

TPO 46 – 1 The Origin of Writing 文字的起源

It was in Egypt and Mesopotamia (modern-day Iraq) that civilization arose, and it is there that we find the earliest examples of that key feature of civilization, writing. These examples, in the form of **inscribed clay tablets** that date to shortly before 3000 B.C.E., have been discovered **among** the archaeological remains of the Sumerians, a **gifted** people settled in southern Mesopotamia.

文明诞生于埃及和美索不达米亚（今伊拉克）地区，那里也出现了代表文明主要特征的最早的例证——文字。这些**刻在泥板**的文字可以追溯到公元前 3000 年，是**在苏美尔人的考古遗迹中**发现的，苏美尔人曾居住在美索不达米亚南部的一个**有天赋**的民族。

The Egyptians were not far behind in developing writing, but we cannot follow the history of their writing in detail because they used a **perishable** writing material. In ancient times the **banks** of the Nile **were lined with** papyrus plants, and from the papyrus reeds the Egyptians made a form of paper; it was excellent in quality but, like any paper, fragile. Mesopotamia's rivers **boasted** no such useful reeds, but its land did provide good clay, **and as a consequence** the clay tablet became the standard material. Though **clumsy and bulky** it has a **virtue dear** to archaeologists: it is durable. Fire, for example, which is death to papyrus paper or other writing materials such as leather and wood, simply **bakes** it hard, thereby making it even more **durable***. So when a conqueror **set** a Mesopotamian palace **ablaze**, he helped ensure the **survival** of any clay tablets in it. Clay, moreover, is cheap, and forming it into tablets is easy, factors that helped the clay tablet become the **preferred** writing material not only throughout Mesopotamia but far outside it as well, in Syria, Asia Minor, Persia, and even for a while in Crete and Greece. Excavators have unearthed clay tablets in all these lands. In the Near East they **remained in use** for more than two and a half millennia, and in certain areas they lasted down to the beginning of the common era until finally **yielding, once and for all, to** more convenient alternatives.

once and for all 一劳永逸地；彻底地；最后一次

埃及人在形成文字上并不落后，但我们不能详细了解到他们的文字发展历史，因为他们使用的书写材料**很容易腐烂**。当时尼罗河**两岸**长满了纸莎草，埃及人就利用这种草造了一种纸；这种纸质量很好，但是像普通的纸一样脆弱。美索不达米亚的河边并没有纸莎草，但当地确实有不错的粘土，**所以**泥板成为了标准的书写材料。虽然泥板很笨重，但对于考古学家来说它有一个**珍贵的优点**：保存持久。比如说，火对纸莎草或其它书写材料，如皮革和木材是致命的，但是对于泥板来说，火只会把它**烧**得更坚硬，从而使其能**保存更持久**。所以当征服者把美索不达米亚宫殿烧为灰烬时，反而使得其中的泥板保存了下来。此外，粘土比较廉价，而且容易成型，这使得泥板不仅在美索不达米亚成为**首选的**写作材料，而且在遥远的叙利亚、小亚细亚和波斯也很受青睐，甚至在克里特岛和希腊也流行过一段时间。发掘者都曾在这些地方都出土过泥板。在近东地区泥板一直使用了 2500 多年，在有些地方一直持续使用到公元后，直到最终**让位于**更方便、更合适的替代品。

The Sumerians perfected a style of writing **suited to clay**. This script consists of simple shapes, basically just wedge shapes and lines that could easily be **incised** in soft clay with a

批注 [1]: inscribe

•vt. 题写；题献；铭记；雕

批注 [2]: clay

•n. [土壤] 粘土；泥土；肉体；似黏土的东西

•vt. 用黏土处理

批注 [3]: tablet

英 ['tæblət] 美 ['tæblət]

