

## TPO 34 – 1 Islamic Art and the Book 伊斯兰艺术和书

The arts of the **Islamic book**, such as calligraphy and decorative drawing, developed during A.D.900 to 1500, and luxury books are some of the most characteristic examples of Islamic art produced in this period. This came about from two major developments: paper became common, replacing parchment as the major medium for writing, and rounded scripts were regularized and perfected so that they replaced the angular scripts of the previous period, which because of their angularity were uneven in height. Books became major vehicles for artistic expression, and the artists who produced them, notably calligraphers and painters, enjoyed high status, and their workshops were often **sponsored** by princes and their courts. **Before A.D.900**, manuscripts of the Koran (the book containing the teachings of the Islamic religion) seem to have been the most common type of book produced and decorated, but after that date a wide range of **books** were produced for a broad spectrum of patrons. These continued to include, of course, manuscripts of the Koran, which every Muslim wanted to read, but scientific works, histories, romances, and epic and lyric poetry were also copied in fine handwriting and decorated with beautiful illustrations. Most were made for sale on the open market, and cities boasted special souks (markets) where books were bought and sold. **The mosque of Marrakech in Morocco is known as the Kutubiyya, or Booksellers' Mosque,** after the **adjacent** market. Some of the most luxurious books were specific commissions made at the order of a particular prince and signed by the calligrapher and decorator.

**问题 1:** 询问 make point 关于 **Islamic book**; 【Except】

**问题 2:** 询问单词意思 (**sponsored**);

**问题 3:** 询问单词意思 (**adjacent**);

**问题 4:** 询问 before a.d. 900, books in the Islamic world ();

**问题 5:** 询问 why 作者说事实 (**The mosque of ...**)

在公元 900 至 1500 年，伊斯兰书籍的艺术造诣，如书法和装饰绘画，得到很大发展，奢侈书籍成为这个时期伊斯兰艺术的最典型代表。这主要源于两大主要发展：一是纸变得随处可见，取代羊皮纸成为主要的书写工具；二是规范完善了圆形字体以取代之前的方形字体，因为方形字体的尖角高度不平均。书成为艺术表达的主要工具；制作书籍的艺术家，通常是书法家和画家，享有很高的地位。他们的作坊得到王子和宫廷的资助。公元 900 年之前，古兰经（写着伊斯兰教义的书籍）的手稿是最常见的印刷和装饰书籍。但是之后，各类资助人资助制作了各式各样的书籍。这些书籍不仅有每个穆斯林都想诵读的古兰经的手稿，还有科学作品，历史书，冒险故事书，史诗书，和诗歌书，它们都印有清晰的字迹和美丽的插图。大部分书籍都在市场上出售，城市设有书籍交易的特殊市场。由于临近书市，摩洛哥马拉喀什的清真寺被称为库图比亚清真寺。最奢侈昂贵的书是受某王子特别委托制作出来并有书法家和装饰者亲笔签名的作品。

Papermaking had been introduced to the Islamic lands from China in the eighth century. 【】 It has been said that Chinese papermakers were among the prisoners captured in a battle fought near Samarqand between the Chinese and the Muslims in 751, and the technique of papermaking-in which cellulose pulp **extracted from** any of several plants is first suspended

in water, caught on a fine screen, and then dried into flexible sheets-slowly spread westward.

【】Within fifty years, the government in Baghdad was using paper for documents. 【】Writing in ink on paper, unlike parchment, could not easily be erased, and therefore paper had the advantage that it was difficult to alter what was written on it. 【】Papermaking spread quickly to Egypt-and eventually to Sicily and Spain-but it was several centuries before paper supplanted parchment for copies of the Koran, probably because of the conservative nature of religious art and its practitioners. In western Islamic lands, parchment continued to be used for manuscripts of the Koran throughout this period.

