# 长难句翻译练习答案

对于以下句子：（1）划出主干 （2）划出逻辑连接词 （3）翻译

1. Insulation protects the leatherback everywhere but on its head and flippers. Because the flippers are comparatively thin and blade-like, they are the one part of the leatherback that is likely to become chilled. There is not much that the turtle can do about this without compromising the aerodynamic shape of the flipper.

*TPO-15 A Warm-Blooded Turtle*

除了头和脚蹼，绝热体保护可以保护棱皮龟身体的所有部位。由于它的刀锋状的脚蹼相对很薄，这是它身体中较容易冻僵的部位。如果棱皮龟没有符合流体动力学结构的鳍的话，他们也不能解决这个脚蹼容易冻僵的问题。

结构主体： Turtle cannot do A without B（没有B，turtle就不能够做A）

2. Unlike rain, which returns rapidly to the sea or atmosphere, the snow that becomes part of a glacier is involved in a much more slowly cycling system.

*TPO-15 Glacier Formation*

和能够很快回到海水和大气层中的降雨不同，成为冰川一部分的降雪的循环过程则非常缓慢。

3. The largest terrestrial planet, Earth has a diameter only one quarter as great as the diameter of the smallest Jovian planet, Neptune, and its mass is only one seventeenth as great. Hence, the Jovian planets are often called giants.

*TPO-16 Planets in Our Solar System*

最大的类地行星地球的直径仅仅是最小的类木行星海王星的四分之一，而质量更是只有海王星的1/17。因此，类木行星通常又被称为巨行星。

its指代Earth

4. In the fourteenth century, a number of political developments cut Europe's overland trade routes to southern and eastern Asia, with which Europe had important and highly profitable commercial ties since the twelfth century. This development, coming as it did when the bottom had fallen out of the European economy, provided an impetus to a long-held desire to secure direct relations with the East by establishing a sea trade.

*TPO-17 Europe’s Early Sea Trade with Asia*

自12世纪起，欧洲就已经建立起与南亚和东亚之间高度互利的贸易关系，但14世纪时，政治的发展切断了双方的陆路贸易路线。政治的发展在将欧洲经济带入谷底的同时，也提供了一个新契机，通过建立一个欧洲与东方的海上航线确保两者之间直接的贸易往来，实现长久以来的愿望。

5. The sheer scale of the investment it took to begin commercial expansion at sea reflects the immensity of the profits that such East-West trade could create.

*TPO-17 Europe’s Early Sea Trade with Asia*

开启海上商业扩张投入的资金规模反映出东西方贸易所能创造出的巨大财富。

6. But even high-priced commodities like spices had to be transported in large bulk in order to justify the expense and trouble of sailing around the African continent all the way to India and China.

*TPO-17 Europe’s Early Sea Trade with Asia*

即使是香料这样的高价商品也不得不大批量运输，以平衡绕行非洲运输至中国和印度所耗费的巨额成本和麻烦。

justify:平衡（V）

7. During courtship and aggressive displays, the turkey enlarges its colored neck collar by inflating sacs in the neck region and then flings about a pendulous part of the colored signaling apparatus as it utters calls designed to attract or repel.

*TPO-17 Animal Signals in the Rain Forest*

在求爱期和发起进攻时，火鸡通过给颈部液囊充气扩张颈圈，晃动着下垂的鲜艳的信号装置，随之发出叫声来吸引异性或击退敌人。

8. In 1857, in return for a payment of 63 million kronor from other commercial nations, Denmark abolished the Sound toll dues the fees it had collected since 1497 for the use of the Sound. This, along with other policy shifts toward free trade, resulted in a significant increase in traffic through the Sound and in the port of Copenhagen.

