Ⅰ　A small slice of design　(BBC News)

A design student at Brunel University, UK, has developed a toaster that takes a meteorological(気象の) information from the internet and then browns your bread with an image of what weather to expect on the way to work.

The image is burned on to the bread by using one of three stencils(型版), representing sunny, cloudy or rainy conditions.　Eventually, the stencils could be changed for a more sophisticated imaging system that might be able to burn weather maps, short text messages and even advertisements on to bread.

<Smart bread>

Robin Southgate, who is studying industrial design, has developed the forecasting toaster for his final-year project that has to take a complete device from concept to finished product.

He decided on the toaster to make his work stand out from the worthy and helpful devices many of his fellow students were creating. "I couldn't compete, so I went for fun and cool," he said. Mr Southgate's ambition is to follow in the footsteps of influential British designers such as Jonathan Ive, the man behind Apple's sleek(つやつやした) iMac computer.

Inspiration for the toaster also came from the MIT Tangible Media project which tries to turn everyday objects into carriers of information.

The current **prototype**(試作品) creates one of three images familiar from TV weather maps on the bread using stencils that mask part of the slice while the rest continues to be toasted. The images are made of *heat-resistant*(耐熱の) plastic and stay rolled up round an axle(回転軸) until needed.

<Toasting success>

When bread is first inserted into the forecasting toaster, it is browned just like in any other toaster. But in the last 20-30 seconds of toasting, an electric motor inside the toaster rolls out the appropriate stencil in front of the bread.

To ensure the symbols are uniformly etched(くっきり描く) on to the bread, the controller chip(半導体) inside the toaster notes how dark someone wants their bread browned and only unrolls the stencil for the last 20 seconds or so of toasting time. "It works with brown, but best with white(1)," said Mr Southgate. "But it should work with any bread."

Weather forecast information is held on a website created just for the smart toasters and this is consulted regularly via a modem(モデム) inside the toaster to find out the latest information(2). Mr Southgate was keen for the toaster to work like any other and make no special demands on users.

After much thought Mr Southgate concluded that the internet was the easiest way to supply forecasts to the toaster. He learned the Java programming language to help him program the toaster to *call up*(電話で呼び出す) the weather website.

<TV licence>

Prior to turning to the web, he considered extracting information from the TV text services Ceefax or Teletext, but this could have meant buying a TV licence for each toaster, and running costs of up to ￡104 per year for the gadget(目新しい道具) would limit its appeal.

Having got the toaster working Mr Southgate is now looking at ways of making it more **versatile**(万能の). He is experimenting with an array(配列) of heating elements that create a display 11 dots square.　This could be used to draw weather maps, advertisement or even write messages from phones on to bread.

Mr Southgate has been working on the forecasting toaster since August last year and has to have his project completed by 11 May. The finished device(3) will go on show at Brunel on 11 June.（593 語）