



## LOCAL DIFFICULTY

Council tax will continue to dog the Government

Today's muted council tax forecasts demonstrate once and for all that local democracy in Britain is neither local nor democratic. Householders will be relieved to learn that only 12 councils plan to raise taxes next year by more than 5 per cent. But they should also beware: the lid that ministers have rushed to place on council tax in the run-up to the election will soon blow off again.

Until three years ago, the Government happily used council tax rises as a stealth tax, blaming increases on profligate local authorities. When the bills started to rise in double-digits, however, voters laid the blame firmly at central Government's door. With councils dependent on the Treasury for four fifths of their funding, it looked as though Whitehall was forcing local authorities to spend beyond their means on national priorities such as social security and education. Central grants to councils increased, but they did not keep pace with the increased burdens of national insurance, pension fund debts and policy aims.

Determined to avoid the spectacle of householders protesting in an election year, ministers have resorted to

an extraordinary combination of threats and cajolery to bring local authorities to heel. The Chancellor laid the ground with his decision in November to reallocate £512 million from other government departments to keep council taxes down. Nick Raynsford, the Local Government Minister, has repeated his threat to cap councils that raise taxes too high. For their part, many councils have become concerned that government enthusiasm for "new localism", devolving power to alternative bodies, might strip them of important functions. All but the most rebellious have fallen into line. That the majority of the rebels are Conservative-controlled may in itself be something of a pre-election gambit, but it does not mask the bigger problem.

The fact is that Britain has one of the most centralised systems of local government finance in the world. Councils typically raise only 20 per cent of their funds locally, and depend on the Treasury for the rest. Local authorities' dependence on fixed Whitehall grant means that they have to increase tax by about 4 per cent to fund a 1 per cent increase in their budget. Council tax rises thus reflect, and mag-

nify, the pattern of government spending. If Government insists on minimising tax rises, the services that suffer first will be those that are truly local, such as parks and street cleaning, over which authorities have discretion. So much for democracy. True local accountability is impossible when there is such a gap between what authorities spend and raise locally. And voters will not impose restraint if they correctly divine that the council is not fully in control of the bill.

What next? The much-vaunted Lyons inquiry will not report until the end of this year, but ministers seem to favour retaining the existing system and raising taxes on higher-value properties. What is certain is that council tax will soar when homes are revalued and tax bands are modified in 2007. The Liberal Democrats predict rises of £300 or more in 60 regions, hitting houses that have gained most in value.

There will be no true local democracy until the bulk of local council revenue is raised, spent and determined locally. Politicians can talk all they like about neighbourhoods and "localism", but handouts from London do not good neighbours make.

## SAFETY AND NUMBERS

Sellafield's problem is not with science, but with public perception

Nuclear power is the cleanest available form of mass energy generation, producing no greenhouse gas emissions. Reactor design has improved, as has the technology of nuclear waste disposal. Greater recourse to nuclear power is a necessary ingredient of strategies to mitigate global warming. The ambitious emissions targets set for Britain by Labour are, as it has yet to admit, extremely unlikely to be met without a decision to replace at least some of this country's ageing reactors.

Public confidence in every aspect of the civil nuclear sector is thus a vital national interest — and that means confidence not only about safety, but about security. Al-Qaeda records in Afghanistan showed that its leaders would have used weapons of mass destruction, had they had them. Cast-iron anti-theft safeguards are required, and nowhere more than in the nuclear reprocessing industry.

When the public learns, therefore, that 30kg of plutonium are listed as "unaccounted for" in the annual audit of the British Nuclear Group's vast

nuclear reprocessing complex at Sellafield, it is natural to assume that this is a euphemism for "lost" — that fissile material could fall, or have fallen, into dangerous hands. Reprocessed plutonium is not necessarily portable, existing not only in metal, but also in oxide powder and liquid nitrate forms, but that does not make it any easier to convince people that this is an inherently untroubling "accounting exercise". Nor does it cut much ice that this quantity is only "0.1 per cent of throughput", or that the apparent discrepancy is well within the 1 per cent ceiling permitted by Euratom. The thought that Sellafield might be "allowed" a 300kg leeway of error, enough for several dozen crude bombs, must naturally appal.

The point, however, is that the "unaccounted for" plutonium is not missing in the way common sense suggests. It probably never existed in the first place. Sellafield's 30 kilos represent the difference between the quantity of plutonium calculated by nuclear physicists to exist inside the spent fuel

rods brought to Sellafield for reprocessing, and the actual plutonium yield.

Plutonium is man-made, created when neutrons hit uranium atoms. The difficulty of measuring how much plutonium a spent fuel rod contains is that not every neutron hits a uranium atom and, even if hit, not every uranium atom turns into plutonium. Before reprocessing, nuclear physicists estimate the quantity of plutonium using factors such as the rod's weight, the quantity of uranium burnt, how long the rod was in a reactor and where it was located, and operational intensity. They can do with almost, but not total, accuracy. The aim must always be to reduce the margin of error.