*TPO-18 Industrialization in the Netherlands and Scandinavia*

在1857年，一些贸易国家向丹麦支付了6 300万克朗，作为交换，丹麦废止了自1497年以来在松德海峡征收的通行费。这一举措与其他自由贸易政策相辅相成，使得途径松德海峡和哥本哈根港口的贸易额大增。

Sound toll dues, the fees it had collected since 1497 for the use of the Sound. 后半句中the frees是同位语，亦在解释说明toll dues其实就是一笔费用，it had collected since 1497 for the use of the Sound是定语从句，修饰同位语the free。

9. The key factor in the success of these countries (along with high literacy, which contributed to it) was their ability to adapt to the international division of labor determined by the early industrializers and to stake out areas of specialization in international markets for which they were especially well suited.

*TPO-18 Industrialization in the Netherlands and Scandinavia*

这些国家成功的关键因素（教育水平高也起了促进作用）在于它们能够适应由早期工业化国家决定的国际劳动力分配，并且能够瞄准那些非常适合他们的国际市场的专业化领域。

stake out: 明确表明，清楚界定(立场、要求等)

10. The West had plenty of attractions: the alluvial river bottoms, the fecund soils of the rolling forest lands, the black loams of the prairies were tempting to New England farmers working their rocky, sterile land and to southeastern farmers plagued with soil depletion and erosion.

*TPO-20 Westward Migration*

西部吸引人的地方很多：冲积河流、绵延起伏的林地下的肥沃的土壤、大草原上的黑土，这些都吸引着在布满岩石又贫瘠的土地上劳作的新英格兰农民和饱受土壤损耗和流失困扰的东南部农民。

alluvival river:冲积河流；fecund:肥沃的; rolling:起伏的; sterile:贫瘠的; plague:使痛苦（v）

11. When one considers the many ways by which organisms are completely destroyed after death, it is remarkable that fossils are as common as they are. Attack by scavengers and bacteria, chemical decay, and destruction by erosion and other geologic agencies make the odds against preservation very high.

*TPO-20 Fossil Preservation*

如果想想生物在死之后被完全摧毁的种种方式，能够这样频繁出现化石是一件很令人惊讶的事。食腐动物和细菌的破坏、化学性腐烂、腐蚀以及其它地质因素都会非常不利于保存。

12. The probability that actual remains of soft tissue will be preserved is improved if the organism dies in an environment of rapid deposition and oxygen deprivation.

*TPO-20 Fossil Preservation*

如果生物体死于一个快速沉积和缺氧的环境，会有助于软组织残骸的保存。

13. The fact that some societies domesticated animals and plants, discovered the use of metal tools, became literate, and developed a state should not make us forget that others developed pastoralism or horticulture (vegetable gardening) but remained illiterate and at low levels of productivity; a few entered the modern period as hunting and gathering societies.

*TPO-21 The Origins of Agriculture*

有些社会驯化了动植物、发现可以使用金属工具，变得有文化、发展国家，这些事实不应该让我们忘记其他社会虽然发展出来畜牧或园艺(种植蔬菜)，但是却仍然停留在文盲状态，生产力水平低，只有少数社会进入了现代的捕猎和采集社会。

fact后面的that引导的是同位语从句，是对fact内容的阐述。forget后面的that引导的从句充当forget的宾语。

14. The images produced by the camera obscura, a boxlike device that used a pinhole or lens to throw an image onto a ground-glass screen or a piece of white paper, were already familiar — the device had been much employed by topographical artists like the Italian painter Canaletto in his detailed views of the city of Venice.

*TPO-22 The Birth of Photography*

当时暗箱照相机已经为大家所熟识，它是一种使用小孔或透镜将影像投射到毛玻璃屏或一张白纸上的盒状设备，这种设备已经为很多地貌风景画家所用，像意大利画家卡纳莱托就用它详细记录了威尼斯城。

15.In the long term, photography's impact on the visual arts was far from simple. Because the medium was so prolific, in the sense that it was possible to produce a multitude of images very cheaply, it was soon treated as the poor relation of fine art, rather than its destined successor.

*TPO-22 The Birth of Photography*

从长远角度看，摄影术对视觉艺术的影响没那么简单。因为可以批量制作，从这种意义上来说就有可能很廉价地生产一堆影像，因此摄影术很快就被当成是艺术品廉价的替代物，而不是其注定的继任者。

16. The new candid photography — unposed pictures that were made when the subjects were unaware that their pictures were being taken — confirmed these scientific results, and at the same time, thanks to the radical cropping (trimming) of images that the camera often imposed, suggested new compositional formats.

