机电技术笔口英汉互译系统方法(一)

(英译汉部分)

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16. 机电英语科普读物的汉译

机电英语类科普读物除其专业词汇方面独具特色之外，其它方面与其它门类的科普读物基本没有区别。因此，在汉译机电英语科普读物时，除了注意正确使用机电技术的专业术语词汇这一点之外，其汉译方法和注意事项与汉译其它门类的科普读物的情况相似。另外，科普读物的科技专业性不强，分界线不明显，所以我们从宏观角度概括地介绍一下英语科普读物的汉译方法。

科普翻译在翻译科学领域中独具特征。至今，仅有百年左右的历史。科普作品的种类、内容和形式是纷纭繁多的。但就其体裁和性质来说，一般分为两大类，即通俗科技知识读物和科普文艺作品。这两大类科普作品，是独具一格的文体。它与科技论文有一个共同点，那就是向读者传授科学知识，这就要求重客观事实与逻辑思维的特点。但是，两者的读者对象又不同，科普读物的读者对象不是从事科学研究的专业科技人员，而是广大少年儿童、青年学生、工人、农民和战士，乃至为数众多的城乡居民。向他们传授人类已经掌握的科学技术知识、技能和先进的科学思想与方法，以求增长知识和才干，提高广大人民群众的科学文化水平。这样一种使群众由“不知”向“有知”的教育过程，须采用通俗而完美的艺术表现形式，以求奏效。

为此，对科普作品的翻译要求，自然也就有其独特之处。

第一，科普作品的科学性。要求科普翻译作品必须严格遵循“信”即“忠实”的原则，不仅要译文无文字上的漏、错、曲，而且还要使译文的内容完全保持原文在科学上的高度准确性，不可有丝毫背离或含混之处。因此，科普译文中对概

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念、事实、数据的表达和专业语言的使用，都要求做到高度准确和规范化。科普翻译作品要符合忠实即“信”的标准要求，译者起码要在有较深厚的外文功底的基础上对所译原文的专业知识作到基本熟悉。否则，就会出现诸多不当之处。有些人，对专业知识一无所知，只靠查科技辞典或只知道原文中外文单词的汉语普通生活字义就去翻译科普作品有时会闹出笑话。

第二，科普作品的翻译与文学及其他作品一样，必须遵循“达”的原则，要做到通俗易懂。然而由于科普作品的科学性所决定，它在“达”这一标准上，即通顺方面的要求，与文学及其他作品不尽相同。其主要表现如下：①专业科学概念必须准确、规范，绝不能用生活和其它非专业用语来代替科学概念。②不能用生活语言代替行业语言的办法去求“通俗易懂”。如果不注意这一点，即使语句译得十分通顺，从科普作品的角度去要求，也如习武场上谈文一般，给人一种别扭的感觉，不但不符合科普译文“达”的标准要求，反而影响文意的准确表达，有害于“信”。③科普译文中，严禁方言、俚语，切忌语言的本民族化。

使用方言、俚语使语言本民族化，虽能使译文通俗易懂，但是却完全歪曲了原文的文体风格，把汉语的民族特点强加给了外文，造成为求“达”而伤“信”的后果。这种“译文”名不符实，已经变成以原文内容为资料重新进行创作的文章了。

第三，关于科普翻译作品中的“雅”，即美的标准，就是在行文中，用口语化的短句和优美、流畅、明快、通俗易懂的常用语言把科学技术知识完美而又毫不枯燥地表达出来。这样，科普译文中的“雅”，即艺术美也就寓于其中了。这也

是科普译文的艺术美，即“雅”的表现形式与文艺作品不同的独特之处。

所以，科普译作的艺术美主要是通过科学技术内容本身的准确、鲜明、生动和完美来表达，靠蕴藏在科学里面的趣味和美的发掘来引人入胜。

既然如此，科普译作中艺术性与科学性的结合就都是有条件的。艺术性的要求不应违背科学性的要求，尤其是对于那些向人们传授知识的通俗科普译文，在用汉语组织语言进行翻译的时候，就要注意达到让读者读过后，能从感性认识开始，再导入科学概念，从种种典型事例中，概括出一般规律，启发科学的思维活动，使人们能够对事物做到从现象到本质、形象而又科学的理解，达到接受科普译文所传授的科技知识的目的。

这样，科普译文中语言的运用，只能是在与科学内容相适宜的专业范围内经常使用的那些日常语言。决不能用日常生活用语来替代“行话”。语言应朴实严谨，准确规范。比喻要恰当，避免拟人化，避免使用夸张、感情色彩浓重和暗示性的语言。

