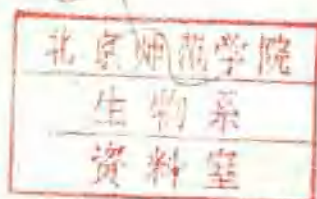


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Putting Brainpower in a Box

Neural networks could change the way computers work

The more time scientists spend designing computers, the more they marvel at ① the human brain. Tasks that stump② the most advanced supercomputer—recognizing a face, reading a handwritten note—are child's play for the 3-lb. organ. Most important, unlike any conventional computer, the brain can learn from its mistakes. Researchers have tried for years to program computers to mimic③ the brain's abilities, but without success. Now a growing number of designers believe they have the answer: if a computer is to function more like a person and less like an overgrown calculator, it must be built more like a brain, which distributes information across a vast interconnected web④ of nerve cells, or neurons⑤.

Although barely off the production lines, the resulting computers, called neural networks, have already started altering the way people think about artificial intelligence⑥. Researchers at Ford Motor⑦, for example, are exploring the possibility of using neural-network computers to find and fix potential problems in new autos. The U.S. Government last year invested \$40 million in neural-network research, according to market analysts. Eventually, proponents⑧ say, the new technology will lead to computers that can reprogram themselves to deal with any contingency⑨, in situations ranging from directing

① marvel at: 对……感到惊异。 ② stump: 难住, 难倒。 ③ mimic: 模仿。 ④ web: 网。 ⑤ neuron: 神经元。 ⑥ 全句意思是: 这种称做神经网络的计算机, 虽然刚刚生产出来, 但已开始改变人们对人工智能的看法。 although 引导的让步状语从句是不完全句, although 后面省略了 they are。 ⑦ Ford Motor: 福特汽车公司。 ⑧ proponent: 倡议者, 支持者。 ⑨ contingency: 偶然发生的事, 意外情况。

combat to planning a sumptuous^⑩ meal.

Last week 1,600 researchers and artificial-intelligence enthusiasts from around the world gathered in San Diego^⑪ for the second international conference on neural networks. For five days, they studied the recent advances in this form of artificial intelligence and pondered its bright future. Before long, Tom Schwartz, an industry consultant in Mountain View, Calif.^⑫, told the crowd, "these machines will be recognized as the steam engines of the 21st century."

Conventional computers function by following a chainlike sequence of detailed instructions. Although very fast, their processors can perform only one task at a time. This lockstep^⑬ approach works best in solving problems that can be broken down into simpler logical pieces. The processors in a neural-network computer, by contrast, form a grid, much like the nerve cells in the brain. Since these artificial neurons are interconnected, they can share information and perform tasks simultaneously. This two-dimensional approach works best at recognizing patterns.

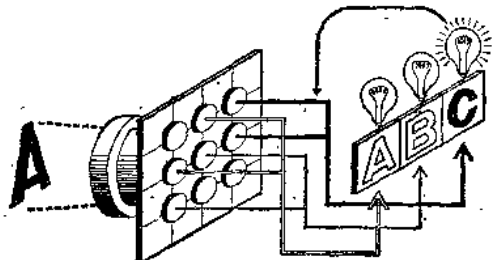
Instead of programming a neural-network computer to make decisions, its maker trains it to recognize the patterns in any solution to a problem by repeatedly feeding examples to the machine. The computer responds to each example by randomly activating its circuits in a particular configuration. The trainer electronically reinforces any connections that produce a correct answer and weakens those that produce an incorrect one. After as many as several thousand trials, the computer activates only those circuits that produce the right answer. "It works just like a kid," says Farrokh Khatibi, senior product manager at AI Ware Inc., a 3½-year-old neurocomputing company in Cleveland^⑭. "It learns and learns, and when you tell it what it did wrong, you hope, it won't do it again."