**问题 6:** 询问 phrase 意思 (extracted from);

**问题 7:** 等价替换语句 (Sentences = which of the CHOICES)

**问题 13:** 插入语的位置 → 【】:

造纸术在 8 世纪由中国传到伊斯兰。据说是因为 751 年中国和穆斯林在撒马尔罕附近的一场战役中,中国的造纸工匠被虏成为囚犯,造纸术才逐渐向西传播。造纸术这项技术是首先是将植物中提取的纤维素纸浆悬浮在水中,然后用筛选设备过滤,再烘干成柔软的纸张。在不到 50 年的时间里,巴格达政府就已经在使用纸记录文件。和羊皮纸不同,使用纸张的优势在于:用墨汁在纸上写的东西不易擦除,所以写在纸上的东西很难改变。造纸术很快传播到埃及,最终传到西西里岛和西班牙,但是纸张取代羊皮纸用来印刷古兰经则较晚出现,或许因为宗教艺术和从业者们的保守性。因此,在整个 8 世纪,西部伊斯兰世界仍然使用羊皮纸书写古兰经。

The introduction of paper spurred a conceptual revolution whose consequences have barely been explored. Although paper was never as cheap as it has become today, it was far less expensive than parchment, and therefore more people could afford to buy books. Paper is thinner than parchment, so more pages could be enclosed within a single volume. At first, paper was made in relatively small sheets that were pasted together, but by the beginning of the fourteenth century, very large sheets-as much as a meter across-were available. These large sheets meant that calligraphers and artists had more space on which to work. Paintings became more complicated, giving the artist greater opportunities to depict space or emotion. The increased availability of paper, particularly after 1250, encouraged people to develop systems of representation, such as architectural plans and drawings. This in turn allowed the easy transfer of artistic ideas and motifs over great distances, from one medium to another, and in a different scale in ways that had been difficult, if not impossible, in the previous period.

**问题 8:** 询问哪个没有 Mentioned as an advantage of paper over parchment?

**问题 9:** 询问为什么作者 include 这个 information (At first, paper was...);

**问题 10:** 询问 (The increased availability of paper & develop systems of representation) 作用;

纸张的引进催生了一次概念革命,其影响几乎还未被探索。尽管当时的纸没有现在廉价,但是它比羊皮纸便宜多了,所以更多人可以买得起书。因为纸比羊皮纸薄,所以在一册中装订的页数也更多。最开始,人们把相对小的纸张粘在一起,但是到了 14 世纪早期,出现了宽达一米的大型纸张。这些大型纸张意味着书法家和艺术家有更多的创作空间。绘画变得更复杂,艺术家有更多机会去描绘空间表达情感。特别是在 1250 年以后,纸张可用性增加鼓励人们发展了模型系统,比如说建筑平面图和绘画。这反过来使得艺术思想和理念更容易远距离传

播，更容易在媒介之间传播，也能以更大规模传播。而在这之前，艺术思想和理念的传播，如果有可能的话，也是很困难的。

Rounded styles of Arabic handwriting had long been used for correspondence and documents alongside the formal angular scripts used for inscriptions and manuscripts of the Koran. **Around the year 900**, Ibn Muqla, who was a secretary and vizier at the Abbasid court in Baghdad, developed a system of proportioned writing. He standardized the length of alif, the first letter of the Arabic alphabet, and then determined what the size and shape of all other letters should be, based on the alif. Eventually, six round forms of handwriting, **composed of** three pairs of big and little scripts known collectively as the Six Pens, became the standard repertory of every calligrapher.

**问题 11:** 询问 Muqla 实现了什么，**Around the year 900**;

**问题 12:** 询问 phrase 意思 (**composed of**);

这一时期，通信和文件中使用阿拉伯书法的圆形风格，而碑文及古兰经手稿中则使用正式楷体。大约在 900 年，伊本穆格来，巴格达阿巴斯法院的秘书和大臣，发明了一套匀称的书写体系。他规范了 alif（阿拉伯字母表的第一个字母）的长度，然后在 alif 长度的基础上，确定了所有其他字母的大小和形状。最终，书写的六个圆形符号，包括三组大小写法，被总称为 Six Pens，成为了每个书法家的标准配置。

## TPO 34 – 2 The Development of Steam Power 蒸汽动力的发展

By the eighteenth century, Britain was experiencing a severe shortage of energy. 【】Because of the growth of population, most of the great forests of medieval Britain had long ago been replaced by fields of grain and hay. 【】Wood was in ever-shorter supply, yet it remained tremendously important. 【】It served as the primary source of heat for all homes and industries and as a basic raw material. 【】Processed wood (charcoal) was the fuel that was mixed with iron ore in the blast furnace to produce pig iron (raw iron). The iron industry's appetite for wood was enormous, and by 1740 the British iron industry was stagnating. Vast forests enabled Russia to become the world's leading producer of iron, much of which was exported to Britain. But Russia's potential for growth was limited too, and in a few decades Russia would reach the barrier of inadequate energy that was already holding England back.

