

TPO 43 – 1 The Empire of Alexander the Great

Alexander the Great: 亚历山大大帝（希腊的征服者，马其顿国王及将军）

In 334 B.C. Alexander the Great took his Greek armies to the east and in only a few years completed his creation of an empire out of much of southwest Asia. In the new empire, barriers to trade and the movement of peoples were removed; markets were put in touch with one another. In the next generation thousands of Greek traders and artisans would enter this wider world to seek their fortunes. Alexander's actions had several important consequences for the region occupied by the empire.

公元前 334 年，亚历山大大帝带领希腊军队来到东方，在短短几年里，他就建立了一个包括亚洲西南大部分的帝国。在新帝国中，阻止贸易和人口流动的壁垒被移除，互通有无的市场建立了。在下一代，成千上万的希腊商人和工匠将进入这个更广阔的世界去寻求财富。亚历山大建立的帝国对所在的地区有几个重要的影响。

The first of these was the expansion of Greek civilization throughout the Middle East. Greek became the great international language. Towns and cities were established not only as garrisons (military posts) but as centers for the diffusion of Greek language, literature, and thought, particularly through libraries, as at Antioch (in modern Turkey) and the most famous of all, at Alexandria in Egypt, which would be the finest in the world for the next thousand years.

首先是希腊文明在整个中东地区的扩张。希腊语成为了重要的国际语言。城镇和城市建立起来，不仅成为驻军之地（军事哨所），也成为传播希腊语言、文学、思想的中心，这种传播尤其是在图书馆进行，比如在安提阿（今土耳其）的图书馆以及最为著名的埃及亚历山大的图书馆，该图书馆在接下来的一千年里都是世界一流的。

Second, this internationalism spelled the end of the classical Greek city-state -- the unit of government in ancient Greece -- and everything it stood for. Most city-states had been quite small in terms of citizenry, and this was considered to be a good thing. The focus of life was the agora, the open marketplace where assemblies could be held and where issues of the day, as well as more fundamental topics such as the purpose of government or the relationship between law and freedom, could be discussed and decisions made by individuals in person. The philosopher Plato (428–348 B.C.), felt that the ideal city-state should have about 5,000 citizens, because to the Greeks it was important that everyone in the community should know each other. In decision making, the whole body of citizens together would have the necessary knowledge in order generally to reach the right decision, even though the individual might not be particularly qualified to decide. The philosopher Aristotle (384–322 B.C.), who lived at a time when the city-state system was declining, believed that a political entity of 100,000 simply would not be able to govern itself.

其次，这种国际主义使古典希腊城邦（古希腊的政府单位）以及它所代表的一切走向了结束。大多数城邦在市民数量上来说都很小，这在当时被认为是一件好事。市民们生活的中心是市集，市集是一个开放的市场，市民们可以在那集会，讨论当下的各种问题，以及如政府的目的或法律与自由的关系这类的基本问题，并且每个人都做出自己的决定。哲学家柏拉图（公元前 428-348）认为一个理想的城邦应该有大约 5000 名公民，因为对希腊人来说，社区的每个

人要互相认识是很重要的。在做决策的过程中，全体公民都得掌握必要的知识以做出正确的决定，即使这个人并非特别有资格做决定。生活在城邦制度衰落时期的哲学家亚里士多德（公元前 384-322）认为一个政治实体若是有 100000 人，那根本就无法自治。

This implied that the city-state was based on the idea that citizens were not specialists but had multiple interests and talents -- each a so-called jack-of-all-trades who could engage in many areas of life and politics. It implied a respect for the wholeness of life and a consequent dislike of specialization. It implied economic and military self-sufficiency. But with the development of trade and commerce in Alexander's empire came the growth of cities; it was no longer possible to be a jack-of-all-trades. One now had to specialize, and with specialization came professionalism. There were getting to be too many persons to know; an easily observable community of interests was being replaced by a multiplicity of interests. The city-state was simply too "small-time."