⑩ sumptuous: 豪华的, 奢侈的。 ⑪ San Diego: 圣地亚哥 [美国港市]。 ⑫ Mountain View, Calif.: 加利福尼亚州的芒廷维尤 [美国城市]。 ⑬ lockstep: 死板的做法。 ⑭ Cleveland: 克利夫兰 [美国城市]。

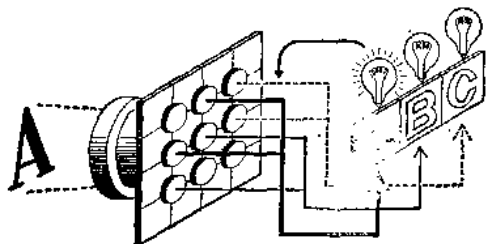
LEARNING THROUGH MISTAKES

A neural network with optical sensors can learn through experience to "recognize" the letter A,

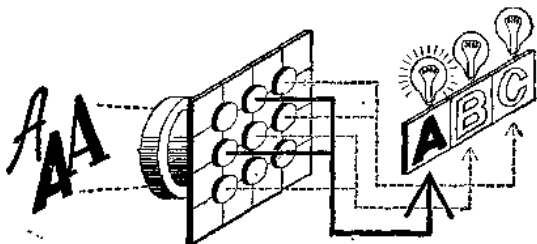
At first the system makes random guesses like a child,



When the system makes an incorrect choice, the circuits responsible are weakened,



When it makes a correct choice, the circuits involved are strengthened.



After many trials with different forms of A in which the correct circuits are repeatedly strengthened, the network is able to identify the character with a high degree of accuracy,

Neural networks come in all shapes and sizes. Until now, most existed as software simulations because redesigning computer chips took a lot of time and money. By experimenting with different approaches through software rather than hardware, scientists have been able to avoid costly mistakes. At last week's convention in San Diego, several firms introduced the real thing: chips that are actually wired to mimic the nerves in the brain.

Perhaps the toughest competition that neural networks will face in the field of artificial intelligence comes from the so-called expert systems used in medicine, banking, navigation and other fields. Instead of looking for patterns, computerized expert systems distill the decision-making process used by human experts into rules of thumb^⑮. Neurocomputer researchers argue that neural networks will eventually prove superior, however, because they can adjust^⑯ more easily to changes in the nature of the problem to be solved.

Others predict that a combination of neural networks and expert systems could solve problems too tough for either to tackle^⑰ alone. Since natural intelligence consists of several ways of reasoning, the argument goes^⑱, computer engineers will have to design artificial intelligence with more than one way of processing information. Says Esther Dyson, editor of *Release 1.0*, a computer-industry newsletter:
• 'A neural network will tell the difference between a Russian tank and an American tank, and an expert system will tell whether to shoot.'

Despite recent advances, neurocomputing attracts skeptics^⑲. Thomas Poggio, head of the Center for Biological Information Processing at M.I.T., insists that proponents of neural networks have exaggerated their computers' smarts^⑳. "The only thing they have in common

⑮ 全句意思是：计算机化的专家系统不是寻找模式，而是把专家们所使用的决策过程提炼成根据实际经验来做的方法。 ⑯ adjust (to): 适应于。 ⑰ tackle: 解决。 ⑱ the argument goes: 他们论证说。这是插入句。 ⑲ skeptic: (=sceptic) 持怀疑态度的人。 ⑳ smarts: 智力，智能。

一些含让步概念的句式

范大建

英语中表示让步概念的方法很多。除了大家熟悉的让步状语从句和一些词汇手段外，尚有一些句式在逻辑上含有让步的意味，常用来表示让步概念。这在翻译和阅读中值得注意。

I. 定语从句表让步概念

英语中有些定语从句在逻辑意念上兼有状语从句的职能，用来说明主句的原因、目的、让步等关系。下面便是兼有让步含义的定语从句的例子。

1. My assistant, *who had carefully read through the instructions before doing his experiment*, could not obtain satisfactory result, because he followed them mechanically.