**问题 1:** 询问 short supply of wood 可以 refer what;

**问题 2:** 询问 true statement 关于 British iron industry;

**问题 13:** 插入语的位置 → 【】;

在 18 世纪,英国正在经历一次严重的能源短缺。因为人口增长,英国在中世纪时的大部分森林已经被农田和牧草代替。因此木材更加缺乏,但是它却一直都很重要。木材不仅是家庭和工业取暖的主要来源并且还是基本的原材料。加工过的木材(木炭)作为燃料和铁矿混合,经过高炉加温形成生铁。炼铁业对木材的需求是巨大的,到 1740 年,英国的炼铁业处于停滞状态。相比之下,得益于广阔的森林,俄国成为世界上主要的铁制造商,其大部分铁出口到英国。但是俄国的增长潜力也受到了限制,在接下来的几十年里俄国和英国一样,也遇到了能源短缺的障碍。

As this early energy crisis grew worse, Britain looked toward its abundant and widely scattered reserves of coal as an alternative to its vanishing wood. Coal was first used in Britain in the late Middle Ages as a source of heat. By 1640 most homes in London were heated with it, and it also provided heat for making beer, glass, soap, and other products. Coal was not used, however, to produce mechanical energy or to power machinery. It was there that coal's potential was enormous.

**问题 3:** 询问单词意思 (abundant);

**问题 4:** 询问 why beer, glass, soap..., 被提及 (in the discussion of B's energy)

随着这种早期能源危机愈演愈烈,英国转而使用数量丰富且分布广泛的煤炭作为即将消失的木材的替代品。英国在中世纪晚期首次使用煤炭来供热。到了 1640 年,伦敦的大部分家庭开始使用煤炭取暖,并且还把它作为制造啤酒,玻璃,肥皂和其他产品的热量来源。然而,这个时候,煤还未被用来生产机械能或驱动机器。而这正是煤的无穷潜力。

As more coal was produced, mines were dug deeper and deeper and were constantly filling with water. Mechanical pumps, usually powered by hundreds of horses walking in circles at the surface, had to be installed. Such power was expensive and bothersome. In an attempt to overcome these disadvantages, Thomas Savery in 1698 and Thomas Newcomen in 1705 invented the first primitive steam engines. Both engines were extremely inefficient. Both

burned coal to produce steam, which was then used to operate a pump. However, by the early 1770s, many of the **Savery engines** and hundreds of the **Newcomen engines** were operating successfully, though inefficiently, in English and Scottish mines.

**问题 5:** 询问 **Savery engines** 和 **Newcomen engines** similar in what ways 【Except】;

随着产煤量的增加，煤矿被挖的越来越深。然而煤矿深处，不断有水灌注进来。人们通常在地表安装由成千上百只马转圈拉动的机械水泵。但是这种动力不仅造价昂贵，而且费时费力。为了克服这些弊端，托马斯萨瓦瑞在 1698，詹姆斯纽克门在 1705 分别发明了第一批最早的蒸汽机。早期的蒸汽机效率极其低下。它们燃煤来产生蒸汽，被用于驱动水泵。然而，到了 18 世纪 70 年代早期，萨瓦瑞和纽克门发明的成千上百的蒸汽机已经成功运行在英国和苏格兰的煤矿中，尽管效率还有待于提高。

In the early 1760s, a **gifted** young Scot named **James Watt** was drawn to a critical study of the steam engine. Watt was employed at the time by the University of Glasgow as a skilled crafts worker making scientific instruments. In 1763, Watt was called on to repair a Newcomen engine being used in a physics course. After a series of observations, Watt saw that the Newcomen's waste of energy could be reduced by adding a separate condenser. This **splendid** invention, patented in 1769, greatly increased the efficiency of the steam engine. The steam engine of Watt and his followers was the technological advance that gave people, at least for a while, unlimited power and allowed the invention and use of all kinds of power equipment.