上述对科普译作在信、达、雅三方面的要求与文艺作品不同的独特之处，主要是指外国通俗科技知识读物。至于那些以文艺形式来表达科学内容的外国科普文艺作品，就形式来讲，它是文艺作品的一种，它在信、达、雅方面的要求基本上与文艺译作是相同的。但又因为它表现的内容是科技知识，所以，又不能简单地用一般文艺译作的信、达、雅标准来套用。在对科普文艺作品进行翻译时，对科学内容、概念、原理、定律、数据、事实等方面的表达，要做到高度准确，语言也要求确切、严谨和规范化。在这方面，与对通俗科技知

识读物译作的要求相同。

综上可以看出，以其在科学内容、概念、原理、定律、数据、事实等方面表达的高度准确，语言高度确切、严谨和规范化的特点，来区别于文艺译作，而又以其语言艺术作品在行文上艺术美的特点，来区别于纯科学译文，从而使科普翻译作品，成为一种既兼有二者特点又与二者有区别的独具一格的文体。

最后须提及一点，一般外国科普作品中，有时也会出现科学知识上的失误。此时，一个责任心强的译者切不可照搬文意，依样画瓢。应该把错处纠正过来，在译注中说明，否则必将错传知识，贻误读者。

机电英语科普读物汉译实例①

OUTLOOK：SCIENCE AT WORK

John Parry

Contents

Ⅶ. Computers

Most of us still count on our fingers. Not prices, perhaps, but points of information and things that we intend to do. Man's fingers were his first computing machine. He used them to help him to add up, subtract, and generally work things out. Then he invented the abacus, or counting frame. On this, rows of beads represent numbers. By using one row for numbers below ten, the next for groups of ten, the next for the hundreds, and then the thousands, etc., the operator can use the abacus for reckoning quite high numbers, Shopkeepers in the Far East — for example, in Singapore or Hong Kong—still use the abacus, and a skilled operator can do his calculations with it more quickly than an operator in London using a mechanical adding machine.

We can think of the beads on an abacus as a series of "switches". On the Chinese abacus illustrated in this section, there are five beads (each representing one) on the wide section of each wire, and two beads (each representing five) on the narrow section. Looking at the wide section first, we see that the beads are normally grouped towards the outer part of the frame.

To count 1, we switch one bead towards the dividing bar. To add 2 and 3, we switch first two beads and then three towards the dividing bar, and read the result as 5. To add 4 and 3, we move the beads until all five in the wide section are towards the dividing bar, We then switch this count of five to the narrow section, where it is represented by one bead only. This releases our five original beads, which return to their original position. We move two of them to complete the calculation: 1" five-bead" plus 2" one-beads" equals 7.

To multiply by ten, we switch to the next wire in the frame, moving one " five-bead" and two " one-beads" to the dividing bar. On the first wire, we return all the beads to their original position. The abacus now reads 70.

It is possible to devise mechanical switches of this kind, automatically operated, to cover a wide range of mathematical calculations. Charles Babbage, an English mathematician living in the nineteenth century, made the first attempt to produce a machine which could do complex mathematical work. He designed his machine for calculating mathematical tables. Its switches were operated mechanically, by means of wheels, gears, weights, wires, etc. The information concerning the problem to be worked, and the instructions to the machine on which set of switches to use, came from punched cards—that is, cards on which information was represented by the position of holes punched in them, in a way rather similar to the way the

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position of the beads on an abacus can show a number.

Babbage's machine could do a wide range of mathematical work, store information for future reference, and even make comparisons between results of different calculations. It included a device for printing results on paper. It was ,in basic conception, very like a modern digital computer. Unfortunately, he never finished building it. In spite of a grant from the British Government, and the investment of much of his own money, when he died in 1871 the machine was still incomplete. Nevertheless, later scientists studying his plans and drawings have said they were sound. The first modern computer, built in 1925 by an Americal team led by Vannevar Bush and also using mechanical switches, was similar in principle to Babbage's design.

The future of computers, however, lay not with mechanical switches, but with electronics. The movement of electrons in so rapid, and they are so quickly started and stopped (the time nceded for a switch being millionths of a second), that even very complex calculations can be done in a very short time.

An electric switch has two positions—on and off. It is therefore simpler for the computer to handle mathematics expressed in terms of two digits (1, 0) than—as in everyday life—in terms of ten digits (1, 2, 3, 4, 5, 6, 7, 8, 9, 0). Two—digit mathematics, known as" binary", is similar to the decimal system, as a comparison of these tables will show:

Decimal system	Decimal system	Binary system
Number: 8097	Number: 29	Number: 29
$8\times10^3=8000$	$2\times10^1=20$	$1\times2^4=16$
$0\times10^2=0$	$9\times10^0=9$	$1\times2^3=8$
$9\times10^1=90$	29	$1\times2^2=4$
$7\times10^0=7$		$0\times2^1=0$
8097		$1\times2^0=1$
		29

In each case we express the number by following the order of the digits on the left-hand side of the table, reading downwards. The number 29 in decimal notation reads 11101 in binary. The digit in each column can only be either 1 or 0.