•n. 碑；药片；写字板；小块；平板电脑

•vt. 用碑牌纪念；将(备忘录等)写在板上；将...制成小片或小块

批注 [4]: be lined with

•排有；镶有

批注 [5]: boast

•vt. 夸口说，自吹自擂说；以有...而自豪

•n. 自夸；值得夸耀的事物，引以为荣的事物

•vi. 自吹自擂

批注 [6]: clumsy

英 ['klʌmzi] 美 ['klʌmzi]

•adj. 笨拙的

•笨拙地

•不得当的

•不得当地

bulky

英 ['bʌlki] 美 ['bʌlki]

•adj. 体积大的；庞大的；笨重的

批注 [7]: virtue

英 ['vɜ:tʃu:] 美 ['vɜ:rtʃu:]

•n. 美德；优点；贞操；功效

reed or wooden stylus; scholars have **dubbed** it cuneiform from the wedge-shaped marks (cunei in Latin) that are its **hallmark**. Although the **ingredients*** are merely wedges and lines, there are hundreds of combinations of these basic forms that **stand for** different sounds or words. Learning these complex signs required long training and much practice; **inevitably**, **literacy** was largely limited to a small **professional class**, the **scribes**.

苏美尔人创造出了更完善的**适合泥板**的书写方式。这些文字由一些简单的形状组成，基本上只含有楔形和线条，可以很容易地用苇秆或木制尖笔**刻在**那些软粘土上；学者将这些以楔形符号（拉丁文意为楔叶）为**特点**的文字**称之为**楔形文。虽然楔形文只是由楔形笔画和线条构成，但是这些基本的形式可以组合成几百种不同的发音或单词。学习这些复杂的符号需要长期训练和大量的实践，不可避免地，有读写能力的人局限于很小的**职业阶层**，即写字匠。

The Akkadians conquered the Sumerians around the middle of the third millennium B.C.E., and they **took over** the various cuneiform signs used for writing Sumerian and **gave** them sound and word values that fit their own language. The Babylonians and Assyrians did the same, and so did peoples in Syria and Asia Minor. The literature of the Sumerians was treasured throughout the Near East, and long after **Sumerian** ceased to be spoken, the Babylonians and Assyrians and others kept it alive as a literary language, **the way Europeans kept Latin alive after the fall of Rome**. For the **scribes** of these non-Sumerian languages, training **was doubly demanding since** they had to know the values of the various cuneiform signs for Sumerian as well as for their own language.

在公元前 3000 年，阿卡德人攻克了苏美尔，他们沿用了书写苏美尔语的楔形文字写法，并**赋予**了这些文字适合自己语言的发音和意义。巴比伦人、亚述人、叙利亚人和小亚细亚人也是如此。整个近东地区都很重视苏美尔人的文字，即使是在没有人说**苏美尔语**之后很久一段时间内，巴比伦人和亚述人依然把它当作一种文学语言，**就像**欧洲人在罗马沦陷后，依然把拉丁语作为文学语言一样。那些不说苏美尔语的**写字匠**需要加倍地刻苦训练，因为他们需要知道楔形文字在苏美尔语中以及他们自己的语言中的不同意义。

The **contents of** the earliest **clay tablets** are simple notations of numbers of commodities—animals, jars, baskets, etc. **Writing**, it would appear, **started** as a primitive form of **bookkeeping**. Its use soon widened to document the **multitudinous** things and acts that are involved in daily life, from simple **inventories*** of **commodities** to complicated **governmental** rules and regulations.

最早的泥板上简单标着各种商品（动物、陶土罐、篮子等）的数量。文字的出现最开始是作为一种原始的记账手段。很快它就被扩展到用来记录日常生活中的各种事件和行为，从简单的**商品清单**到复杂的**政府** ^{adj} 规章制度。

批注 [8]: hallmark

- n. 特点；品质证明
- vt. 给...盖上品质证明印记；使具有...标志

批注 [9]: ingredient*

英 [ɪn'grɪ:diənt] 美 [ɪn'grɪ:diənt]