**问题 6:** 询问单词意思 (**gifted**);

**问题 7:** 询问 **James Watt** 的主要成就;

**问题 8:** 询问单词意思 (**splendid**);

在 18 世纪 60 年代早期，一个满腹才华的年轻苏格兰人詹姆斯瓦特开始认真研究蒸汽机。瓦特当时受雇于格拉斯哥大学，是学校制作科学工具的熟练技工。1763 年，学校要求瓦特去修理物理课上使用的一台纽科门蒸汽机。在观察之后，瓦特发现增加一个分离的冷凝器可以提高纽科门蒸汽机的效率。这项杰出的发明，在 1769 年取得专利权，大大提高了蒸汽机的效率。瓦特和其追随者的蒸汽机是巨大的技术进步，给予人们，至少在一段时间内，无限的动力，并且催生了各种发明和动力设备。

The steam engine was quickly put to use in several industries in Britain. It drained mines and made possible the production of ever more coal to feed steam engines elsewhere. The steam power plant began to replace waterpower in the cotton-spinning mills as well as other industries during the 1780s, contributing to a phenomenal rise in industrialization. The British iron industry was radically transformed. The use of powerful, steam-driven bellows in blast furnaces helped iron makers switch over rapidly from limited charcoal to **unlimited coke (which is made from coal) in the smelting of pig iron** (the process of refining impure iron) after 1770. In the 1780s, Henry Cort developed the puddling furnace, which allowed pig iron to be refined in turn with coke. Cort also developed heavy-duty, steam-powered rolling mills, which were capable of producing finished iron in every shape and form.

**问题 9:** 询问 what 没有提到 (as a development 很大程度上改变了 iron 的 production)

蒸汽机很快被用于英国的各行各业。它帮助人们抽干煤矿的水，从而挖掘更多的煤炭来带动

其他地方的蒸汽机。在 18 世纪 80 年代，蒸汽动力取代水力用于棉花纺织工业和其他工业，这促进了工业化的迅速实现。英国的炼铁业从根本上发生了变革。1770 年之后，因为高炉中使用动力十足、蒸汽驱动的风箱，铁制造商们在铸造生铁（提炼铁的过程）时，很快不再使用数量有限的木炭，转而使用无限的焦炭（由煤制作而成）。在 18 世纪 80 年代，亨利科特发明了搅铁炉，这一发明可轮流提炼生铁和焦炭。科特也发明了蒸汽驱动的重型轧钢厂，能把炼过的铁轧成各种形状。

The economic consequence of these technical innovations **in steam power** was a great boom in the British iron industry. **In 1740** annual British iron production was only 17,000 tons, but **by 1844**, with the spread of coke smelting and the impact of Cort's inventions, it had increased to 3,000,000 tons. This was a truly amazing expansion. Once scarce and expensive, iron became cheap, basic, and **indispensable** to the economy.

**问题 10:** 询问为什么作者对比 iron production (**In 1740** & **by 1844**);

**问题 11:** 询问单词意思 (**indispensable**);

**问题 12:** 询问关于 development of **steam power** 的发展, true is which;

这些技术革新的经济影响是促进了英国炼铁产业的巨大繁荣。在 1740 年，英国年产铁量只有 17,000 吨，但是到 1844 年之前，随着焦炭熔铸法和科特搅铁炉的广泛应用，英国年产铁量增加到 3,000,000 吨。这的确是令人惊异的增长。曾经稀少昂贵的铁，变得廉价、基础，成为了经济发展的不可缺少的一部分。

## TPO 34 – 3 Protection of Plants by Insects 用昆虫保护植物

Many plants—one or more species of at least 68 different families—can secrete nectar even when they have no blossoms, because they bear **extrafloral** nectaries (structures that produce nectar) on stems, leaves, leaf stems, or other structures. These plants usually occur where ants are abundant, most in the tropics but some in temperate areas. Among those of northeastern North America are various plums, cherries, roses, hawthorns, poplars, and oaks. Like **floral** nectar, **extrafloral** nectar consists mainly of water with a high content of dissolved sugars and, in some plants, small amounts of amino acids. The extrafloral nectaries of some plants are known to attract ants and other insects, but the evolutionary history of most plants with these nectaries is unknown. Nevertheless, most ecologists believe that all extrafloral nectaries attract insects that will defend the plant.