虽然我的助手在做实验之前已经从头到尾仔细阅读过说明书，但由于他生搬硬套，所以不能得到满意的结果。

2. He insisted on building another house, *which he had no use for*. 他坚持要再造一幢房子，尽管他并无此需要。

II. when-clause

除引导时间状语从句外，when 还可引导让步状语从句。这时它的意义相当于 although。例如：

1. She paid *when she could have entered free*.

虽然她可以免费入场，但她还是付了钱。

2. They sometimes expect gratitude *when they are not entitled to it*.

~~~~~  
with the human brain is the word neural," he argues. At best, neurocomputers consist of only a few thousand connections—a very small number compared with the trillions of connections between billions of neurons found in the human brain. "Before trying to duplicate the human brain," Poggio says, "scientists will have to learn far more about the brain than they already know."

(From Times, Aug. 8, 1988)



虽然没有接受的资格，他们有时却期待着别人的感谢。

### III. if-clause

这时的 if 相当于 even if，但是语气较弱些。此时要注意与 if 条件句的区别。

1. *If John was there, I didn't see him.*

虽然约翰在那里，但我没有见到他。

2. *If I die, mourn not over my fate.*

即使我死了，也不要为我的命运叹息。

表“让步”的 if-clause 和条件句一样，也有省略 if 的主谓倒装用法。例如：

*Had Johnson left nothing but his dictionary, one might have traced there a great intellect, a genuine man.*

即使约翰逊仅留下一部辞典给后世，人们也足以在它的字里行间领略到他那伟大的智慧与纯真的人格。

*Had she been alive, we shouldn't have seen her.*

即使她还活在人间，我们也见不着她了。

### IV. 并列句

and 和 but 连接的并列句有时具有让步的含义。其让步意义是通过两个分句语意的对比体现出来的。例如：

1. *I cannot keep these trees alive and I have watered them well.*

虽然我一直细心浇水，可还是没法使这些树成活。 ★

2. *She tried hard in the new experiment and she failed.*

虽然她在新的实验中努力工作，但还是失败了。

3. *Your job may be demanding, but at least it isn't boring.*

(=Although your job is demanding, at least it isn't boring.)

你的工作虽然紧张，但起码不令人厌烦。

4. *English may be difficult to learn, but I like it very much.*

(=Although English may be difficult to learn, I like it very much.)

虽然英语也许不容易学，但我很喜欢它。

### V. 祈使句表让步概念

一些“动词原形+连接词 (what, when, where, how, who 等)”的祈使结构常具有让步含义，相当于“no matter+疑问词”或“疑问词+ever+”

may...”所表示的让步概念。这种结构表示较强的让步意义，主句与从句的对立概念更加明显。

1. *Be the consequences what they may*, I will not shrink from doing my duty. (=No matter what the consequences may be,...)

不论结果怎样，我不会不履行我的义务。

2. I shall have to buy the coat, *cost what it may*. (=No matter what it may cost,...)

无论要多少钱，我非买这件上衣不可。

3. *Go where you will*, forget not the adage “Do in Rome as the Romans do.” (=Wherever you may go,...)

无论你走到什么地方，要记住“入乡随俗”这句格言。

4. *Look where I will*, I see nothing like him. (=Wherever I may look,...)

无论我到哪里，都找不到他那样的人。

#### VI. 分词结构表让步概念

分词可以不用连接词，单独构成表示“让步”的短语。它和表“原因”的分词结构极易混淆，应特别注意。它们的区别为：表原因的分词结构与主句在语意上通常是一致的；表让步的分词结构在语意上与主句内容相反，较多表示前后对立的观念。

1. *Born of the same parents*, he bears no resemblance to his brothers.

虽是同一父母所生，他与自己的兄弟毫无相似之处。

(cf. *Born of the same parents*, he bears a strong resemblance to his brothers. 因为是……。)

2. *Disappointed, but not discouraged*, Miranda followed again.

米兰达虽已失望，但并不沮丧，重新在后面追赶。

3. *Granting the achievements to be great*, we have no reason to be conceited.