- n. 原料；要素；组成部分
- adj. 构成组成部分的

批注 [10]: stand for

- 代表；支持；象征；担任...的候选人

批注 [11]: literacy

- n. 读写能力；精通文学

批注 [12]: scribe

- n. 抄写员；作家；划线器
- vt. 写下，记下；用划线器划
- vi. 写下，记下；担任抄写员

批注 [13]: took over

- 接管；接收

批注 [14]: multitudinous

英 [ˌmʌltɪ'tju:diːnəs]

美 [ˌmʌltɪ'tu:diːnəs]

- adj. 大量的，众多的；各种各样都有的；由许多不同成分（或人）组成的；浩瀚的，辽阔的

批注 [15]: inventory*

英 [ɪn'ventəri] 美 [ɪn'ventɔ:ri]

- n. 存货，存货清单；详细目录；财产清册
- vt. 给.....开列清单

Archaeologists frequently find clay tablets **in batches**. The batches, some of which contain thousands of tablets, consist **for the most part** of documents of the types just mentioned: bills, deliveries, receipts, inventories, loans, marriage contracts, **divorce settlements**, court judgments, and so on. These records of **factual*** matters were kept in storage to be available for reference—they were, in effect, **files**, or, to use the **term preferred by specialists in the ancient Near East, archives**. **Now and then** these files include pieces of writing that are of a distinctly different order, writings that do not merely record some matter of fact but involve **creative intellectual** activity. They range from simple textbook material to literature—and they make an appearance very early, even from the third millennium B.C.E.

考古学家经常能发现**成批的**泥板。一批泥板可能有数千块,**大多数是**关于方才提到的几类事物的记录:账单、交付单据、收据、库存清单、贷款、婚姻证书、**离婚协议**、法院判决等等。这些事实的记录被储存起来供参考使用,事实上,它们就是文件,或者用古代近东专家的术语叫“档案”。在这些文件中,**时而**会出现一些另类的文件:它们不仅仅记录事实,还记录下了一些富有创造性的**智力** *adj.*活动。这些另类文件既有简单的教科书材料,也有文学著作,早在公元前三千年就出现了。

批注 [16]: for the most part

英美

•adv. 在极大程度上,多半

批注 [17]: factual*

英 ['fæktʃuəl] 美 ['fæktʃuəl]

•adj. 事实的; 真实的

批注 [18]: creative

英 [kri'eɪtɪv] 美 [kri'eɪtɪv]

•adj. 创造性的

批注 [19]: intellectual

英 [ˌɪntə'lektʃuəl] 美 [ˌɪntə'lektʃuəl]

•adj. 智力的; 聪明的; 理智的

•n. 知识分子; 凭理智做事者

TPO 46 – 2 The Commercial Revolution in Medieval Europe 中世纪欧洲商业革命

Beginning in the 1160s, the opening of new silver mines in northern Europe led to the minting and circulation of vast quantities of silver coins. The widespread use of cash greatly increased the volume of international trade. Business procedures changed radically. The individual traveling merchant who alone handled virtually all aspects of exchange evolved into an operation involving three separate types of merchants: the sedentary merchant who ran the "home office," financing and organizing the firm's entire export-import trade; the carriers who transported goods by land and sea; and the company agents resident in cities abroad who, on the advice of the home office, looked after sales and procurements.

从十二世纪六十年代欧洲北部开辟了新的银矿开始，大量银币开始铸造和流通。现金的广泛使用大大增加了国际贸易量，从根本上改变了商业程序。从几乎要独自处理交易的方方面面的流动商人演变成了需要三种不同类型商人的操作：一个维持总部，为企业整个进出口贸易筹集资金和做出规划的商人；一个负责通过海陆运输货物的送货员；一个驻国外城市的企业代理，此人依照总部的建议，主管销售和采购。

Commercial correspondence, unnecessary when one businessperson oversaw everything and made direct bargains with buyers and sellers, multiplied. Regular courier service among commercial cities began. Commercial accounting became more complex when firms had to deal with shareholders, manufacturers, customers, branch offices, employees, and competing firms. Tolls on roads became high enough to finance what has been called a road revolution, involving new surfaces and bridges, new passes through the Alps, and new inns and hospices for travelers. The growth of mutual trust among merchants facilitated the growth of sales on credit and led to new developments in finance, such as the bill of exchange, a device that made the long, slow, and very dangerous shipment of coins unnecessary.