**问题 1:** 询问两个 (Like **floral** nectar, **extrafloral** nectar) 相同在哪方面;

即使不开花, 很多植物也能分泌花蜜 (在至少 68 个不同的植物科里就有一种或多种分泌花蜜的植物), 这是因为它们在茎, 叶子, 叶茎或其他结构上有花外蜜腺 (产生花蜜的结构)。这些植物通常生长在大量蚁群存在的地方, 因此大多数生长在热带地方, 但也有一些生长在温带地区。在北美东北部地区就有这类植物, 包括各种各样的李子, 樱桃, 蔷薇, 山楂树, 白杨树和橡树。像花蜜一样, 花外花蜜主要包括水, 高浓度的溶解糖, 在某些植物里, 还有少量的氨基酸。人们已经知道某些植物的花外蜜腺是为了吸引蚂蚁和昆虫, 但是大部分带有花外蜜腺的植物的进化史目前人们还不得而知。尽管如此, 大多数生态学家相信所有的花外蜜腺都是为了吸引昆虫以便防御自身。

**Ants** are probably the most frequent and certainly **the most persistent** defenders of plants.

【】 Since the highly active worker ants require a great deal of energy, plants exploit this need by providing **extrafloral nectar** that supplies **ants** with abundant energy. 【】 To return this favor, ants guard the nectaries, driving away or killing intruding insects that might compete with ants for nectar. 【】 Many of these intruders are herbivorous and would eat the leaves of the plants. 【】

**问题 2:** 询问说 (**the most persistent defenders of plants**), 意味着? ;

**问题 3:** 询问被 **extrafloral nectar** 吸引的 ants 可以 refer what?

**问题 13:** 插入语的位置 → 【】;

蚂蚁或许是植物的最常见也无疑是最执著的保护者了。因为高度活跃的工蚁需要很多能量, 而植物正好可以利用这一需求, 为蚂蚁提供花外蜜以满足它们的能量需求。为了回报植物, 蚂蚁会保卫蜜腺, 赶走或杀死入侵的昆虫, 因为它们会和蚂蚁争夺蜜腺。很多入侵者是食草动物, 会吃掉植物的叶子。

Biologists once thought that secretion of extrafloral nectar has some purely internal physiological function, and that ants provide no benefit whatsoever to the plants that secrete it. This view and the opposing **"protectionist" hypothesis** that ants defend plants had been disputed for over a hundred years when, in 1910, a **skeptical** William Morton Wheeler commented on the controversy. He called for proof of the protectionist view: that visitations

of the ants confer protection on the plants and that in the absence of the insects a much greater number would perish or fail to produce flowers or seeds than when the insects are present. That we now have an abundance of the proof that was called for was established when Barbara Bentley reviewed the relevant evidence in 1977, and since then many more observations and experiments have provided still further proof that ants benefit plants.

**问题 4:** 询问 position of the opponents of "protectionist" hypothesis;

**问题 5:** 询问单词意思 (skeptical);

**问题 6:** 等价替换语句 (Sentences = which of the CHOICES)

生物学家曾经认为分泌花外蜜只产生内部生理功能, 蚂蚁对分泌花蜜的植物没有任何益处。人们就该观点及其反方观点争执了一百多年。反方观点坚持“保护主义者”假说, 认为蚂蚁能够保护植物。1910年, 怀疑论者威廉莫尔顿惠勒对这一争议做出了评论。他要求为“保护主义者”观点提供证据: 蚂蚁能为植物提供保护; 如果没有昆虫, 更多植物将会消失, 或者不能开花或结种。我们现在已经有充分证据表明昆虫的确有益于植物, 因为在1977年巴巴拉宾利就已经研究了相关证据, 并且自那以后, 更多的观察和实验也提供了更多的证据。

