crystallised in conversation with a friend. (Para. 8)

想一想那些醍醐灌顶的时刻：诗人捕捉到你所感受到的却从未表达出来的东西；或者在与朋友交谈时你灵光一现，信口而出你曾难以总结、难以表达的一些想法。

-
7. By contrast, “dialogical” theories, brought to life in experiments such as Lisa Freund’s “doll house study” from 1990, emphasise interactions between the child and the adult who can provide “scaffolding” for how she understands the world. (Para. 10)

相比之下，从1990年开始，对话理论才在莉萨·弗罗因德的“玩偶屋研究”等一系列实验中得以呈现。该理论强调孩子和成年人之间的互动，认为成年人可以为孩子们了解世界提供“脚手架”。

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8. Deprived of contact and interaction – the external perspective needed to consummate and sustain a coherent self-image – a person risks disappearing into non-existence. (Para. 11)

如果失去联系与交流这种完善和维持清晰自我形象的外部因素，人会面临失去自我的危险。

-
9. But for the most part, scientific psychology is only too willing to adopt individualistic Cartesian assumptions that cut away the webbing that ties the self to others. (Para. 12)

但是在大多数情况下，科学意义上的心理学非常乐意采纳个人色彩浓厚的、切断了自我与他人相互联系的笛卡尔式假说。

Keys

Task 1

- | | | | |
|------------|---------------|--------------|-------------|
| 1 purport | 2 wipe away | 3 contextual | 4 contour |
| 5 solitary | 6 scaffolding | 7 axiomatic | 8 inscribed |

Task 2

C

Task 3

Paras. 3–4 have explained that Descartes held a disconcerting notion on “selfhood” and he believed in the self-sufficiency of human existence.

Para. 3 briefly introduces Descartes’ notion on “selfhood”, and then in Para. 4, the author contrasts one’s own *cogito* and other people/things to illustrate Descartes’ philosophy in detail.

Supplementary Reading

Spoiler Alert: Most People Want to Remain in the Dark, Finds Study

Nicolaks Davis

Whether anticipating good news or bad, it turns out that most people would prefer to remain in the dark than sneak a glimpse of the future.

According to research involving more than 2,000 participants, more than 85% would not want to know if their marriage would end in divorce, while a similar proportion wanted to remain ignorant of when they would die. Even for happy events, ignorance was often prized, be it in the case of Christmas gifts, or the upshot of a football match.

Published in the journal *Psychological Review*, the research involved two face-to-face studies, one in Spain, the other in Germany.

In each, just over 1,000 participants were asked a series of hypothetical questions, five around negative events, such as whether they would want to know when they would die and whether their recent marriage would last, as well as five questions around positive events, such as whether they’d want to know the sex of an unborn baby or the outcome of a recorded football match.

The results of the German study revealed that just under 88% of participants said they did not want to know when they would die, almost 87% said they would not want to know if their marriage would fail, and almost 90% did not want to know when their partner would die.

By contrast just over 59% said they wouldn’t want to know in advance what they were getting for Christmas, 57% did not want to know if there was life after death, while almost 77% would not want someone to reveal the outcome of a football match before they had seen it.

Knowing the sex of a baby, however, was only rejected by just over 40% of participants.

Only 1% of participants wanted to catch a glimpse of the future for all issues explored.

When the same study was carried out in Spain, the authors add, the results were very similar, although Spaniards were less interested in keeping the sex of an unborn baby a surprise, and Germans less concerned about maintaining suspense over Christmas presents.

To unpick factors underpinning the desire to remain in the dark, the team asked participants a variety of questions designed to probe their attitudes towards risk. The results suggest that those who prefer to remain ignorant are more risk averse and more likely to buy insurance. Age also came into the mix, with older individuals less keen on knowing whether there was an afterlife, or the time and cause of their own or their partner's death.

The findings, the authors say, support the idea that both avoiding negative emotions and maintaining an element of surprise are rooted in the common goal of avoiding the feeling of regret. However, they note that those who attend religious services are more likely to want to know what the future holds.

“There are other values besides knowing everything in advance and they are largely emotional values – so to avoid the negative feelings that may arise from foreknowledge like Cassandra, or to maintain surprise, and joy in expectations,” said Gigerenzer, citing the Greek myth of Cassandra who was cursed by Apollo to see the future accurately but not to be able to persuade others to heed her warnings.

David Dunning, a professor of psychology at Cornell University who was not involved in the research, said the idea is interesting but further study is needed to probe the idea that anticipated regret is behind the findings.

“People are notorious for not being able to predict how they would respond in situations involving real emotion, and the scenarios people are presented in the studies are merely hypothetical, e.g. it's not a real possibility yet to know whether there is life after death,” he said. “I'd like to see more studies involving people, for example, who really are pregnant to see what percentage don't want to know their baby's sex.”

A key area to explore is whether knowledge can be harnessed for action. “Past work on willful ignorance about medical diseases focus on the issue of control,” said Dunning. “If people can control a disease, they want to know if they have it more than if they feel they cannot control the outcome of the disease, such as in Huntington's.”

But Gigerenzer says the new research should be a warning to burgeoning attempts to harness technology to predict causes and times of death. “They overlook the large proportion of the public who would not want to see these results,” he said.