*TPO-22 The Birth of Photography*

新出现的堪的派摄影（即拍摄对象不知情时抓拍的照片）证实了这些科学成果，同时，由于相机对影像进行的彻底裁剪（修剪），这些图像暗示了新的创作版式。

17. When broken open, Allende stones are revealed to contain an assortment of small, distinctive objects, spherical or irregular in shape and embedded in a dark gray matrix (binding material), which were once constituents of the solar nebula — the interstellar cloud of gas and dust out of which our solar system was formed.

*TPO-22 The Allende Meteorite*

打开Allende的石头,发现里面包括各种小的独特物体的混杂物,这些混杂物有着球面以及无固定形状并且插在一种黑灰色的基质中.它们（混杂物）是星云的一种组成物质.星云是形成太阳系星际云,由气体和灰尘组成.

spherical or irregular in shape and embedded in a dark gray matrix 是插入语，修饰an assortment of objects，which 指代objects; out of:来源于

18. Importing the grain, which would have been expensive and time consuming for the Dutch to have produced themselves, kept the price of grain low and thus stimulated individual demand for other foodstuffs and consumer goods.

*TPO-23 Seventeenth-Century Dutch Agriculture*

进口谷物会使荷兰人避免会花费更多的金钱和时间去自行生产粮食,并且保持谷物的低价应此刺激个体对其他食品和消耗品的需求。

which would have been为虚拟语气，如果荷兰人自己种就会耗钱又耗时

19. Early in the nineteenth century, encounters with Aboriginal rock art tended to be infrequent and open to speculative interpretation, but since the late nineteenth century, awareness of the extent and variety of Australian rock art has been growing.

*TPO-23 Rock Art of the Australia Aborigines*

在十九世纪早期，遇到的岩石艺术品还比较少，大多是猜测性的解释，但是到了十九世纪晚期，人们意识越来越多意识到这些岩石艺术的范围和多样性。

20. Third, is it possible to interpret accurately the subject matter of ancient rock art, bring to bear all available archaeological techniques and the knowledge of present-day Aboriginal informants?

*TPO-23 Rock Art of the Australia Aborigines*

第三，有没有可能在利用所有可能的考古技术和对现有土著居民中博学者的了解，准确地了解这些岩石艺术所要表达的主题？

bring to bear：运用

21. While accepting that this sequence fits the archaeological profile of those sites, which were occupied continuously over many thousands of years a number of writers have warned that the underlying assumption of such a sequence — a development from the simple and the geometric to the complex and naturalistic — obscures the cultural continuities in Aboriginal Australia, in which geometric symbolism remains fundamentally important.

*TPO-23 Rock Art of the Australia Aborigines*

尽管赞同该顺序适合这些地区的考古图案，这些地区几千年来一直不断出现考古图案，然而许多作家警告说这种顺序的潜在结论——从简单图案到几何图案再到复杂和自然主义的图案，模糊了仍然非常重要的几何象征主义在澳大利亚土著的文化连续性。

22. Abandoning small extended-family households to move into these large pueblos with dozens if not hundreds of other people was probably traumatic.

*TPO-24 Moving into Pueblos*

这些住户放弃小的扩展型家庭，进入到没有上百也有几十人的大的普韦布洛地区其实内心是崩溃的。

traumatic:痛苦的

23. Few of the cultural traditions and rules that today allow us to deal with dense populations existed for these people accustomed to household autonomy and the ability to move around the landscape almost at will.

*TPO-24 Moving into Pueblos*

对于这些习惯于家庭自治,随意在世界各处游荡安居的人而言,几乎没有什么今天使我们能应对密集人口的文化传统和准则。

that today allow us to deal with dense populations是定语从句,修饰the cultural traditions and rules，

for these people是状语,

accustomed to household autonomy and the ability to move around the landscape almost at will是定语,修饰people

24. On Mars, there are relatively few craters less than 5 kilometers in diameter. The Martian atmosphere is an efficient erosive agent, with Martian winds transporting dust from place to place and erasing surface features much faster than meteoritic impacts alone can obliterate them.