这意味着城邦是基于公民虽然不是专家但有着广泛的兴趣和才能这一理念的，每个人都是可以参与到生活和政治的许多领域的多面手。这意味着对人生的完整性的尊重和随之而来的对专业化的厌恶。这也隐含经济和军事上的自给自足。但随着亚历山大帝国的贸易和商业的发展，城市也发展起来人们不再可能是多面手。每个人都要专门化，随着专门化而来的是专业度。由于有太多的人，根本认不过来，原来显而易见的利益社群被复杂的利益群体取代。城邦实在是太“小”了。

Third, Greek philosophy was opened up to the philosophy and religion of the East. At the peak of the Greek city-state, religion played an important part. Its gods -- such as Zeus, father of the gods, and his wife Hera -- were thought of very much as being like human beings but with superhuman abilities. Their worship was linked to the rituals connected with one's progress through life -- birth, marriage, and death -- and with invoking protection against danger, making prophecies, and promoting healing, rather than to any code of behavior. Nor was there much of a theory of afterlife.

第三，希腊哲学对东方的哲学和宗教开放。在希腊城邦的繁盛时期，宗教发挥了重要的作用。其神如众神之父宙斯和他的妻子赫拉通常认为很像人类，但具有超能力。对他们的信仰联系着生命历程（出生、结婚、死亡）相关的仪式，联系着祈求远离危险、做出预言、提高治愈能力的仪式，而不是联系着行为规范。对他们的信仰中也不存在一个来世的理论。

Even before Alexander's time, a life spent in the service of their city-state no longer seemed ideal to Greeks. The Athenian philosopher Socrates (470–399 B.C.) was the first person in Greece to propose a morality based on individual conscience rather than the demands of the state, and for this he was accused of not believing in the city's gods and so corrupting the youth, and he was condemned to death. Greek philosophy -- or even a focus on conscience -- might complement religion but was no substitute for it, and this made Greeks receptive to the religious systems of the Middle East, even if they never adopted them completely. The combination of the religious instinct of Asia with the philosophic spirit of Greece spread across the world in the era after Alexander's death, blending the culture of the Middle East with the culture of Greece.

即使在亚历山大之前的时代，希腊的城邦生活也不是理想的。雅典哲学家苏格拉底（公元前

470-399) 是希腊第一个提出道德要基于个人良心而不是国家要求的人，为此他被指控亵渎神明和腐蚀青年，所以被判了死刑。希腊哲学——抑或甚至仅是对良心的关注——可能会成为宗教的补充，但不能替代宗教，这让希腊人接受了中东的宗教系统，即使希腊人从未全盘采纳。亚洲的宗教本能与希腊的哲学精神这种结合在在亚历山大死后传遍了世界，将亚洲文化和希腊的文化融合在一起。

TPO 43 – 2 The Origin of Petroleum 石油的起源

Petroleum is defined as a gaseous, liquid, and semisolid **naturally occurring substance** that **consists chiefly of** hydrocarbons (chemical compounds of carbon and hydrogen). Petroleum is therefore a term that includes both oil and natural gas. Petroleum is nearly always found in **marine sedimentary** rocks. In the ocean, **microscopic** phytoplankton (tiny floating plants) and bacteria (simple, single-celled organisms) are the principal sources of organic matter that is trapped and buried in sediment. Most of the organic matter is buried in clay that is slowly **converted** to a **fine-grained** sedimentary rock known as shale. During this conversion, organic compounds are transformed to oil and natural gas.