Academic Reading Skills

Predicting Theme and Identifying Patterns and Structures

Apart from chronological sequence, cause and effect, comparison and contrast, classification, other patterns of organisation are also commonly featured in both general and academic writings. Here are some of them.

Spatial sequence

This is frequently employed in science writings. For instance, a geologist would introduce the structure of the earth according to its spatial arrangements – start with the crust, then move on to the mantle, and finally to the molten core. In the section of methods, many academic writers will introduce their study sites using the spatial sequence.

Order of importance

This is mostly used for listings. An order of descending importance is more frequently adopted, given that it fits more closely with the “first things first” expectation of the average readers.

Process writing

Process writing refers to writing that features a process, which could be one of an experiment, of manufacturing a product, or of setting up a software. It is especially relevant for science experiments, whose processes need to be laid out in an extremely clear, concise, and scientifically rigorous manner, sometimes in the form of rigid bullet points.

Keys

Task 1

D

Task 2

Para.1: C

Para. 2: H

Para. 3: L

Para. 4: D

Para. 5: A

Para. 6: B

Para. 7: F

Para. 8: I

Para. 9: J

Para. 10: E

Para. 11: K

Para. 12: G

Task 3

This passage has used a combination of different patterns: problem & solution, cause & effect, exemplification, classification, as well as comparison & contrast.

讲解：通过标注文中表示逻辑关系的关联词等词汇来分析文章的结构。本文灵活运用了各种组织方式和结构，从而使得信息的呈现更加有条理、有逻辑。

Black Lies

Deception is so common that not only humans, but even animals engage in it. **For instance**, while apes often simply take food from weaker counterparts, they have also been shown to employ deception. When they can steal food by reaching through opaque instead of see-through tunnels, they often reach for the opaque tunnels so that their competitors cannot detect their actions. These cases of deception are exploitative, as the deceiving apes strategically mislead their counterparts for personal benefits (e.g. tasty food). But **what determines whether or not people (and apes) engage in such black lies?**

An obvious factor that influences whether people deceive is whether they think that they will get caught. **For example**, low chances of being detected increase deception of taxpayers. Such behaviour is rational, as being detected reduces the gain one can expect. Imagine the used car dealer who considers lying about a car's history of accidents to charge a higher price for the car (i.e. the gain). If the lie is easily detected (e.g. if the car has bumps and scratches), the likelihood to sell the car decreases. **Consequently**, the salesman will be honest.

A common assumption is that, rationally, deceiving for higher, rather than lower gains is more beneficial. Surprisingly however, this is not what psychological research finds. People seem to cheat equally often when both high and low gains are at play. Research suggests that cheating does not only depend on materialistic gains, but also on psychological costs that deception inflicts on the deceiver. **On the one hand**, deceiving for larger gains is more attractive than deceiving for smaller gains. **On the other hand**, deceiving for larger gains carries larger psychological costs. Psychological costs – the internal discomfort that people experience when doing something against their beliefs or values – depend on the magnitude of a lie. In one experiment,

participants were paid according to the outcome they secretly rolled with a die. When asked about their outcome, they were more likely to commit “smaller” deceptions (i.e. reporting 5 instead of 4) than “bigger” ones (reporting 6 instead of 1). **Thus**, it seems that the psychological costs of telling a lie increase with the magnitude of the lie.

The psychological costs of a lie are closely linked to what one thinks about oneself. In general, people want to think that they are honest. Telling big lies and deceiving others is incompatible with this image. Telling somewhat smaller lies that are “almost true” is easier to reconcile with a positive image of oneself. **Because** generating a plausible justification for one’s lie (e.g. “I almost rolled a 6 with my die”) is often a crucial part of deception, limiting people’s ability to come up with explanations for their lying increases honesty. **Furthermore**, measures that highlight that one wants to be a good person increase subsequent honesty. **For example**, signing on top of a self-report form (e.g. tax returns) increases the attention to the moral self. **Consequently**, people cheat less when completing the form. In other words, the human desire to view oneself as a moral person can be utilised to deter deception.

Taken together, people try to exploit others with black lies. Whether people engage in black lies depends on whether something can be gained through the deception, whether they will get caught, and whether psychological costs occur.

Yet, there is another important factor: the relationship with the deceived. Research shows that cheating socially distant others is more acceptable. However, people more frequently deceive close others. **A possible explanation is that** there is often more to gain from deceiving close others, and more to lose from revealing unpleasant truths. However, we suggest that this is not the only reason. Deception is not only driven by exploitative motives but can also result from affiliative motives. **Therefore**, we next discuss cases of deception that result from the motivation to forge a positive relationship with the deceived or to please the deceived.

Task 4

1 C

2 A

3 B

2

Academic Writing

Text B

Supplementary Information

1. Scotland Yard (Para. 2)

Scotland Yard (officially New Scotland Yard) is a metonym for the headquarters of the Metropolitan Police Service (MPS), the territorial police force responsible for policing most of London.

2. super-recogniser (Para. 2)

A person who never forgets a face. The opposite of a “super-recogniser” is someone who’s “face blind”.

3. Notting Hill Carnival (Para. 2)

It is London’s biggest street party which fills the streets of West London with Caribbean colours, music and flavours.