即使我们取得了巨大成就，也没有理由骄傲自满。

4. *There are some people who, not lacking in skill on ordinary occasions*, lose their presence of mind in public.

有些人在平时虽很能干，但到了大庭广众之前，却显得手足无措。

# DO WITH 和 DO WITHOUT

陈明发

这是一对常用习语，各有多种含义。现将它们的主要意义和译法介绍如次。

## DO WITH

### 1. 处理, 应付, 对待 (deal with)

What was Madame Curie to do with the mineral in which there was some source of radiation? 居里夫人怎样处理含有某种辐射源的矿物?

He has the ability to do properly with all kinds of complicated situations. 他具有恰当地应付各种复杂局面的能力。

Teachers should do fairly with their students. 教师应当公平地对待学生。

### 2. 放置 (put, leave)

— What did you do with my English-Chinese dictionary? 你把我的英汉辞典放到哪里去了?

— I left it in the dormitory. 我把它放在宿舍里了。

### 3. 利用时间, 度过时间 (occupy, pass the time)

Mary didn't know what to do with herself. 玛丽不知道做些什么才好。

Tell me what you did with yourselves on Sunday. 告诉我你们星期天是怎样度过的。

### 4. 需要, 想要 (常与 can, could 连用) (expressing a need or wish)

The instrument of this laboratory could do with a change. 这个实验室的仪器需要更换了。

Could you do with an experiment again? 你想再做一次试验吗?

You can do with a good time. 你们该好好玩一玩了。

Could they do with someone to help them? 他们需要什么人帮助他们吗?

### 5. 用完, 结束, 读完, 完成 (可与 to be 或 to have 连用) (finish, fulfil,

complete)

Have you done with this reference book? 这本参考书你用完了吗?

Have you done with this *EST LEARNING*? 你看完了这期《科技英语学习》了吗?

6. 忍受, 容忍 (tolerate)

Can you do with this pain? 你能忍受这痛苦吗?

She couldn't do with waiting any longer, so she left. 她受不了再久等了, 因此她走了。

7. 相处, 生活或工作在一起 (get on with, live or work with)

Don't you find her difficult to do with? 你没有发现她难以相处吗?

That man is pretty difficult to do with. 那个人相当难处。

8. 控制自己(情感) (control one's feeling)

Most children won't know what to do with themselves for excitement. 大多数孩子因兴奋总是控制不住自己的。

9. 将就用, 使用, 以……勉强对付过去 (make use of, use profitably)

Can you do with cold water for your shower? 你能用冷水洗个淋浴吗?

The most interesting thing about this remarkable plant (bamboo) is what people do with it after it is cut down. 有关这种奇异植物(竹)的最有趣的事是在被砍倒后人们对它的利用。

I could do with a little more money. 再多一点钱我就能对付过去了。

DO WITHOUT:

1. 不用, 不需要 (manage without, dispense with)

We can't do without knowledge, can we? 我们少不了知识, 不是吗?

No one can do without sleep for very long. 没有人能长时间不需要睡觉。

If you can't find your watch, you will have to do without it. 假如你找不到你的表, 你只好不戴了。

Joan is doing without candy; she's dieting. 琼不吃糖, 她正节食。

## 从形容词 heavy 看词义的派生现象

王志森

Heavy 是一个常用的多义形容词。它源于古 Anglo-Saxon 语 hefig 一词,意思是 "having great weight, hard to heave", 因此它的本义是 "of a certain weight, esp. of a weight that makes carrying, moving or lifting difficult" (指一定重量,尤指重得难以搬移或提举)。由于它在口语和书面语中长期被广泛采用,它的词义外延扩展,派生丰富多采的转义,有的转义已与本义相去甚远。它原是中性的,词义派生后,大多数转义趋向降格,具有各种贬义;少数转义趋向升格,具有一定的褒义。现汇集它的贬义与褒义的搭配词组,以纵观其词义派生现象之全貌。

一、词义派生后,大多数转义趋向降格,与名词灵活搭配,衍生广泛的贬义:

- 1) 指人物(愚蠢丑恶的人物角色、丑陋的容貌体态、恶劣的心态、难忍的感觉)

a heavy man (fellow) 思想迟钝、说话不流利的笨人(蠢货)

a heavy eater 食量很大的人(俗称大肚皮)

heavy features 粗陋的面貌,粗眉大眼的人