*TPO-25 The Surface of Mars*

在火星上，只有相当少的一部分陨石坑直径小于5千米。火星大气是一种强效的腐蚀剂，加之火星上的风把灰尘从一个地方卷到另一个地方，并且它清除表面特征的速度要比仅凭借陨星撞击来清除表面要快的多。

25. Merchants complained that the privileges reserved for Venetian-built and owned ships were first extended to those Venetians who bought ships from abroad and then to foreign-built and owned vessels.

*TPO25* *The Decline of Venetian Shipping*

商人们抱怨威尼斯建造并拥有私家船只者享有特权，这种特权最先拓展到了从国外购买船只的威尼斯人，然后又扩展到了国外建造并拥有船只的人。

26. A contemporary of Shakespeare (1564-1616) observed that the productivity of Italian shipping had declined, compared with that of the British, because of conservatism and loss of expertise. Moreover, Italian sailors were deserting and emigrating, and captains, no longer recruited from the ranks of nobles, were weak on navigations.

*TPO25 The Decline of Venetian Shipping*

在莎士比亚时代（1564～1616），相比较英国，意大利航运业生产力已经在下降了，这是因为意大利的航运业过于守旧并且缺乏专业技术所致。此外，意大利船员逐渐逃离并移居到他乡，而船长不再是从贵族阶级中征召而来，并且在航海方面也暴露出各种不足。

27. In addition, other lines of evidence support the hypothesis that land plants evolved from ancestral green algae used the same type of chlorophyll and accessory pigments in photosynthesis as do land plants.

*TPO-25 The Evolutionary Origin of Plants*

此外，其他一系列证据支持了这种假说，即陆生植物由原始绿藻进化而成，两者在进行光合作用时使用了相同类型的叶绿素和辅助色素。

28. It was this that made the organization of irrigation, particularly the building of canals to channel and preserve the water, essential. Once this was done and the silt carried down by the rivers was planted, the rewards were rich: four to five times what rain-fed earth would produce.

*TPO-26 Sumer and the First Cities of the Ancient Near East*

这就使得灌溉系统的规划至关重要，特别是如何建造水渠以疏导和保存水资源。一旦这些灌溉工程完成以及河流冲积下的淤泥沉积之后，带来的回报是相当可观的：其产出量会比靠雨水滋润的土地高出4-5倍。

It was this that：强调句，强调灌溉系统规划组织的重要性

channel：v.形成河道；plant: v.安放，安置，使固定

29. A major development was the discovery, again about 3000 B.C.E., that if copper, which had been known in Mesopotamia since about 3500 B.C.E., was mixed with tin, a much harder metal, bronze, would result.

*TPO-26 Sumer and the First Cities of the Ancient Near East*

一个重大进展同样也发生在约公元前3000年，铜在约公元前3500年就为美索不达米亚人所熟知，如果将铜和锡混合在一起，就可以制造出一种更坚硬的金属——青铜。

本句包括三层结构：第一层为that引导的同位语从句，第二层为if引导的条件状语从句，第三层为which引导的定语从句

30. While population estimates are notoriously unreliable, scholars assume that Uruk inhabitants were able to support themselves from the agricultural production of the field surrounding the city, which could be reached with a daily commute.

*TPO-27 Crafts in the Ancient Near East*

众所周知，人口估计通常是不可靠的，但是学者们认为，乌鲁克居民可以每天往返城市，并通过城市周边田地生产的农产品来维持生活。

while引导让步状语从句，主句里有个宾语从句scholars assume that...，紧接着是由which引导的非限制性定语从句，修饰the city

31. A glance at a map of the Pacific Ocean reveals that there are many islands far out at sea that are actually volcanoes----many no longer active, some overgrown with coral----that originated from activity at points in the interior of the Pacific Plate that forms the Pacific seafloor.

