

## The Birth of Scientific English

World science is dominated today by a small number of languages, including Japanese, German and French, but it is English which is probably the most popular global language of science. This is not just because of the importance of English-speaking countries such as the USA in scientific research; the scientists of many non-English-speaking countries find that they need to write their research papers in English to reach a wide international audience. Given the prominence of scientific English today, it may seem surprising that no one really knew how to write science in English before the 17th century. Before that, Latin was regarded as the lingua franca<sup>1</sup> for European intellectuals.

The European Renaissance (c. 14th-16th century) is sometimes called the 'revival of learning', a time of renewed interest in the 'lost knowledge' of classical times. At the same time, however, scholars also began to test and extend this knowledge. The emergent nation states of Europe developed competitive interests in world exploration and the development of trade. Such expansion, which was to take the English language west to America and east to India, was supported by scientific developments such as the discovery of magnetism (and hence the invention of the compass), improvements in cartography and - perhaps the most important scientific revolution of them all - the new theories of astronomy and the movement of the Earth in relation to the planets and stars, developed by Copernicus (1473-1543).

England was one of the first countries where scientists adopted and publicised Copernican ideas with enthusiasm. Some of these scholars, including two with interests in language - John Wallis and John Wilkins - helped found the Royal Society in 1660 in order to promote empirical scientific research.

Across Europe similar academies and societies arose, creating new national traditions of science. In the initial stages of the scientific revolution, most publications in the national languages were popular works, encyclopaedias, educational textbooks and translations. Original science was not done in English until the second half of the 17th century. For example, Newton published his mathematical treatise, known as the Principia, in Latin, but published his later work on the properties of light - Opticks - in English.

There were several reasons why original science continued to be written in Latin.

The first was simply a matter of audience. Latin was suitable for an international audience of scholars, whereas English reached a socially wider, but more local audience. Hence, popular science was written in English.

A second reason for writing in Latin may, perversely, have been a concern for secrecy. Open publication had dangers in putting into the public domain preliminary ideas which had not yet been fully exploited by their 'author'. This growing concern about intellectual property rights was a feature of the period - it reflected both the humanist notion of the individual, rational scientist who invents and discovers through private intellectual labour, and the growing connection between original science and commercial exploitation. There was something of a social distinction between 'scholars and gentlemen' who understood Latin, and men of trade who lacked a classical education. And in the mid-17th century it was common practice for mathematicians to keep their discoveries and proofs secret, by writing them in cipher, in obscure languages, or in private messages deposited in a sealed

box with the Royal Society. Some scientists might have felt more comfortable with Latin precisely because its audience, though international, was socially restricted.

Doctors clung the most keenly to Latin as an 'insider language'.

A third reason why the writing of original science in English was delayed may have been to do with the linguistic inadequacy of English in the early modern period.

English was not well equipped to deal with scientific argument. First, it lacked the necessary technical vocabulary. Second, it lacked the grammatical resources required to represent the world in an objective and impersonal way, and to discuss the relations, such as cause and effect, that might hold between complex and hypothetical entities.

Fortunately, several members of the Royal Society possessed an interest in language and became engaged in various linguistic projects. Although a proposal in 1664 to establish a committee for improving the English language came to little, the society's members did a great deal to foster the publication of science in English and to encourage the development of a suitable writing style. Many members of the Royal Society also published monographs in English. One of the first was by Robert Hooke, the society's first curator of experiments, who described his experiments with microscopes in *Micrographia* (1665). This work is largely narrative in style, based on a transcript of oral demonstrations and lectures.

In 1665 a new scientific journal, *Philosophical Transactions*, was inaugurated. Perhaps the first international English-language scientific journal, it encouraged a new genre of scientific writing, that of short, focused accounts of particular experiments.

The 17th century was thus a formative period in the establishment of scientific English. In the following century much of this momentum was lost as German established itself as the leading European language of science. It is estimated that by the end of the 18th century 401 German scientific journals had been established as opposed to 96 in France and 50 in England. However, in the 19th century scientific English again enjoyed substantial lexical growth as the industrial revolution created the need for new technical vocabulary, and new, specialised, professional societies were instituted to promote and publish in the new disciplines.

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*lingua franca: a language which is used for communication between groups of people who speak different languages*

## Questions 1-7

Complete the summary.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes **1-7** on your answer sheet.

In Europe, modern science emerged at the same time as the nation state. At first, the scientific language of choice remained **1**..... It allowed scientists to communicate with other socially privileged thinkers while protecting their work from unwanted exploitation. Sometimes the desire to protect ideas seems to have been stronger than the desire to communicate them, particularly in the case of mathematicians and **2**.....

In Britain, moreover, scientists worried that English had neither the **3**..... nor the **4**..... to express their ideas. This situation only changed after 1660 when scientists associated with the **5**..... set about developing English. An early scientific journal fostered a new kind of writing based on short descriptions of specific experiments. Although English was then overtaken by **6**..... it developed again in the 19th century as a direct result of the **7**.....

## Questions 8-10

Do the following statements agree with the information given in Reading Passage?

In boxes **8-10** on your answer sheet, write

**TRUE** if the statement agrees with the information

**FALSE** if the statement contradicts the information

**NOT GIVEN** if there is no information on this

**8**..... There was strong competition between scientists in Renaissance Europe.

**9**..... The most important scientific development of the Renaissance period was the discovery of magnetism.

**10**..... In 17th-century Britain, leading thinkers combined their interest in science with an interest in how to express ideas.

### Questions 11-13

Complete the table.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes **11-13** on your answer sheet.

<b>Science written in the first half of the 17th century</b>		
<b>Language used</b>	<b>Latin</b>	<b>English</b>
Type of science	Original	<b>11</b> .....
Examples	<b>12</b> .....	Encyclopaedias
Target audience	International scholars	<b>13</b> ....., but socially wider

**Solution:**

- |   |  |
|---|--|
| 1. Latin  | 8. NOT GIVEN   |
| 2. doctors  | 9. FALSE   |
| 3. technical<br>vocabulary//grammati<br>cal resources | 10. TRUE   |
| 4. technical<br>vocabulary//grammati<br>cal resources | 11. popular  |
| 5. Royal Society                                      | 12. Principia / the<br>Principia /<br>Newton's Principia<br>/ mathematical<br>treatise |
| 6. German   | 13. local / more<br>local / local<br>audience  |
| 7. industrial revolution                              |  |