One example shows how ants attracted to extrafloral nectaries protect morning glories against attacking insects. The principal insect enemies of the North American morning glory feed mainly on its flowers or fruits rather than its leaves. Grasshoppers feeding on flowers indirectly block pollination and the production of seeds by destroying the corolla or the stigma, which receives the pollen grains and on which the pollen germinates. Without their colorful corolla, flowers do not attract pollinators and are not fertilized. An adult grasshopper can consume a large corolla, about 2.5 inches long, in an hour. Caterpillars and seed beetles affect seed production directly. Caterpillars devour the ovaries, where the seeds are produced, and seed beetle larvae eat seeds as they burrow in developing fruits.

**问题 7:** 询问 corolla 的破坏对 plants 有什么影响?

**问题 8:** 询问单词意思 (devour);

有一个例子向我们展示了被花外蜜腺吸引的蚂蚁如何保护牵牛花不被昆虫伤害的。北美牵牛花的头号天敌昆虫主要吸食牵牛花的花朵和果实而不是叶子。因为草蜢吸食花朵, 破坏牵牛花的花冠或柱头, 而这正是接收花粉粒和花粉生长的地方, 所以间接阻断了授粉和制造种子。一旦花冠被破坏, 花朵不能再吸引传份昆虫, 因此不能受精。一个成年草蜢可以在不到一个小时消耗一个 2.5 英寸的大型花冠。相比之下, 毛毛虫和象鼻虫则是直接影响种子的形成。毛毛虫吞食子房, 这是生产种子的地方, 在果实成熟过程中, 象鼻虫的幼虫进入果实内部蚕食种子。

Extrafloral nectaries at the base of each sepal attract several kinds of insects, but 96 percent of them are ants, several different species of them. When buds are still small, less than a quarter of an inch long, the sepal nectaries are already present and producing nectar. They continue to do so as the flower develops and while the fruit matures. Observations leave little doubt that ants protect morning glory flowers and fruits from the combined enemy force of grasshoppers, caterpillars, and seed beetles. Bentley compared the seed production of six plants that grew where there were no ants with that of seventeen plants that were occupied by ants. Unprotected plants bore only 45 seeds per plant, but plants occupied by ants bore



211 seeds per plant. Although ants are not big enough to kill or seriously injure grasshoppers, they drive them away by nipping at their feet. Seed beetles are more **vulnerable** because they are much smaller than grasshoppers. The ants prey on the adult beetles, disturb females as they lay their eggs on developing fruits, and eat many of the eggs they do manage to lay.

**问题 9:** 询问本段的 role 在整个文章中;

**问题 10:** 询问单词意思 (**vulnerable**);

**问题 11:** 询问 Bentley 的对比实验表明?

**问题 12:** 询问 ants defend morning glory plants 不受 seed beetles 的影响在哪些 ways;

**【Except】**

每个花萼底部的花外蜜腺可以吸引几种不同的昆虫，不过 96%都是蚂蚁，尽管种类会有所不同。当蓓蕾还小时，已经有不到四分之一长的花萼蜜腺分泌花蜜了。随着花朵的发育和果实变得成熟，花萼蜜腺仍然继续分泌花蜜。通过观察可以确定蚂蚁保护牵牛花的花朵和果实不会受到草蝻、毛毛虫和象鼻虫的联合侵袭。宾利对比了六株生长在没有蚂蚁地域的植物结出的果实和 17 株生长在有蚂蚁地域的植物结出的果实。结果发现：不受蚂蚁保护的植物每株只结出 45 个种子，而有蚂蚁保护的植物每株结出了 211 个种子。尽管蚂蚁不够强大，不能杀死或严重伤害草蝻，但是蚂蚁可以通过啃咬草蝻的脚驱赶它们。而比草蝻更小的象鼻虫则更容易受到蚂蚁的攻击。蚂蚁以象鼻虫为食，干扰在果实上产卵的雌性象鼻虫，还能吃掉象鼻虫的卵虫。