marine • adj. 船舶的；海生的；海产的；航海的，海运的 n. 海运业；舰队；水兵；（海军）士兵或军官	fine-grained adj. 细粒的；有细密纹理的；详细的；深入的
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石油被定义为一种天然存在的气体、液体、和半固体物质，其主要成分是烃（碳氢化合物）。因此石油是一个包括石油和天然气的术语。石油几乎总是在**海洋沉积岩**中发现。在海洋中，微小的浮游植物（微小的漂浮植物）和细菌（简单的单细胞生物）是被留在或是埋在沉积物中的有机物的主要来源。大多数有机物都被埋在泥土里，泥土慢慢转化成一种细粒沉积岩，叫做页岩。在这个转化过程中，有机化合物转化为石油和天然气。

Sampling on the continental shelves **and** (省略 **sampling**) **along** the **base** of the **continental** slopes **has** shown that fine muds beneath the seafloor contain up to 8 percent organic matter. **Two** additional kinds of **evidence** support the hypothesis that **petroleum is a product of the decomposition of organic matter**: oil **possesses** optical properties known only in hydrocarbons derived from organic matter, and oil **contains** nitrogen and certain compounds believed to originate only in living matter. A complex sequence of chemical reactions **is involved in** converting the original solid organic matter to oil and gas, and additional chemical changes may occur in the oil and gas **even after** they have formed.

对大陆架和沿**大陆斜坡底部**进行采样可以发现，海底下面的细泥浆含有高达百分之八的有机物。另外还有两类证据证实了石油是一种有机物的分解产物的假说：一是石油具有一些光学特性，这些特性只有来源于有机物的碳氢化合物才有，二是石油还含有氮和某些化合物，这些化合物被认为只能来源于有生命的物质。将有机固体转化成石油和天然气涉及一系列复杂的化学反应，并且即使在石油和天然气形成之后可能还会发生其他的化学反应。

It is now well established* that petroleum migrates through aquifers **and** can become trapped in reservoirs. Petroleum migration **is analogous to*** groundwater migration. When oil and gas are squeezed out of the shale in which they originated **and** enter a body of sandstone or limestone somewhere above, they migrate **readily** because sandstones (consisting of quartz grains) and limestones (consisting of carbonate minerals) **are much more permeable than any shale**. The **force** of molecular attraction between **oil and quartz or carbonate minerals** is weaker than that between **water and quartz or carbonate minerals**. Hence, because oil

批注 [1]: naturally-occurring substance 天然物质

批注 [2]: sedimentary(形容词)
•adj. 沉淀的

批注 [3]: microscopic
•adj. 微观的；用显微镜可见的

批注 [4]: continental
•adj. 大陆的；大陆性的
•n. 欧洲人

批注 [5]: 算是一句长难句。

批注 [6]: possess
•vt. 控制；使掌握；持有；迷住；拥有，具备

批注 [7]: is involved in 涉及（被动翻译为主动）

批注 [8]: even after 在...之后（状语先翻译）

批注 [9]: It is now well established
目前很好被建立起来的是✗
目前公认的说法是✓

批注 [10]: is analogous to [bi ə'neɪləgəs tu]
•与...类比；与.....类似，与.....相似；类似于.....

批注 [11]: readily (easily, quickly)
英 ['redɪli] 美 ['redɪli]
•adv. 容易地；乐意地；无困难地

and water do not mix, water **remains*** **fastened** to the quartz or carbonate grains, while oil occupies the central parts of the larger **openings** in the porous sandstone or limestone. Because oil is lighter than water, it **tends to*** glide **upward** past the carbonate- **and** quartz-held water. In this way, oil **becomes segregated from*** the water; when it **encounters** a trap, it can form a pool.

openings n. 开口; 空缺 (opening 的复数); 开幕; 走向世界	segregate 英 ['segrɪgeɪt] 美 ['segrɪgeɪt] vt. 使隔离; 使分离; 在...实行种族隔离
remains fastened to 固定在……上	becomes segregated from 从……隔离