选材注解：本文节选自美国心理学协会网站（www.apa.org）上的一篇文章，该论文主要分析了面孔识别能力的个体差异对于执法、刑事司法及国家安全的影响。具体而言，本文聚焦于面孔识别这一认知技能在很多重要职业中的应用及其潜在的问题，所涉及人士包括警察、海关人员、法庭上的目击证人、军人等。文章指出，人们面孔识别的能力存在非常大的个体差异，这些个体差异影响了一些重要职业的工作。针对这些应用与问题，本文还提供了一些解决方案，比如寻找类似伦敦警方“超级面孔识别者”这样的范式，从而为员工提供指导，抑或是建议雇主在招聘或分配职责时将面孔识别作为考量的因素等。

Academic Writing Skills

Paraphrasing

As it's widely acknowledged, there are mainly three approaches (namely, quoting, paraphrasing, and summarising) that can help a writer avoid accusations of plagiarism. The following is an introduction of common types of plagiarism.

Verbatim plagiarism

“Verbatim” means “word for word”, so to plagiarise verbatim means to plagiarise every single word in exactly the same order as it appears in the original text. This is the most blatant form of plagiarism, and the easiest to spot.

Structural plagiarism

This approach retains the structure of the original text, and merely changes the words and the phrases. For example,

Original: The punishment was originally designed to encourage introspection: to turn the prisoner's thoughts inward, to prompt her to reflect on her crimes, and to eventually help her return to society as a morally cleansed citizen.

Structural plagiarism: The penalty was initially imposed to instigate reflection on the prisoner's deeds by channeling the thoughts of the prisoner to her inner self, and urging her to think about the crimes she committed, thereby ultimately facilitating her comeback to society as a new citizen with correct moral principles.

Patchwork plagiarism

This is less blatant and more discreet compared with the first two forms of plagiarism. It refers to plagiarism that copies fragmentary information from several sources of text, and pieces them up in the paraphrase. For example,

Source 1: The dictator game is a popular experimental instrument in psychology and economics, a derivative of the ultimatum game. In the dictator game, the first player, “the dictator”, determines how to split an endowment (such as a cash prize) between himself and the second player. The dictator's action space is complete and therefore is at his own will to determine the endowment, which means that the recipient has no influence over the outcome of the game.

Source 2: The dictator game (DG) is a variant of the ultimatum game (UG) in which the respondent has no chance to reject the offer and thus all of the proposer's offers are

“accepted”.

Patchwork plagiarism: *The dictator game (DG) is a widely-known psychological and economics experiment and a variant of the ultimatum game (UG), in which the dictator is at his own will to decide on how a financial offer is split and the respondent has no say over the result of the game. (The paraphrase selects information from the two sources above, jumbles it all up into a mishmash of borrowed ideas and phrases, while keeping the original syntax largely intact.)*

Self-plagiarism

This is best illustrated through an example – Jack has written an essay on euthanasia for his academic writing course, and for his public speech class, he delivers the same essay to his classmates without crediting the source. This counts as self-plagiarism, i.e. using material developed for a course to meet the requirements of another course. If one’s own material is to be used for another purpose, consent needs to be obtained from the instructors involved in the relevant courses.

Keys

Task 1

- 1 The ability to recognise faces can be considered as a factor for employment (like the London’s super-recognisers) and employers can assign different tasks to people with different face recognition abilities.
- 2 In face recognition, students are no worse than the passport officers who have inspected passport photos for many years, according to this research.
- 3 Because of linguistic differences, it’s necessary to have a good face recognition ability for soldiers when they communicate with local residents face to face.

Task 2

Paraphrase 1 is better than Paraphrase 2. The reasons are as follows:

First, structure-wise, Paraphrase 1 is rather different from the original text. Specifically, the causality between “cultural dependence” and “resource-sharing mechanisms” is reversed; the cause-effect relationship between Lamelara’s cultural norms and their typically higher offers is also flipped on its head; finally, the evidence and the conclusion are swapped in terms of the positions where they are placed in the text. In so doing,

Paraphrase 1 avoids a structural arrangement that resembles that of the original text so much that the concern of plagiarism may be raised. By contrast, Paraphrase 2 fails to rearrange the original syntax, which is a gross mistake for a paraphrase.

Second, language-wise, Paraphrase 1 has also gone through a facelift compared with the original text, while Paraphrase 2 changes the language very little, and thus teems with risks of plagiarism accusations. For example, “have mechanisms in place” becomes “put in place arrangements” in Paraphrase 1, and is mostly kept as “have measures in place” in Paraphrase 2; “they are culturally dependent on large-scale cooperation (to hunt whales)” is changed to “their culture dictates cooperation among a wide community of people for activities like whale-hunting” (note especially from adverb to noun, or from verb to noun, and other similar changes), but much of the original language is retained in Paraphrase 2 as “they rely on massive cooperation to hunt whales”, not to mention its lack of the key word “culture” or “cultural”.

In conclusion, based on the two critical standards of paraphrase – rearrangement in syntax and in wording, Paraphrase 1 is a better version.

Task 3

Suggested paraphrase:

Quite often, intelligence quotient (IQ) is regarded as an indicator of various things, such as outstanding educational achievements, high salary, whereas still some other studies show just the opposite: A higher IQ, especially in language capability, may be related to some mental and immune system abnormality. (Karpinski et al, 2018)

Task 4

Suggested paraphrase for Paragraph 1:

We can be easily overwhelmed by negative feelings like disappointment, frustration, anger and fear in all relationships. Worse, dissatisfaction generates frustration, and frustration leads to termination of relationship. However, this cycle can be broken by vision, which informs action-planning and facilitates production of positive emotions. Therefore, visioning is important.