*TPO-27 The Formation of Volcanic Islands*

扫一眼太平洋的地图就知道那里有许多在大海深处的岛屿，它们其实都是火山，其中有许多已经不活动了，一些长满了珊瑚。这些火山都起源于当时太平洋板块内部一些在形成太平洋海底时的地质活动。

32. When experimental populations are set up under simple laboratory conditions, the predator often exterminates its prey and then becomes extinct itself, having nothing left to eat. However, if safe areas like those prey animals have in the wild are provided, the prey population drops to low level but not extinction.

*TPO-27 Predator-Prey Cycles*

在简单的实验条件下，捕食者经常吃掉了所有被捕食者，然后因为食物缺乏而自己灭绝了。但是，如果能给被捕食动物提供如同在野外的安全的区域，被捕食动物的数量会降低到很低的数值，但不会灭绝。

33. At greater depths within Earth, the pressure of the overlying rock causes pores and cracks to close, reducing the space that pore water can occupy, and almost complete closure occurs at a depth of about 10 kilometers. The greatest water storage, therefore, lies near the surface.

*TPO-28 Groundwater*

随深度增加，上覆岩层压力使岩石孔隙和裂缝闭合，减少了水的储存空间，而超过10公里深的地下孔隙几乎全部闭合。因此绝大部分水储存于接近地表的地层中。

34. The Sahara is a highly diverse, albeit dry, region that has undergone major climatic changes since 10,000 B.C. As recently as 6,000 B.C. the southern frontier of the desert was far to the north of where it is now, while semiarid grassland and shallow freshwater lakes covered much of what are now arid plains.

*TPO-28 Early Saharan Pastoralists*

尽管干旱，撒哈拉的物种极其多样，并自公元前10,000年前开始已经历了数次重大气候变迁。早在公元前6,000年前，沙漠的南部边界比现在的位置要靠北很多，并且半干旱的草原和浅淡水湖泊覆盖了大部分现在干旱的平原。

35.The areas that are now desert were, like all arid regions, very susceptible to cycles of higher and lower levels of rainfall, resulting in major, sudden changes in distributions of plants and animals. The people who hunted the sparse desert animals responded to drought by managing the wild resources they hunted and gathered, especially wild oxen, which had to have regular water supplies to survive.

*TPO-28 Early Saharan Pastoralists*

现在的沙漠地区，像所有干旱地区一样，对降雨量的变化周期极为敏感，因而其动植物的分布变化巨大且迅速。依靠捕食稀少的沙漠动物的居民应对干旱的方式是管理他们捕捉和收集到的野生资源，尤其是需要可靠水源维持生命的野牛。

they hunted and gathered是省略了引导词that的定语从句，修饰wild resources;

,which为非限定性定语从句，修饰wild oxen.

36. Whatever the source of the original tamed herds might have been, it seems entirely likely that much the same process of juxtaposition (living side by side) and control occurred in both southwest Asia and northern Africa, and even in Europe, among peoples who had an intimate knowledge of the behavior of wild cattle.

*TPO-28 Early Saharan Pastoralists*

无论驯化的兽群起源于何处，但是似乎东南亚、北非甚至是欧洲那些对野生牲畜行为了若指掌的人们可能都经历了从与他们要驯化的动物毗邻而居到逐渐控制它们的过程。

whatever = no matter what，引导的是让步状语从句

it seems entirely likely that....是由that引导的宾语从句，it是形式主语，真正的主语是that后面的内容;

who引导的是定语从句，修饰peoples

37. It was found that when a white-tailed buck makes a rub, it moves both antlers and forehead glands along the small tree in a vertical direction. This forehead rubbing behavior coincides with a high level of glandular activity in the modified scent glands found on the foreheads of male deer; the glandular activity causes the forehead pelage (hairy covering) of adult males to be distinctly darker than in females or younger males.