a heavy smoker 烟抽得多的人    a heavy drinker 酒鬼

heavy eyelids 沉甸甸的眼皮    a heavy look 愁容

heavy tongue 笨拙的口才    heavy walk 蹒跚笨拙的步态

heavy breath 困难的呼吸    a heavy heart 忧心、沉痛的心情

- 2) 指时间、空间景况(不爽的天气、忙碌的日子、险恶不利的自然环境、不景气的市容)

a heavy sky 阴天    a heavy weather 不爽的阴湿天气

2. 没有……也行或也无妨 (it doesn't matter if not)

Mr Johnson said that he likes coffee, but can do without it.  
约翰逊先生说他爱喝咖啡,但不喝亦可。

We shall do without a holiday this summer. 今年夏天我们没有假日也无妨。

a heavy day 繁忙的一天      a heavy road 崎岖的、泥泞的道路  
 a heavy grade 险峻的斜坡      a heavy scene 尴尬的情景  
 heavy soil 难耕地      heavy sea 波涛汹涌的大海  
 a heavy market 呆滞的市场      heavy traffic 拥挤不堪的交通

3) 指程度或数量(难以忍受的强力、不胜负担的巨数或过量)

a heavy blow 猛击      a heavy fighting 恶斗  
 a heavy fall 狠跌      a heavy hurt 重伤  
 heavy debts 重债      heavy taxes 苛税  
 heavy expenses 巨耗      heavy casualties 重大伤亡  
 heavy drinking 狂饮      heavy smoking 过量吸烟

4) 指感官所接触的事物(令人不快的气味、声音,令人乏味的食物、读物)

a heavy odour 闷人的臭味  
 a heavy sound 低沉的声音  
 a heavy roar of cannon 沉闷的隆隆炮声  
 heavy bread 发酵不充分的面包  
 heavy food 不易消化的食物  
 heavy readings 枯燥无味的读物

5) 指坏事、难事、罪行、重罚等

heavy news 噩耗      heavy tidings 坏消息  
 heavy responsibilities 繁重职责  
 a heavy undertaking 艰巨事业  
 a heavy crime 恶行  
 a heavy offence 重罪  
 a heavy punishment 过于严厉的惩罚

二、词义派生后,少数转义趋向升格,具有一定的褒义,常见的搭配名词有:

a heavy thinker 深邃的思想家  
 heavy crops 丰收  
 heavy applause 热烈掌声

由上可窥见多义形容词 heavy 具有很强的词义辐射力(radiation)。对其褒贬两个方面的转义,必须细加品味,而后选用贴切的汉语形容词译出,方能传神。



## Boy Survives Ice-water Drowning

Alvaro Garza, age 11, was sledding① in early December with three friends close to the Red River② in Moorhead, Minnesota. Somehow, Alvaro slid onto thin ice and broke through into the frigid③ water. His friends tried to help him. When they realized they could not, they ran to a nearby house and dialed the emergency 911 number.

About 45 minutes later, several rescuers in two boats pulled Alvaro from 10 feet of water. He wasn't breathing and he had no heartbeat. As the ambulance raced to the hospital, CPR④ was performed.

In the emergency room at St. Luke's Hospital in Fargo, North Dakota, Alvaro still wasn't breathing and had no heartbeat. "He was clinically⑤ dead," said the hospital's Dr. Panjini Sivanna, a critical-care specialist⑥.

But four days later, Alvaro was very much alive. Doctors had hooked him up to a heart-lung machine that warmed his blood. They gave him air until he could breathe on his own.

The icy water that filled Alvaro's lungs helped save his life. It lowered his body temperature to about 77°F. Normal body temperature is 98.6°F. The low temperature "reduces the body's demand for oxygen and for nutrients⑦," Dr. Sivanna said. Alvaro probably wouldn't have survived a plunge in the river during summer⑧. In