Tips:

Reverse the “conclusion + evidence” structure; specifically, the conclusion is rearranged and placed in the end.

Change the original syntax, and there are various ways to do this. For example,

a longer sentence – “Visioning is important especially in the difficult times”, is changed to a short one – “Therefore, visioning is important”; an attributive clause – “which can even prompt us ...” is reconstituted into a complete sentence – “frustration leads to termination of relationship”.

Consolidate and summarise information. The third sentence in the original text denotes a sequence of events in an order of ascending undesirability, which is consolidated and summarised into a more concise structure that is semantically similar, albeit not identical – “Worse, dissatisfaction generates frustration, and frustration leads to termination of relationship”.

Suggested paraphrase for Paragraph 2:

There is wide consensus in the scientific community that psychometric tests can be used to measure intelligence, which typically encompasses abilities to solve problems, learn languages and arrange space. However, multiple questions revolve around scientists’ efforts to analyse human intelligence, regarding correlations between IQ and success, and between genetics and environment in terms of how these two factors contribute to sharp brains, and regarding the rise in average IQ in the 20th century.

Tips:

Structurally, this one is tricky, as there is no causality or “conclusion + evidence” structure to reverse. When dissected, this text yields a “context + quasi-definition + statement + problem” structure. The “context” (the first sentence) can be dispensed with in the paraphrase, as it merely gives two measurable indicators as segues to the key point of the text, i.e. “intelligence”. The “quasi-definition” (the second sentence) and the “statement” (the third sentence) can swap places. This rearrangement is in line with common practice where a statement is followed by a definition (or a quasi-definition) of a keyword thereof. Finally, the “statement” and the “problem” (the last sentence) should remain where they are, because a problem of something generally cannot precede the statement of this particularly thing itself, while the vice-versa tends to be the more cognitively reasonable sequence.

Semantically, information is consolidated. For instance, the last sentence enumerates three problems, which can all be expressed more succinctly – “correlations between IQ and success, between genetics and environment in terms of how these two factors contribute to sharp brains, and regarding the rise in average IQ during the 20th century”.

Suggested paraphrase for Paragraph 3:

Human beings sometimes act in ways that compromise their own financial well-being. In an economist's eyes, this does not seem like the behaviour of a rational individual. An explanation could be human beings' concerns for both their own and others' interests. To study psychological responses to economic incentives, psychologists use the ultimatum game, the dictator game and other experiments.

Tips:

Structurally, the text starts with a generalisation, and then backs it up with an example. An alternative to this deductive approach is to reverse the first two sentences, placing the "individual" before the "general".

Language-wise, most changes are small ones – "from an economic perspective" becomes "in an economist's eyes"; "that actually decreases their absolute wealth" becomes "that compromises their own financial well-being", and "human reactions to reward distributions" is reworded as an objective, i.e. "to study psychological responses to economic incentives", thereby exposing the logical connection between the last sentence and the previous ones.

Unit 2 Geoscience

Our imagination is struck only by what is great; but the lover of natural philosophy should reflect equally on little things.

— Alexander von Humboldt

唯有重要之事才能激发想象力；但是自然哲学爱好者也应当仔细考量细小之事。

—— 亚历山大·冯·洪堡

1 Academic Reading

Text A Supplementary Information



Mini-class

1. pyroclastic flows (Para. 3)

It is a rapid flow of hot gas and volcanic materials (also known as tephra), which reaches a speed up to 700 kilometres per hour. The temperature of the gas can reach about 1,000°C.

2. Tolkien's Mordor (Para. 3)

Mordor is a black, volcanic plain that appeared in J. R. R. Tolkien's fictional world. It is located in the southeast of Middle-earth to the east of Ithilien, Gondor and the great river Anduin. Mordor was chosen by Sauron to be his territory because of the mountain ranges surrounding on three sides, creating a natural fortress protecting against his enemies.

3. 1816, the so-called "year without a summer", was the second coldest (Para. 5)

The "year without a summer" was a special disaster in the 19th century, with strange changes in the weather in Europe and North America in 1816, leading to widespread

crop failures and even famine.

4. Icelandic eruption (Para. 8)

Although the eruption was relatively small, it caused significant disruption to air traffic in western and northern Europe during the first six days of April 2010. About 20 countries have closed their airspace to commercial aircraft, affecting about 10 million passengers.

5. Toba eruption (Para. 8)

It refers to a supervolcanic eruption which occurred about 75,000 years ago at Lake Toba (Sumatra, Indonesia). This is one of the largest known volcanic eruptions on earth. According to Toba catastrophe theory, the event led to a global volcanic winter of 6–10 years and possibly a cooling episode that lasts about 1,000 years.

6. Ice Age (Para. 10)

It is a period of prolonged cooling of the earth's surface and atmosphere, leading to the emergence or expansion of continental and polar ice caps and alpine glaciers.

7. the next arrival of Vulcan's shock troops (Para. 11)

Vulcan is the god of fire. In Roman religion and myth, he is in charge of the fire of volcanoes, metalworking and forging.