当一个商人可以监管贸易的所有事项或者买卖双方直接交易时，商业信函没有必要，但是有了分工后它们被大量使用。商业城市间开始有了常规的快递服务。当企业不得不开始处理与股东、制造商、客户、分支机构、员工和竞争企业之间的众多关系时，商业会计变得更加复杂了。公路收费高到足以支持所谓的“道路革命”，包括建造新的路面和桥梁、穿过阿尔卑斯山的新隧道，以及为旅客提供的新旅馆和招待所。商家间的相互信任促进了赊销的增长，金融出现了新的发展：比如汇票的产生，避免了那些不必要的又缓慢又危险的长途钱币运输。

The ventures of the German Hanseatic League illustrate these advancements. The Hanseatic League was a mercantile association of European towns dating from 1159. The league grew by the end of the fourteenth century to include about 200 cities from Holland to Poland. Across regular, well-defined trade routes along the Baltic and North seas, the ships of league cities carried furs, wax, copper, fish, grain, timber, and wine. These goods were exchanged for finished products, mainly cloth and salt, from western cities. At cities such as Bruges and London, Hanseatic merchants secured special trading concessions, exempting them from all tolls and allowing them to trade at local fairs. Hanseatic merchants established foreign trading

centers, the most famous of which was the London Steelyard, a walled community with warehouses, offices, a church, and residential quarters for company representatives. By the late thirteenth century, Hanseatic merchants had developed an important business technique, the business register. Merchants publicly recorded their debts and contracts and received a league guarantee for them. This device proved a decisive factor in the later development of credit and commerce in northern Europe.

德国汉萨同盟的商业冒险正是这些进步的体现。汉萨同盟是欧洲城镇的一个商业协会，始建于 1159 年。该同盟在十四世纪末迅速扩大到包括了荷兰和波兰的约 200 个城市。沿着波罗的海和北海的明确、固定的贸易路线，同盟城市的船只运输着毛皮、蜡、铜、鱼、谷物、木材和酒。这些货物主要是与西部城市的布料和盐等成品交换。在布鲁日和伦敦等城市，汉萨商人获得特殊的贸易优惠，免除了所有的过路费，并且允许他们在当地的集市做买卖。汉萨商人建立了国外贸易中心，其中最著名的是“伦敦钢院”，一个有仓库、办公室、教堂、公司代表住处的封闭社区。到十三世纪后期，汉萨商人已发展出一种重要的商业技术——商业登记。商人公开记录了他们的债务和合同，并获得了同盟为他们作担保。这一机制在北欧的信贷和商业发展中起了决定性的作用。

These developments added up to what one modern scholar has called "a commercial revolution." In the long run, the commercial revolution of the High Middle Ages (A.D.1000–1300) brought about radical change in European society. One remarkable aspect of this change was that the commercial classes constituted a small part of the total population—never more than 10 percent. They exercised an influence far in excess of their numbers. The commercial revolution created a great deal of new wealth, which meant a higher standard of living. The existence of wealth did not escape the attention of kings and other rulers. Wealth could be taxed, and through taxation, kings could create strong and centralized states. In the years to come, alliances with the middle classes were to enable kings to weaken aristocratic interests and build the states that came to be called modern.