*TPO-28 Buck Rubs and Buck Scrapes*

当白尾鹿制造擦痕时，它将其鹿茸和前额腺体在小树上垂直磨蹭。这种前额的磨蹭行为和雄鹿前额上散发气味的腺体的异常活跃一致。该腺体活动导致成年雄鹿的前额皮毛比雌鹿或未成年鹿的暗很多。

38. Thus the presence of many well-marked rubs is indicative of older, higher-status males being in the general vicinity rather than simply being a crude measure of relative deer abundance in a given area. The information conveyed by the olfactory signals on a buck rub make it the social equivalent of some auditory signals in other deer species, such as trumpeting by bull elk.

*TPO-28 Buck Rubs and Buck Scrapes*

因此大量的标记得很好的擦痕的出现表明年龄较大、地位较高的雄鹿就在附近，而不仅只是粗略的说明了该区域鹿群的相对丰度。雄鹿擦痕上的气味记号所携带的信息使它成为与其它种类鹿群中的某些声音信号，比如雄性麋鹿的叫声，同等重要。

rather than并列连词，意为“是...而不是...” 它前后的成分在词性上是一致的。

being in the general vicinity现在分词，作宾语补足语。

39.The high quality of Roman pottery is very easy to appreciate when handling actual pieces of tableware or indeed kitchenware and amphorae (the large jars used throughout the Mediterranean for the transport and storage of liquids, such as wine and oil). However, it is impossible to do justice to Roman wares on the page, even when words can be backed up by photographs and drawing.

*TPO-29 Characteristics of Roman Pottery*

当把玩古罗马陶制餐具或厨房用具和双耳陶罐（遍及整个地中海地区用以运输或储存酒或油之类液体的大型陶罐）时，人们对其良好的质量赞不绝口。尽管有照片和画像的记录，却无法轻易的对罗马陶器做出公正评价。

40. When considering quantities, we would ideally like to have some estimates for overall production from particular sites of pottery manufacture and for overall consumption at specific settlements. Unfortunately, it is in the nature of the archaeological evidence, which is almost invariable only a sample of what once existed, that such figures will always be elusive.

*TPO-29 Characteristics of Roman Pottery*

当确定数量时，我们常喜欢去评估某一陶器生产地点生产陶器的总量以及某地居民对陶器的消费总量。不幸的是，考古证据本质上只能是历史存在的一个样本，因而由此得到的数据并不可靠。

it is in the nature of the archaeological evidence这句话是强调句，被强调的部分是in the nature of the archaeological evidence。Which引导的是定语从句，修饰archaeological evidence。

elusive:难以琢磨的，难懂的，逃避的

41. However, no one who has ever worked in the field would question the abundance of Roman pottery, particularly in the Mediterranean region. This abundance is notable in Roman settlements (especially urban sites) where the labor that archaeologists have to put into the washing and sorting of potsherds (fragments of pottery) constitutes a high proportion of the total work during the initial phases of excavation.

*TPO-29 Characteristics of Roman Pottery*

但是，那些曾经在现场工作过的人绝不会怀疑罗马陶器的数量，尤其是在地中海地区。罗马人聚集区(尤其是城市遗址)拥有丰富的陶器，这是家喻户晓的。考古学家们在对这些地区进行挖掘时，在第一个阶段就利用了总劳动力的一大部分去清洗和整理陶器的碎片。

where引导的是状语从句，修饰settlements;

在where the labor that archaeologists have to put into the washing and sorting of potsherds (fragments of pottery)句中有that引导的定语从句，修饰的labor，labor在从句充当put的宾语。

42. Only rarely can we derive any “real” quantities from deposits of broken pots. However, there is one exceptional dump, which does represent a very large part of the site’s total history of consumption and for which an estimate of quantity has been produced.

*TPO-29 Characteristics of Roman Pottery*

从陶罐碎片堆中我们很难推算出真正的数量。但也有例外，有一处遗址出土的陶器代表了其曾经的陶器消费的很大一部分，因此可以据此推测出其数量。

Only rarely这句话是个倒装句。正常的语序是we only rarely can derive any “real” quantities from deposits of broken pots.