Theme of Text A

After describing the Tambora volcano eruption in 1815 and its consequences, this article discusses some possible things we human beings can do now to survive the next Tambora disaster in the future.

Organisation of Text A

Text A can be divided into three sections.

| Sections | Paragraphs | Main Ideas |
|----------|-------------|---|
| S1 | Paras. 1–6 | Negative impact of Tambora’s eruption on the environment, climate, agriculture, military, social stability, health care, and livelihoods. |
| S2 | Paras. 7–8 | A question is raised – how to cope in case of a similar eruption today? Two opposing views presented – some believe that globalisation will facilitate our navigating the potential crisis; others argue that globalisation will do more harm than good: stagnant agriculture, rocketing produce prices, and countries scrambling for food, leading to an eventual collapse of market order. All these will happen despite the advanced agricultural technologies we have today. |
| S3 | Paras. 9–11 | Some practical suggestions are put forward on how to survive the next Tambora disaster. (1) Formulate detailed emergency plans that ensure an adequate food supply before the potential crisis comes to an end; (2) Conduct research (for example, research on climate warming) to help predict volcanic eruptions; (3) Pay more attention to the volcanoes that have remained quiet for too long, as they have a higher probability of eruption. |

Sentence Translation

1. According to the lieutenant governor, Thomas Stamford (later Sir Stamford) Bingley Raffles, to whom volcanologists are indebted for his accounts of the eruption, the detonation was so loud that it was mistaken across Java for cannon fire, causing consternation among the British troops, which had ousted the Dutch and French forces just a few years earlier. (Para. 2)

因记录了火山喷发事件而令火山学家们感激不已的副州长托马斯·斯坦福德·宾利·莱佛士（后来的斯坦福德爵士）表示，此次火山爆发声音之巨大，以至被误认为是爪哇岛爆发战争时发射的加农大炮声，令几年前曾驱赶荷兰和法国军队的英国士兵们惊慌失措。

2. After five days of relative calm, the climactic phase of the eruption began with a colossal explosion that launched a towering column of ash to the edge of space. For four or five days, utter blackness reigned across the island as the hurricane blasts of hot ash and scalding gas – known as pyroclastic flows – scoured the flanks of the volcano of everything and everyone, and drifts of ash metres thick entombed what few signs of life remained. (Para. 3)

经过相对平静的五天之后，一声巨响宣告了火山爆发的高潮，喷发的火山灰烬柱高耸入云，直逼天际。在接下来的四五天里，整个岛屿都笼罩在一片漆黑之中，炽热的火山灰和滚烫的气体——即火山碎屑流，像飓风一样吞噬了火山翼侧的一切事物，几米厚的火山灰掩盖之处死寂沉沉，几乎没有任何生命迹象。

3. In addition to the ash, an estimated 200 million tonnes of microscopic sulphur particles pumped into the stratosphere, spread outwards from Sumbawa to form a giant aerosol veil that enclosed the planet and acted as a block to incoming sunlight. (Para. 4)

除了火山灰，估计有 2 亿吨微小的硫黄颗粒注入平流层，从松巴哇向外扩散，形成一个巨大的气溶胶幕，将整个地球包裹起来，成为阻挡阳光照射的屏障。

4. Such was the degree of breakdown of food supply that economic historian John Post has called the episode “the last, great subsistence crisis in the Western world”. (Para. 6)

（因火山爆发而引起的）食物短缺问题十分严重，经济历史学家约翰·波斯特称这一时期是“西方世界最近一次严重的生存危机”。

-
5. The very interconnectedness of world markets may, however, make things worse – the collapse of food production across Europe, parts of North America and perhaps elsewhere, could result in global shortages which in turn would drive a dramatic rise in the cost of food commodities. (Para. 7)

然而，世界市场间的这一密切联系可能会令事态恶化——欧洲、北美部分地区以及其他地区的产粮危机可能带来全球粮食短缺，进而可能导致食品的成本大幅上涨。

-
6. At the same time, the intense worldwide competition for food supplies, scarce as a consequence of the harvest failures, could drastically reduce the range of products available in the UK, interfere with supply and distribution, and bring about a collapse of the supermarkets' ultra-sensitive, time-critical, stock-control systems, leaving their shelves increasingly depleted. (Para. 7)

与此同时，由荒年而致的粮食短缺问题也会造成激烈的全球食品竞争，可能会大大减少英国可用的农产品，干扰供应和分销，导致很多超市异常灵敏的、时间要求严格的库存管理系统全面崩塌，超市的食品货架也会变得越来越空旷。

-
7. On top of this, harvest disruption in response to volcano weather might extend far beyond Europe, and might – in ensuing decades – be exacerbated by the consequence of rampant climate change. (Para. 8)

此外，火山天气造成的庄稼歉收状况可能远远超出欧洲范围，并且可能在随后的几十年中由于剧烈的气候变化而加剧。

-
8. While we can't stop the next Tambora, nor handle its potential impacts on the climate and the harvest, we can ensure that contingency plans are in place to keep everyone adequately fed until the sulphur veil dissipates and temperatures return to normal. (Para. 9)

虽然我们不能阻止下一个坦博拉，也不能控制它对气候和庄稼的潜在影响，但是我们可以实施应急计划，确保每个人都能吃饱，直到硫黄消散，温度恢复正常。

-
9. Looking back at previous episodes of dramatic climate warming provides us with plenty of robust evidence for a vigorous volcanic response, most notably as our world heated up rapidly at the end of the last Ice Age. (Para. 10)