所有的这些发展被现代学者称为“商业革命”。从长远来看，中世纪的商业革命（公元 1000-1300 年）给欧洲社会带来了根本性的变化。其中一个显著的变化是，商人的数量只占人口的一小部分，还不到百分之十。但是他们带来了的影响远远超过这个比例。商业革命创造了大量的新财富，意味着人们可以有更高的生活水平。国王和其他统治者也注意到了这些财富的存在。财富可以被征税，通过税收，国王可以创造强大的集权国家。在后面几年里，与中产阶级的联盟使国王能够削弱贵族的利益，并建立了“现代”的国家。

The commercial revolution also provided the opportunity for thousands of agricultural workers to improve their social position. The slow but steady transformation of European society from almost completely rural and isolated to relatively more urban constituted the greatest effect of the commercial revolution that began in the eleventh century. Even so, merchants and business people did not run medieval communities, except in central and northern Italy and in the county of Flanders. Most towns remained small. The nobility and churchmen determined the predominant social attitudes, values, and patterns of thought and behavior.

The commercial changes of the eleventh through fourteenth centuries did, however, lay the economic foundation for the development of urban life and culture.

商业革命也使成千上万的农业从业者有机会提高社会地位。欧洲社会开始从几乎完全孤立的农村缓慢而稳定地转变为相对更为城市化，这是从十一世纪开始的商业革命带来的最大影响。尽管如此，除了在意大利中北部和弗兰德斯县之外，商人和生意人没有掌控中世纪社会。大部分城镇仍然很小。贵族阶层和教士决定主要的社会态度、价值观，以及思想和行为模式。但是十一世纪到十四世纪的商业变革确实为城市生活和文化的发展奠定了经济基础。

TPO 46 – 3 Ecosystem Diversity and Stability

生态多样性与稳定性

Conservation biologists have long been concerned that species extinction could have significant consequences for the stability of entire ecosystems—groups of interacting organisms and the physical environment that they inhabit. An ecosystem could survive the loss of some species, but if enough species were lost, the ecosystem would be severely degraded. In fact, it is possible that the loss of a single important species could start a cascade of extinctions that might dramatically change an entire ecosystem. A good illustration of this occurred after sea otters were eliminated from some Pacific kelp (seaweed) bed ecosystems: the kelp beds were practically obliterated too because in the absence of sea otter predation, sea urchin populations exploded and consumed most of the kelp and other macroalgae.

一直以来，生物保护学家一直关注的一个问题是，物种灭绝可能会对整个生态系统的稳定性产生严重的影响，影响到与它们有交集的生物以及它们所生活的物理环境。一个生态系统可以承受某些物种的损失，但如果损失的物种足够多，生态系统就会严重退化。事实上，一个重要的物种损失就可能引发一系列的物种灭绝，可能极大地改变整个生态系统。海獭被从太平洋海藻（海草）床生态系统中移除就是一个很好的例子：没有了海獭捕食，海胆数量暴增，吃掉了大量海带和其他大型海藻，海草床也因此不复存在。

It is usually claimed that species-rich ecosystems tend to be more stable than species-poor ecosystems. Three mechanisms by which higher diversity increases ecosystem stability have been proposed. First, if there are more species in an ecosystem, then its food web will be more complex, with greater redundancy among species in terms of their nutritional roles. In other words, in a rich system if a species is lost, there is a good chance that other species will take over its function as prey, predator, producer, decomposer, or whatever role it played. Second, diverse ecosystems may be less likely to be invaded by new species, notably exotics (foreign species living outside their native range), that would disrupt the ecosystem's structure and function. Third, in a species-rich ecosystem, diseases may spread more slowly because most species will be relatively less abundant, thus increasing the average distance between individuals of the same species and hampering disease transmission among individuals.

一般来说，物种丰富的生态系统往往比物种贫乏的生态系统更稳定。有人提出，物种的多样性通过三种机制增加了生态系统的稳定性。首先，一个生态系统的物种越多，它食物网就越复杂，物种间的营养作用方面就会有更多的重合。换句话说，在一个物种丰富的系统里，如果失去了一个物种，就给了其它物种一个很好的机会，代替它扮演猎物、捕食者、生产者、分解者、或任何它所扮演的角色。第二，多样的生态系统不太可能遭到新物种的入侵，特别是会破坏生态系统结构和功能的外来物种（生活在本土范围以外的物种）。第三，在一个物种丰富的生态系统中，疾病可能会传播得比较慢，因为每个物种的数量相对较少，从而增加了同一物种内个体间的平均距离，从而阻碍了个体间的疾病传播。

