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TECHNOLOGY MONITOR**Safer knives****The blunt truth**Feb 18th 2009
From Economist.com**Most knives could be much safer yet still do their job**

COULD household knives be made less dangerous without being made less useful? In countries such as Britain, where the latest figures suggest that 30% of murders are committed with knives or other sharp instruments, many of which have come out of a kitchen drawer, that is a pertinent question. It is one that Sarah Hainsworth, a forensic-engineering specialist at the University of Leicester, asked herself.

The answer that she and her colleagues at Britain's Forensic Pathology Unit have now come up with is "Yes". Using a pig's carcass, which is similar in some ways to a human's, Dr Hainsworth and her team studied the wounds made by different blades falling from a height that was adjusted, depending on the weight of the knife, to result in the same force. The team looked at four of a knife's properties—the radius of the tip, the shape of the tip, the thickness of the blade and the sharpness of the edge—in order to determine what was doing the most damage.

The answer turned out to be the radius of the tip. The reason is that skin is elastic and will at first stretch and deflect a knife. At some point, however, a critical level of stress is reached and the skin is ruptured, allowing the blade to enter the muscle beneath. A sharp-pointed knife overcomes the initial deflection faster.

The force needed to go deeper is much less than that required for the entry. In fact, some convicted killers have commented on how their knife seemed to "fall into" the body of their victim after breaching his skin. That, combined with the closeness of many vital organs to the surface (depending on the area, a wound a mere 2cm deep has a 41% chance of puncturing the lungs, more than a 60% chance of rupturing the liver or the femoral artery and even a 6% chance of penetrating the heart) means a lethal wound is easily (and often unintentionally) inflicted. It also explains why the sharpness of the knife's edge is less relevant to the damage ultimately caused than is the sharpness of its tip.

All this may sound obvious in retrospect, but it is important because the working part of most kitchen knives is the edge of the blade, not the tip. That suggests a systematic redesign might make most such knives less lethal without making them less effective. Obviously there would be exceptions. Filleting knives, which turned out to be the most lethal of all, certainly need their tips. But the bread knives tested by Dr Hainsworth, with their "sheep's foot" shaped tips often failed to pierce the skin at all. A model for other kitchen equipment, perhaps?

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**Too fine a point on it**