Dealing in terms of two positions only, the machine can do calculations of even the most complex kind, depending on the circuitry. Because the switches are electronic and not mechanical, the calculations are made with great speed.

1. ACROSS THE ATLANTIC BY COMPUTER

One of the yachts entered for the transatlantic race in 1968 had a pbssible advantage over the others. Only one person was allowed on board each yacht and he had to sail it single-handed across the Atlantic Ocean, but the man who sailed the Sir Thomas Lipton used daily information from a computer on shore to help him to plot his course.

The program prepared for the computer included data (in-formation) ablut the characteristic performance of the yacht in different conditions. Data concerning the daily performance of the yacht during the race — its speed. , course and position — were radioed back by her captain, Geoffrey Williams, to the computer programmers at English Electric Computers. They also had daily from the Meteorological Office, on magnetic tape, recorded data on wind speed and direction over the Atlantic Ocean.

With these data, the computer worked out a number of the " best possible" routes which the yacht might take. At this point. , human judgement took over again. From six routes supplied by the computer, the Ship Routing Offecr at the Meteorological Office selected two or three to radio to Geoffrey Williams. He, in turn, used his judgement to select the route he wished to follow.

The calculations by computer took three and a half minutes each day. (A man would need perhaps as long as thirty—six hours.)

And the result of the race? The sir Thomas Lipton won.

2. THE COMPUTER IN DAILY USE

In helping the winner of 1968 transatialtic single — handed yacht race, the computer calculated (and therefore, we may say, proposed) several courses of action. To do this it used not only the instructions fed into it by its programmers, but also the information stored in its memory banks. Computers are already used in normal business operations in the same way. Information concerning the business, and instructions on the necessary calculations, are fed into the computer. In considering a number of alternative courses of action, a manager can now ask the computer," What would happen if I…?" and he will get a helpful answer. Similarly, public services can use computers to help with planning. In St Louis, U. S. A., the police department uses a computer to help to plan the distribution of its men over the city. In this case, the computer's calculations are based on information about the geographical distribution of the city's crime. In the centre of London, a computer fed with information concerning traffic flow controls traffic lights.

In addition to calculations, the most frequent use for a computer is probably "information retrieval". Most business firms, on receiving a letter, will know how to file it so that they can find it again. Big firms have thousands of files occupying valuable space, because paper takes up a lot of room. The same information could be stored in a comparatively small space by using a computer. Moreover, computers can retrieve information very rapidly, Bringing together a series of relevant facts may take several days in a firm using old-style files (maybe even longer), while a firm using a computer could have the information in minutes.

The full benefits of the information retrieval potential of computers have not yet been exploited. In Britain, a scientist working for the Atomic Energy Authority has proposed to the government that the whole of British law should be computer-filed-an eatimated twenty million words. Another suggestion, made in the weekiy magazine New Scientist, is that people's addresses and telephone numbers should be stored by computer. In the future, instead of looking up a number in a telephone directory, we could ring up the computer, which could be programmed even to answer comparatively vague inquiries such as " Could you tell me the number of a Mr Halkin who lives in…er…Chalfont Road or Avenue?" The computer would reply, almost immediately," John Halkin, 530 Chalfont Way, number 111—85—6728."

3. FEEDING THE COMPUTER

To look at, a computer is a mass of equipment and circuitry neatly contained in one or more metal boxes. Perhaps there is a keyboard (similar to a typewriter keyboard) attached to it, or a cathode ray tube looking like a television screen. Near by, there may be a number of racks and shelves on which magnetic tape and discs are stored. All this equipment, in fact everything that we can see, is called by the computer industry the hardware.

When a firm decides to install a computer, the cost of the hardware may only be half the total cost. It may even be considerably less than half. The remaining cost is the software—that is, the instructions which must be fed into the computer before anyone can use it. Most manufacturers of hardware have a library of programs. They can feed in the relevant programs when they install the equipment, assuming of course that the purchaser needs the kind of program which has already been used by other purchasers. If his needs are less general and he requires a program designed for his special situation, then the costs are much higher. Even then, the programs may be sent to him by the manufacturers of the hardwarc, although there are already a number of firms specializing in programming only, the software manufactursers.

The user may wish to ask his computer questions, or feed information into it or both. The program is designed to fit his requirements, and this means giving him a language that he can use when communicating with the computer. He may wish to translate everything into a series of numbers, but it is more likely that most users will wish to express themselves in plain language. This is possible on modern computers. The operator can sit at the keyboard and type out a question in English, such as" How many one — centimetre brass screws must I order?" If the computer is programmed to answer such questions it may type back " Don't order any. You are over-stocked."

It is therefore no longer necessary to translate words into numbers. Plain language can be used providing that the operator keeps within the limits which the computer will accept. A computer may be able to answer a question such as " What is the time?" (providing it has access to such information), but might be puzzled by communications such

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