以往气候急剧变暖的历史时期，最为显著的是在地球气温迅速上升的上个冰河世纪末期，为我们提供了大量有力的证据，证明在该时期发生过剧烈的火山反应。

10. That rule of thumb is borne out by the fact that fully half of the biggest eruptions since 1800 originated at volcanoes that had previously been dormant throughout history. (Para. 11)

自 1800 年以来，半数最为猛烈的火山喷发源自于历史上一直处于休眠状态的火山。这一事实证实了该经验法则。

Keys

Task 1

1 C 2 E 3 I 4 J 5 H
6 G 7 D 8 F 9 B 10 A

Task 2

C

Task 3

1. According to climatic records, the second coldest year in the northern part of the earth in the last 600 years was 1816, which thus earns its name “year without a summer”.
2. Nevertheless, Tambora eruption resulted in serious consequences like lack of food, illness and death in less developed European countries.
3. Rising magma is a warning sign of volcanic eruption, which stimulates earthquake swarms and inflates the earth surface.
4. Volcanoes which had been quiet for long caused 50% of the greatest eruptions since 1800, and this fact highlighted the unofficial axiom.

Notes: When paraphrasing, you have to (1) modify the structure of original sentences and (2) avoid word-by-word repetition.

Supplementary Reading

Geologists Reveal How Violent “Brexit 1.0” Separated Britain from Europe

Nicola Davis

Once attached to the European mainland, a new study shows how catastrophic flooding led to Britain becoming an island about 125,000 years ago.

Brexit might be causing political chaos but whatever Theresa May has up her sleeve it is unlikely to be as catastrophic as the first separation of Britain from the continent. A new study has revealed how giant waterfalls and, later, a megaflood severed our connection to France, resulting in the creation of island Britain and the watery moat of the English Channel.

“A chance series of geological events set the stage for Britain becoming an island,” said Sanjeev Gupta, professor of earth science at Imperial College London and co-author of the research. “If it weren’t for these events, in a sense the history of Britain would have been completely different,” he added, pointing out that if the ridge had never been breached, Britain would have remained attached to northern France with easy access to the rest of Europe.

The research, published in the journal *Nature Communications* by Gupta and colleagues in the UK, France and Belgium, draws together a number of long-held theories and previous studies of the Channel’s seafloor with new, high resolution mapping of the landscape under the sea of the strait of Dover to unravel how Britain became separated from France. “It really tells us about the details of how this breaching happened, which we’d only basically guessed at previously,” said Gupta.

The result is a dramatic tale. About 450,000 years ago Britain was connected to France by a long, rocky, chalk ridge, approximately 32km long, behind which was a great lake, likely dotted with icebergs, with ice stretching across what is now the North Sea. “It would have been a dramatic landscape,” said Gupta. The Channel itself would have been dry, except for small rivers, while the surrounding land would have been forbidding. “It would have been cold, grey, rocky, with very, very sparse vegetation, like Svalbard or Siberia,” he said.

But, whether as a result of melting of the ice sheet or some other reason, it seems this dam-like ridge began to overflow.

“We find these huge holes basically, depressions, eroded into the bedrock in the Dover strait, and we believe the best explanation for these is that these were giant plunge pools – basically formed by waterfalls from the lake water plunging over [the ridge],” said Gupta.

The sediment-filled holes are enormous, he added, reaching up to 140 metres in depth and up to 4km in diameter, and exist in a line running across the seafloor. But while they were first discovered decades ago, leading to a change in course for plans for the Channel tunnel, the authors say the new study is the first clear evidence that they are the remains of huge plunge pools.

Erosion of the ridge by the water, the team add, at least partially ruptured the dam-like structure, releasing pent-up lake water which possibly carved some of the valleys previously found in the centre of the Channel. But there was more to come.

Analysis of the new data has revealed details of a huge valley, etched into the seafloor, running from behind the location of the former rock ridge into the Channel, cutting across the fossil plunge pools and connecting with the valleys in the centre of the Channel. That, says Gupta, suggests it was formed by catastrophic flooding, possibly sometime about 160,000 years ago, during another glacial period. “We think this is actually coming from lakes further upstream,” he said, adding that the megaflood probably also gouged the centre of the Channel.

Together, said Gupta, the two stages completely opened up the Dover strait, although Britain probably only fully became an island about 125,000 years ago, after sea level rises linked to a warmer climate. “You could say it was a violent beginning to Brexit 1.0,” he said.

Academic Reading Skills

Making Inferences

Language learning strategies, which consist of metacognitive, cognitive, and socio-affective strategies, are used by L2 learners consciously and deliberately to compensate for unknown information in the process of acquiring a foreign language.

Metacognitive strategies are self-regulatory strategies in which learners understand how they think and learn. Learners use metacognitive strategies to plan, monitor, and evaluate their learning process. Learners can use cognitive strategies to manipulate task materials by themselves, completing different tasks. Socio-affective strategies are used by students to interact with their teachers and classmates to solve problems.

Inference is a mental process which enables readers to obtain more implicit information based on specific evidence or reasoning. Making inferences belongs to cognitive strategies. Learners can use available information to guess the meanings or usage of unknown or unfamiliar information, predict outcomes and to compensate missing information in a language task. Context both at the sentence and discourse levels can be utilised by learners to make inferences.