43. It has been estimated that Monte Testaccio contains the remains of some 53 million amphorae, in which around 6,000 million liters of oil were imported into the city from overseas, imports into imperial Rome were supported by the full might of the state and were therefore quite exceptional ---- but the size of the operations at Monte Testaccio, and the productivity and complexity that lay behind them, nonetheless cannot fail to impress.

*TPO-29 Characteristics of Roman Pottery*

据估计，Monte Testaccio山上约有5300万只油罐并由此从海外进口了约6亿升的油。向罗马帝国的进口由国家全力支持，因此也非常例外----但是Monte Testaccio的制作规模及其背后的生产力和复杂性却绝对不容忽视。

44. To what extent competition determines the composition of a community and the density of particular species has been the source of considerable controversy.

*TPO-29 Competition*

竞争对于群落构成和特定物种密度究竟有多大的决定性曾引发大规模的论战。

To what extent competition determines the composition of a community and the density of particular species是主语从句，to what extent是宾语补足语

45. They revealed output powers ranging from about 1 horsepower to perhaps 60 for the largest wheels and confirmed that for maximum efficiency, the water should pass across the blades as smoothly as possible and fall away with minimum speed, having given up almost all of its kinetic energy.

*TPO-29 The History of Waterpower*

它们的输出功率从1马力到最大的60马力，并且人们确信要想产生最高效率，水应该从叶轮上尽可能光滑的流过，并以最小的速度落下，以便输出其几乎所有动能。

46. And then the new cities and towns, squeezed by their walls, had to know and order time in order to organize collective activity and ration space.

*TPO-30 The Invention of the Mechanical Clock*

另外新的城市和小镇，由于其空间的限制，他们必须要知道并且安排时间去组织集体活动和分配空间。

47. Once known, it spread rapidly, driving out water clocks but not solar dials, which were needed to check the new machines against the timekeeper of last resort.

*TPO-30 The Invention of the Mechanical Clock*

一旦被人们所知，它(机械钟)就快速传播并替代了水钟表，但日晷依然存在，用来对照这个新仪器与原来的计时法。

which 引导定语从句修饰 solar dials, 即日晷

48. Although church ritual had sustained an interest in timekeeping throughout the centuries of urban collapse that followed the fall of Rome, church time was nature’s time. Day and night were divided into the same number of parts, so that except at the equinoxes, days and night hours were unequal; and then of course the length of these hours varied with the seasons.

*TPO-30 The Invention of the Mechanical Clock*

虽然几世纪以来，尽管城市瓦解，罗马没落，但教堂仪式一直保持着对时间记录的兴趣，教堂时间是自然的时间。白天和黑夜被分为均等的部分，所以除去昼夜平分点，白天和黑夜时间是不均等的；当然，这些时间的长度也随着季节变化。

49. From the start, however, the towns and cities took equal hours as their standard, and the public clocks installed in town halls and market squares became the very symbol of a new, secular municipal authority. Every town wanted one; conquerors seized them as especially precious spoils of war; tourists came to see and hear these machines the way they made pilgrimages to sacred relics.

*TPO-30 The Invention of the Mechanical Clock*

但是一开始，城镇都接受了均等时间作为他们的标准，并且安装在市政大楼和市场的公共时钟成为了新的世俗市政权威的标志。每个城镇都想要一个；胜利者视它们为珍贵的战利品，在游人去神圣古迹朝圣的路上，他们专程去看并听这些钟表。

50.Indeed, the very notion of productivity is a by-product of the clock: once one can relate performance to uniform time units, work is never the same. One moves from the task-oriented time consciousness of the peasant (working on job after another, as time and light permit) and the time-filling busyness of the domestic servant (who always had something to do) to an effort to maximize product per unit of time.

*TPO-30 The Invention of the Mechanical Clock*

事实上，生产力的准确概念是时钟的副产物，一旦一个人可以将其表现用统一的时间单位衡量，那么工作就永远都不会一样了。人们从农民以任务为导向的工作方式（在时间和光线条件允许的情况下，一件工作接着一件的干）和家奴以时间为导向的工作方式（总有事情做）中转变到了将单位时间的生产量达到最大化的努力中。