目前公认的说法是, 石油向上迁移, 穿过含水层, 可能被困在蓄水层。石油的迁移与地下水的流动相似。当石油和天然气被从形成它们的页岩中挤出, 进入位于其上方某处的砂岩或石灰岩时, 它们就**很容易**流动, 因为砂岩(由石英颗粒组成)和石灰岩(由碳酸盐矿物组成)比页岩的**渗透性要强**。石油和石英或碳酸盐矿物之间的分子引力弱于水和石英或碳酸盐矿物分子之间的引力。因此, 由于石油和水不混合, 水会依附在石英或碳酸盐颗粒上, 而石油则占据了多孔的砂岩或石灰岩中更大空隙的中央区域。由于石油比水轻, 所以它会向上流动, 越**过**吸附于碳酸盐和石英上的水。这样, 石油就与水**分离**开来; 当遇到圈闭时就形成一个油藏。

Most of the petroleum that forms in sediments does not find a suitable trap **and eventually** makes its way, along with groundwater, to the surface of the sea. It is estimated that **no more than 0.1 percent of all the organic matter** (originally buried in a sediment) is eventually trapped in an oil pool. It is not surprising, therefore, **that** the highest **ratio** of oil and gas pools **to volume** of sediment **is found in rock no older than 2.5 million years**-young enough so that little of the petroleum has leaked away-**and that** nearly 60 percent of all oil and gas discovered so far has been found in **strata** that formed in the last 65 million years. This does **not** mean that older rocks produced less petroleum; it simply **means** that oil in older rocks has had a longer time in which to leak away.

大多数形成于沉积物的石油都没有找到合适的圈闭, 并最终通过某种方式随着地下水来到了海洋的表面。据估计, **这些最初埋在沉积物中的**有机物只有不到0.1%被留住最终形成了油藏。因此也就不奇怪, 油藏和气藏的数目与沉积物的总量相比, 最高的比例**出现在**年龄不超过250万年的沉积岩中——岩石还较新, 所以只有很少的石油泄露——而迄今发现的近60%的石油和天然气都出现在过去6500万年形成的地层中。这并不意味着更古老的岩石产生的石油较少, 这只是意味着石油在更古老的岩石里的时间较长, 而在这段时间里石油泄漏了。

How much oil is there in the world? This is an extremely **controversial** question. Many billions of barrels of oil have already been pumped out of the ground. A lot of additional oil has been located by **drilling** but is still waiting to be pumped out. Possibly **a great deal more** oil remains to be found by drilling. Unlike **coal**, the volume of which can be accurately estimated, the volume of undiscovered oil can only **be guessed at**. Guesses **involve** the use of accumulated experience from a century of drilling. Knowing how much oil has been found in an **intensively** drilled area, such as eastern Texas, experts make estimates of probable volumes in other

批注 [12]: 一定要有这类词:

- ① 体现英文的逻辑;
 - ② 并列两句话:
- 谓语动词: does not find
谓语动词: makes

批注 [13]: 翻译:

be found in 在...中被发现
be found / in 被发现 (在...中)

批注 [14]: strata

英 ['strɑ:tə] 美 ['streɪtə]
•n. 层; [地质] 地层; 阶层

批注 [15]: controversial

英 [kɒntrə'vɜ:ʃl] 美 [kɑ:ntrə'vɜ:ʃl]
•adj. 有争议的; 有争论的

批注 [16]: drilling(名词)

英美 ['drɪlɪŋ]
•n. 钻孔; 训练, 教练; 演练
•v. 钻孔; 训练 (drill 的 ing 形式)

批注 [17]: coal

英 [kəʊl] 美 [koʊl]
•n. 煤; (尤指燃烧着的) 煤块; 木炭
•v. 供煤; 采煤, 提炼煤; 把……烧成炭; 加煤

批注 [18]: intensively

英 [ɪn'tensɪvli] 美 [ɪn'tensɪvli]
•adv. 强烈地; 集中地

regions (where rock types and structures are similar to those in eastern Texas). Using this approach and considering all the sedimentary basins of the world, experts estimate that somewhere (between 1,500 and 3,000 billion barrels of oil) will eventually be discovered.