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① sled: 采雪橇。 ② the Red River: 这里指的是“北方红河”(Red River of the North)。它是美国明尼苏达州和北达科他州的界河,向北流入加拿大。 ③ frigid: 寒冷的。 ④ CPR: (= cardiopulmonary resuscitation) 心肺复苏术。 ⑤ clinically: 根据临床诊断。 ⑥ critical-care specialist: 处理危急病人的专家。 ⑦ nutrient: 营养物。 ⑧ 全句意思是: 如果是在夏天落水,阿尔瓦罗就不可能幸免于死。此句是虚拟语气。

warm water, the body's organs will still require a lot of oxygen and nutrients to keep on working. But in cold water, a drowned person, even though he or she might appear dead, might still be alive. That's why it's important not to give up on<sup>⑨</sup> someone who drowns in icy water, according to Dr. Robert Pozos, an expert on hypothermia<sup>⑩</sup>.

Why is it that only children seem to recover miraculously from cold-water drowning<sup>⑪</sup>? Dr. Pozos told SW<sup>⑫</sup> that "a child is smaller and can cool off much faster than an adult." In the time it takes an adult's body temperature to drop, his organs can suffer fatal damage from lack of oxygen<sup>⑬</sup>.

Alvaro's body responded to the frigid water in much the same way as a Weddell seal's<sup>⑭</sup> body reacts when it dives deep in the Antarctic waters. He had what is called the diving reflex<sup>⑮</sup>. Cold water on the face of any mammal<sup>⑯</sup> sends nerve signals to the brain. These cause the heart rate to slow and the flow of oxygen-carrying blood to go mainly to vital tissues such as brain.

(From *Science World*, January 29, 1988)

⑨ give up on: 认为……无可挽救,对……绝望。⑩ hypothermia: 低体温(法)。⑪ 全句意思是: 在冰冷的水中溺水时,为什么好象只有小孩才能奇迹般地恢复过来? that 引出的是主语从句, it 是形式主语。⑫ SW: (= *Science World*)《科学世界》杂志。⑬ 全句意思是: 成人的体温还没来得及降低,由于缺氧,他的器官可能已遭受致命的损坏。it takes ... to drop 是定语从句,修饰 time。⑭ Weddell seal: 威德尔海豹(产于南极洲边缘的威德尔海 Weddell Sea), ⑮ reflex: 反射(作用)。⑯ mammal: 哺乳动物。

(李伟选注)

If I have done the public any service, it is due to patient thought.

—Isaac Newton

如果我为公众做了点事,那要归功于耐心的思考。

——艾萨克·牛顿

The shortest way to do many things is to do only one thing at a time.

—Cecil

多做事的捷径是每次只做一件事。

——赛西尔。



## as such 的译法

玫 漪

固定词组 *as such* 用得不如 *such as* 多,但在科技文献中也常见到。其基本意义有两个:

1. *in that form or kind*. 可译为“如此”、“这种”,也可译为“以此”、“因此”、“因而”。如:

Most of the patients with neurocirculatory asthenia are unwilling to accept psychotherapy *as such*.

多数神经血循环无力患者不愿接受这种精神疗法。

2. *in itself*. 可译为“本身”,“就其本身而论”等。如:

Enzyme, *as such*, does not enter into the chemical reaction.

酶本身并不参与这一化学反应。

*as such* 的含义基本上是上述两种,但在实际翻译时要适当地处理。下面是一些实例的翻译。

You are a doctor and should do the duty *as such*.

你是医生,就应该尽医生的职责。

In general, man serves as the source of infection while animals act *as such* only occasionally.

一般说来,人可作为感染源,而动物只是偶然如此。

Darwin was a brilliant biologist and is known *as such* to the world.

达尔文是一位卓越的生物学家,并以此闻名于世。

Backache is a traditional symptom of retroversion but one which is probably only rarely caused by the position of the uterus *as such*.

背痛是子宫后倾的一种常见症状,但这种症状也许很少是单纯由于子宫后倾引起的。

It is now known that food protein is not absorbed *as such*, but must first be broken down into constituent amino-acids.

现在已经发现,食物中的蛋白质不能按其原来形式加以吸收,必须首先分解为氨基酸。