Scientific evidence to illuminate these ideas has been slow in coming, and many shadows remain. One of the first studies to provide data supporting a relationship between diversity

and stability examined how grassland plants responded to a drought. Researchers D. Tilman and J.A. Downing used the ratio of above-ground biomass in 1988 (after two years of drought) to that in 1986 (predrought) in 207 plots in a grassland field in the Cedar Creek Natural History Area in Minnesota as an index of ecosystem response to disruption by drought. In an experiment that began in 1982, they compared these values with the number of plant species in each plot and discovered that the plots with a greater number of plant species experienced a less dramatic reduction in biomass. Plots with more than ten species had about half as much biomass in 1988 as in 1986, whereas those with fewer than five species only produced roughly one-eighth as much biomass after the two-year drought. Apparently, species-rich plots were likely to contain some drought-resistant plant species that grew better in drought years, compensating for the poor growth of less-tolerant species.

已经慢慢有一些科学证据来证明这些观点，同时还有很多未解的问题。最早提供数据来支撑多样性和稳定性之间的关系的是关于草原植物如何对抗干旱的研究。D. 蒂尔曼和 J.A. 唐宁两位研究员在美国明尼苏达州的雪松溪自然历史保护区，用 207 个地块在 1988（经过两年的干旱）和 1986（干旱前）的地表生物量的比值来反映生态系统受干旱破坏的程度。在一个 1982 年开始的实验中，他们比较了这些比值与每个取样点的植物物种数，发现取样点的植物物种越多，其生物数量在干旱中急剧下降得就越少。那些物种数量超过十种的取样点在 1988 年的生物量大概是 1986 年的一半，而那些物种数量少于五种的取样点在经过两年干旱之后，大概只剩下八分之一的生物数量。显然，物种丰富的地块很可能包含一些抗旱植物品种，这些品种在干旱年份生长得更好，弥补了那些不那么抗旱的品种的数量。

To put this result in more general terms, a species-rich ecosystem may be more stable because it is more likely to have species with a wide array of responses to variable conditions such as droughts. Furthermore, a species-rich ecosystem is more likely to have species with similar ecological functions, so that if a species is lost from an ecosystem, another species, probably a competitor, is likely to flourish and occupy its functional role. Both of these, variability in responses and functional redundancy, could be thought of as insurance against disturbances.

从更一般的意义上来说，一个物种丰富的生态系统可能更稳定，因为它更可能含有能对某种气候条件（如干旱）的做出各种反应的物种。此外，物种丰富的生态系统更可能包含着类似生态系统的功能，因此，如果生态系统中的一个物种损失，另一个物种，可能是竞争对手，就有希望蓬勃发展，并取代它的作用。对恶劣条件的不同的反应，以及系统内的功能重合性，这两个特征都是对抗恶劣气候的保障。

The Minnesota grassland research has been widely accepted as strong evidence for the diversity-stability theory; however, its findings have been questioned, and similar studies on other ecosystems have not always found a positive relationship between diversity and stability. Clearly, this is a complex issue that requires further field research with a broad spectrum of ecosystems and species: grassland plants and computer models will only take us so far. In the end, despite insightful attempts to detect some general patterns, we may find it very difficult to reduce this topic to a simple, universal truth.

明尼苏达草原的研究作为多样性-稳定性理论的有力证据已被广泛接受，但是，它的研究结果已经被质疑，另外其他生态系统的类似的研究并没有找到多样性和稳定性之间积极的相关性。显然，这是一个复杂的问题，需要进一步的关于更多各种生态系统和物种的实地研究，对草地的研究和建立计算机模型只能证明部分问题。最后，尽管这些富有洞察力的尝试得出了一些概括性结论，我们可能会发现很难将这个话題缩小成一个简单的、普遍认可的事实。