世界上有多少石油？这是一个非常有争议的问题。数十亿桶石油已经被从地下抽出。还有很多石油已被钻井所发现，等待被抽出。也许还有更多的石油等待着被钻井发现。石油和煤不一样，煤的储量可以被准确估计，未探明的石油储量只能估计。这种估计依靠的是一个世纪以来的钻探经验。在一个集中钻探的区域，如东部德克萨斯州，在知道此处已经发现的石油量之后，专家们以此估计其他岩石类型和结构与其类似的区域的潜在石油储量。使用这种方法，并考虑到世界上沉积盆地的总量，专家估计未来还会有 1.5 万亿到 3 万亿桶石油被发现。

批注 [19]: somewhere

•adv. 在某处；到某处

•n. 某个地方

TPO 43 – 3 El Niño

厄尔尼诺

The cold Humboldt Current of the Pacific Ocean flows toward the equator along the coasts of Ecuador and Peru in South America. When the current approaches the equator, the westward-flowing trade winds cause nutrient-rich cold water along the coast to rise from deeper depths to more shallow ones. This upwelling of water has economic repercussions. Fishing, especially for anchovies, is a major local industry.

太平洋沿岸的洪堡德寒流沿着南美洲的厄瓜多尔和秘鲁流向赤道。当接近赤道时，西流的信风会导致沿海营养丰富的冷水从深处上升到较浅的地方。冷水上涌会带来经济上的影响。捕鱼业，尤其是鳀鱼的捕捞因此成为当地的主要产业。

Every year during the months of December and January, a weak, warm countercurrent replaces the normally cold coastal waters. Without the upwelling of nutrients from below to feed the fish, fishing comes to a standstill. Fishers in this region have known the phenomenon for hundreds of years. In fact, this is the time of year they traditionally set aside to tend to their equipment and await the return of cold water. The residents of the region have given this phenomenon the name of El Niño, which is Spanish for "the child," because it occurs at about the time of the celebration of birth of the Christ child.

每年十二月和次年一月之间，一股微弱的、温暖的逆流取代了通常寒冷的沿海水域。没有营养物质从海水深处涌上来喂鱼，渔业就停滞了。这片区域的渔民几百年前就已经知道这种现象了。事实上，这段时间向来也是渔民们修补设备、等待冷水回归的时间。该地区的居民已经替这种现象取了个名字叫“厄尔尼诺”，在西班牙语里意思是“圣婴”，因为它发生在庆祝基督诞生的这段时间。

While the warm-water countercurrent usually lasts for two months or less, there are occasions when the disruption to the normal flow lasts for many months. In these situations, water temperatures are raised not just along the coast, but for thousands of kilometers offshore. Over the last few decades, the term El Niño has come to be used to describe these exceptionally strong episodes and not the annual event. During the past 60 years, at least ten El Niños have been observed. Not only do El Niños affect the temperature of the equatorial Pacific, but the strongest of them impact global weather.

温暖的逆流通常会持续 2 个月或更短，但正常的洋流中断几个月的情况也时有发生。在这种情况下，不只是海岸附近的海水温度升高，连数千公里之外的海面温度都会升高。在过去的几十年里，厄尔尼诺一词已经被用来描述这些异常强烈的事件，而不是一年一度的普遍现象。在过去的 60 年中，至少出现了 10 次厄尔尼诺现象。厄尔尼诺现象不仅影响赤道太平洋的温度，其中最强的还会影响全球的天氣。

The processes that interact to produce an El Niño involve conditions all across the Pacific, not just in the waters off South America. Over 60 years ago, Sir Gilbert Walker, a British scientist, discovered a connection between surface pressure readings at weather stations on the eastern and western sides of the Pacific. He noted that a rise in atmospheric pressure in the eastern Pacific is usually accompanied by a fall in pressure in the western Pacific and vice versa. He called this seesaw pattern the Southern Oscillation. It was later realized that there is a close link between El Niño and the Southern Oscillation. In fact, the link between the two is so great that they are often referred to jointly as ENSO (El Niño–Southern

Oscillation).