Learners of English at different proficiency levels use learning strategies, but differences exist in how they use the strategies. Factors, such as target language, proficiency level, knowledge about self, gender, motivation, learning style, career orientation, teaching methodology and task requirement can affect how learners use learning strategies. When teaching students how to make inferences, language tutorials need to take the above-mentioned factors into consideration.

Although no mathematic formula or specific procedures can be followed to make inferences, previous scholars still conclude several skills involved in the process of making inferences.

Quick accessibility of background knowledge

The role of background knowledge in making inferences is significant, but the availability of background knowledge cannot stimulate the process of making inferences. The accessibility of background knowledge is crucial for making inferences. In other words, readers need to retrieve and utilise their background knowledge to make inferences. Background knowledge should not be confined to readers' life experience and all previous knowledge. How a reader understands the context of the current text should also be regarded as background knowledge.

Word-level knowledge

Vocabulary initiates inferencing. Comprehension of content words and the combinations of content words is important for making inferences. Understanding every meaning group consisting of content words accurately may facilitate the process of making inferences.

Understanding writers

The background knowledge of readers should be the same as that of writers. If they come from different cultural backgrounds, readers are more likely to make incorrect inferences. It is common that readers and writers have huge differences, such as different educational backgrounds, family backgrounds, religious beliefs, and so forth. But readers can use their word-level knowledge, background knowledge, and the context of the current passage to understand the intentions of writers so as to make correct and reasonable inferences.

Keys

Task 1

1 A

Key sentence: *But the consequences were not confined to this Indonesian backwater.*
(Para. 4)

2 C

Key sentence: *While the less well-off could be priced out of purchasing even staple foodstuffs, panic buying by those who can afford it could quickly empty the stores.* (Para. 7)

3 B

Key sentence: *Looking back at previous episodes of dramatic climate warming provides us with plenty of robust evidence for a vigorous volcanic response, most notably as our world heated up rapidly at the end of the last Ice Age.*
(Para. 10)

4 C

Key sentence: *While there are too many candidates to keep a serious eye on, the numbers can be narrowed down by focusing on those that have been recently “restless”; perhaps best regarded as the volcanologists’ term for “bubbling under”.*
(Para. 11)

Task 2

Reading material 1: B

Key sentence: *About 450,000 years ago Britain was connected to France by a long, rocky, chalk ridge, ...*

选材注解：约 45 万年前，英国曾与欧洲大陆由石灰石山脊相连。这一山脊类似一座巨大的堤坝挡在冰川湖前，研究人员认为在历史上的某些时刻，冰川湖的水溢出，漫过了该山脊，最终导致这个堤坝垮塌，英国本岛脱离欧洲大陆。

Reading material 2: C

Key sentence: *In addition to the satellite calibration error, his analysis also takes into account other factors that have influenced sea-level rise in the last several decades ...*

选材注解：由于全球气候变暖，海平面上升速度在加快。本段谈到的研究团队计算出海平面上升速度从 1993 年的每年 1.8 毫米加速到了如今的每年 3.9 毫米。同时他们还发现位于菲律宾的皮纳图博火山爆发和厄尔尼诺现象都加剧了海平面的上升。

Reading material 3: B

Key sentence: *Then, using data from previous studies on how temperature and rainfall affect several economic factors – including crop yields, crime rates and energy expenditures – SEAGLAS predicted how the economy of each of the 3,143 counties in the United States would fare.*

选材注解：研究人员开发出了一种名为 SEAGLAS 的电脑程序，可以预测出从现在开始直到 2100 年的美国气候。同时，基于之前降雨和温度对美国各经济指数造成的影响，该程序可预测美国各县未来的经济情况。

Academic Writing

Supplementary Information

1. hot mantle (Para. 1)

The mantle is the inner layer of terrestrial planets and other rocky planets. For a mantle to form, the planetary body must be large enough to undergo density-induced planetary differentiation. The mantle is on the bottom of the planet's core and on the top of the earth's crust.

2. lava (Para. 1)

It is hot liquid rock that flows from a volcano.

3. Archaean eon (Para. 1)

The Archaean eon (/ɑːr'kiːən/ /'iːən/, also spelled Archean aeon) is a geologic eon that followed the Hadean Eon and preceded the Proterozoic Eon. During the Archaean eon, the earth's crust had cooled enough to form continents.

4. Costa Rica (Para. 3)

It is a country located in Central America that borders Nicaragua to the north, Panama to the southeast, the Pacific Ocean to the west, the Caribbean Sea to the east and Cocos Island to the south. It has a population of approximately 4.9 million and stretches across 51,100 square kilometres.