相互作用造成厄尔尼诺现象的过程包括整个太平洋的情况，而不仅仅是南美洲的水域。60 多年前，英国科学家吉尔伯特·沃克先生发现气象站播报的东西太平洋之间的气压有一定的关系。他注意到，当东太平洋气压上升时，通常会伴随着西太平洋气压的下降，反之亦然。他把这种交互式的现象叫做“南方涛动”。后来人们意识到，厄尔尼诺现象和南方涛动之间有着密切的联系。事实上，两者之间的联系是如此之大，他们往往将两者统称 ENSO(厄尔尼诺-南方涛动)。

During a typical year, the eastern Pacific has a higher pressure than the western Pacific does. This east-to-west pressure gradient enhances the trade winds over the equatorial waters. This results in a warm surface current that moves east to west at the equator. The western Pacific develops a thick, warm layer of water while the eastern Pacific has the cold Humboldt Current enhanced by upwelling. However, in other years the Southern Oscillation, for unknown reasons, swings in the opposite direction, dramatically changing the usual conditions described above, with pressure increasing in the western Pacific and decreasing in the eastern Pacific. This change in the pressure gradient causes the trade winds to weaken or, in some cases, to reverse. This then causes the warm water in the western Pacific to flow eastward, increasing sea-surface temperatures in the central and eastern Pacific. The eastward shift signals the beginning of an El Niño.

在一个典型的年份里，东太平洋的气压比西太平洋的气压高。这由东西向的气压梯度增强了赤道水域的信风。因此形成一股温暖的沿赤道由东向西移动的表层流。这样，西太平洋便形成了一个深厚的、温暖的水层，而东太平洋则有被上涌增强的洪堡德寒流。然而，在其他年份，南方涛动不知道是因为什么原因，朝相反的方向波动，使得西太平洋气压增加，东太平洋气压减小，极大地改变了前面所说的通常情况。这种压力梯度的变化使得信风减弱，在某些情况下还可能逆转。这就导致了西太平洋的暖水向东流动，提高了太平洋中部和东部的海水表面温度。这种向东流动标志着厄尔尼诺现象的开始。

Scientists try to document as many past El Niño events as possible by piecing together bits of historical evidence, such as sea-surface temperature records, daily observations of atmospheric pressure and rainfall, fisheries' records from South America, and the writings of Spanish colonists dating back to the fifteenth century. From such historical evidence we know that El Niños have occurred as far back as records go. It would seem that they are becoming more frequent. Records indicate that during the sixteenth century, an El Niño occurred on average every six years. Evidence gathered over the past few decades indicates that El Niños are now occurring on average a little over every two years. Even more alarming is the fact that they appear to be getting stronger. The 1997–1998 El Niño brought copious and damaging rainfall to the southern United States, from California to Florida. Snowstorms in the northeast portion of the United States were more frequent and intense than in most years.

科学家们试图尽可能多地记录发生的厄尔尼诺现象，他们收集各种微小的历史证据，如海面温度记录、气压和降水的日常观察，南美洲渔业记录，以及追溯到 15 世纪的西班牙殖民者的记录。从这样的历史证据，我们知道，厄尔尼诺现象从有文字记载开始就发生过。而且看起来变得越来越频繁。记录表明，十六世纪平均每六年发生一次厄尔尼诺现象。而最近几十年收集的证据表明，厄尔尼诺现象平均两年多就要发生一次。更令人吃惊的是，厄尔尼诺的威力越来越强。1997-1998 年的厄尔尼诺给美国南部从加利福尼亚到佛罗里达带来了大量的、破坏性的降雨。美国东北部的暴风雪也比大多数年份更频繁、更猛烈。