选材注解: Text B 选自一篇地球动力学论文的引言部分, 该部分综述了热地幔上涌活动。地球在太古代时期的地幔温度高。在该时期内形成了一种独特类型的火成岩: 科马提岩。它由高温喷发的岩浆组成, 冷却后生长出长长的针状橄榄石晶体。地球历史上, 近期科马提岩的罕见喷发被认为是地幔缓慢冷却的证据。然而, 特雷拉等人认为这些熔岩由异常的热地幔柱形成。特雷拉及其同事利用地球化学方法测量早期加拉帕戈斯火山喷发的原始熔岩以便重建地幔温度。他们发现, 该熔岩形成于地幔源, 其温度比当今地幔最热的地区高 200°C, 高于环境温度 400°C。这种热爆发的存在意味着具有类太古代温度的地幔域仍然在地球内部深处形成或保存。特雷拉等人也描述了最近爆发的热科马提亚斯熔岩, 这种温度较高且相对年轻的熔岩的存在说明地球上仍存有极端温度的地幔区域, 并且这种热量可以在上升的地幔柱中被保留并推动如今的熔融和火山活动。

Academic Writing Skills

Summarising

When writing an essay or a paper to build your own argument, you may use either a true summary or an interpretive summary. True summary accurately and completely includes the main idea and primary supporting points of the original text. The summary writer writes as a narrator who does not judge or make comments on the original text. True summaries may also outline what previous studies have done in a certain field.

In your essay, true summaries may contain a few sentences, no more than a paragraph. Sometimes you may need to write an interpretive summary in which you may inform your readers the argument of the original source and your comments on it. The most striking difference between true summaries and interpretive summaries is whether you need to show your readers your assessment of the original source or not.

Keys

Task 1

1 A

Tips:

B "... at the base of the upper mantle" is incorrect.

C "... infer the temperature of the upper mantle" is incorrect.

2 A

Tips:

B: "According to our knowledge of ..." is incorrect.

C: "... formed simultaneously" is not mentioned.

3 C

Tips:

A: "... now, the upwelling plumes of hot mantle are making it greater." is not mentioned.

B: "... greater than in the past." is incorrect.

Task 2

- 1 Links between subduction and Yellowstone volcanism are also the gist of a third recent study **by Quan Zhou and his colleagues**.
- 2 **According to MacDonald and his colleagues**, an even greater proportion (37%) of the Indo-Gangetic Basin groundwater system suffers from high levels of arsenic.
- 3 **Ying Zhou's findings** for depths above 700km imply that mantle upwelling and downwelling indeed coexist.
- 4 Indeed, **Nelson and Grand** recently report having traced the Yellowstone plume from the core-mantle boundary upwards.

Task 3

Suggested summaries:

- 1 McKie (2017) reports that the largest volcanic region on earth has been discovered in West Antarctica by Edinburgh University researchers.

选材注解: 科学家们在覆盖大西洋的冰盖表层以下2,000米处发现了全球最大的火山区, 这项工程发现了近一百座火山, 这样的火山密集程度甚至超过了东非的火山脊, 该地目前被认为是世界上火山最密集的地区。

- 2 Popkin (2017) displays three ways in which the El Niño weather pattern of 2014–2016 increased emissions.

选材注解：2014–2016年发生的厄尔尼诺现象导致热带森林地区多排放了30亿吨碳。相关数据说明厄尔尼诺现象会从三方面导致碳排放增多，分别是：高温与旱灾所导致的东南亚地区的野外大火，植物生长放缓所导致的碳吸收量降低，以及在非洲因为高温和少雨所导致的森林排放出的CO₂增多。

Task 4

A suggested summary:

Briney (2018) concludes that three primary forces (mantle convection, gravity, and the earth's rotation) cause the movement of the tectonic plates. Mantle convection is the most studied force by previous specialists. Large convection currents of molten material transmit energy to the earth's asthenosphere, so new lithospheric material is pushed up toward the earth's crust. This driving force is illustrated by what happens at the mid-ocean ridges. As new lithospheric material rises and spreads away from the ridge, gravity causes the older material to sink and facilitates the movement of the plates. Compared to the first two forces, the power of the earth's rotation is limited.

选材注解：板块运动有三种驱动机制，它们分别是：地幔对流、地球重力和地球自转。科学家们最广泛研究的是地幔对流。地幔对流是一种自然对流，它不仅是发生在地幔中的一种传热方式，同时它也是一种地幔物质的运动过程，是地球内部向地球表面输送能量、动量和质量的一种有效途径。地球重力是第二重要的驱动机制。洋中脊的推力和俯冲板块的拉力是驱动板块运动的两种重力。地表板块边界存在洋中脊和俯冲带。洋中脊会不断产生新的物质，由于洋中脊比周围高，所以重力均衡的作用就会往边上推，即洋中脊的推力。俯冲带俯冲下去的板块，由于比周围温度低，所以密度大，在重力作用下会往下掉，即俯冲板块的拉力。相较于前两种机制，地球自转的影响则较小。

Tips:

Here is a recommended process to summarise the original passage in Task 4:

Step 1: *Highlight or underline key points and key words.*

- 1 *There are three main driving forces for the movement of the earth's tectonic plates. They are mantle convection, gravity, and the earth's rotation.*

- 2 *Mantle convection is the most widely studied method of tectonic plate movement.*
- 3 *As these currents transmit energy to the earth's asthenosphere new lithospheric material is pushed up toward the earth's crust.*
- 4 *As the convection currents within the earth cause new lithospheric material to rise and spread away from the ridge, gravity causes the older material to sink toward the ocean floor and aid in the movement of the plates.*
- 5 *The earth's rotation is the final mechanism for the movement of the earth's plates but it is minor in comparison to mantle convection and gravity.*

Step 2: *Paraphrase the above-mentioned key points, using linking words to connect them in a logical manner.*

Step 3: *The sources of the original texts should be acknowledged in your summary.*