Confidence requires openness — more of it than Britain's nuclear industry has been known for in the past. One problem with BNG's conversion to candour, as it has found this week, is that the science of nuclear reprocessing is not widely understood. The best course is not less information, but more. That is a commitment the Government should share with industry.

## PC PLODS ON

The latest robots show that walking and computing do not mix

If a robot falls over in a lab and no one is around to straighten out its wonky antenna, does anyone really care? Apparently so. Three top-flight teams of robotics engineers attending the annual meeting of the American Association for the Advancement of Science have gone to inordinate lengths to persuade their titanium-coated progeny to walk the real human walk; to flex their ankles and avoid cracks in the pavement, perchance even to swagger. One android from MIT, called Toddler, seems to have pulled it off. It even has contrary-swinging arms for

balance, just like people do. The trouble is, the effort Toddler puts into walking leaves it with almost no computing power left to think.

As a species, we should allow ourselves a smirk. All the brains with all the microchips in all the world can build a 'bot that walks like us but, having done so, can barely hold a scrubbing brush. Not for the first time, this heroic branch of science has proved its usefulness by reminding human beings of their unique brilliance and versatility. We remain the only things, living or otherwise, able to retrieve drop-

ped socks from behind washing machines and talk about it afterwards.

Lest smugness give way to hubris, though, we should bear this in mind: Toddler *learnt* to walk, from a computer program, in 20 minutes. What will it learn next? Presumably its descendants will be able to orate like Cicero but will grind to a halt when they open their mouths. There may eventually be a generation of true humanoids that walk our walk *and* talk our talk, but at least we'll be able to do to them what we've always done to know-alls, and tell them to shove off.

## Wear your heart on your wrist and show that you really, really care



NOTEBOOK  
MICK HUME

WITH THE market for anti-racist, anti-bullying and anti-everything wristbands nearing saturation, I am thinking of launching a new anti-wristband wristband. It could be worn as a symbol of concern about the mass outbreak of multicoloured plastic bands on the wrists of the Western world. Available in "invisible" flesh tones only. Make cheques payable to Emperor's New Clothes Ltd.

Wristbands have replaced ribbons as the badge of compassion du jour. The phenomenon took off in May when Lance Armstrong, six-times winner of the Tour de France, and Nike launched yellow Livestrong wristbands to highlight testicular cancer. By October they had sold 20 million, and everybody from presidential candidates to Prince William wanted to be seen wearing them.

Now it seems that every victim-centred campaign has to have its own coloured wristband. The most obvious ones in Britain include blue for anti-bullying (one million issued), endorsed by the Government, the BBC and assorted celebrities and charities, and white for the Make Poverty History campaign, sported by everybody from Nelson Mandela downwards.

They are supposed to be about raising awareness of good causes. But it is hard to see how glimpsing somebody else's wrist-furniture could raise my awareness of anything — particularly when different causes have adopted the same colour. Some critics complain that the wristbands make a fashion statement rather than a moral commitment. But this is more than a style thing.

It seems to me that the wristband wearers are making a moral statement, but one based on a fashionable self-flattery. One wristband sold for the victims of the Asian tsunami by an American retailer of girls' fashions sums up the underlying message: it bears the inscription "I CARE". The wristbands may not make much difference to the world outside, but they can make you feel better about yourself inside — and provide an ersatz emotional connection

with others. If there are grown-ups with a wristband-shaped hole in their lives who feel that they need to affirm their goodness in that way, fair enough. But leave the rest of us out of it.

Wearing your heart on your wrist is now presented as some sort of moral imperative. "Wear a band — take a stand" commands Rio Ferdinand at the end of the television adverts for the anti-bullying wristband, as if refusing to do so meant siding with school bullies. And who would want to take a stand for racism, breast cancer or poverty in the Third World?

The spread of the wristbands is both a symptom and a symbol of our culture of conspicuous compassion ("I feel, therefore I am good"), competitive compassion ("I care more than you do") and compulsory compassion ("support this anti-bullying campaign — or else"). It is enough to make some of us feel like tearing a wristband to ribbons.

◆ REMEMBER the child obesity epidemic? That was the one that was meant to wipe out a generation, before we discovered that the epidemics of passive smoking and binge drinking are apparently going to get them first. Now a report from by the Oxford-based Social Issues Research Centre (SIRC) suggests that the panic about child obesity has been blown up out of all proportion.

The Government's line is that around one in six children in Britain are currently obese, with doom-laden predictions that this could rise to one in two. Using the Department of Health's own data, however, and applying the international standard for assessing child obesity, SIRC has found a truer figure of more like one in fifteen, with no evidence of an "epidemic" or exponential rise in child obesity rates, or of any overall decline in children's health. It also found that, despite the focus of concern on child obesity, people are far more likely to get fat as they get older — something which seems unlikely to come as a shock to many of us over 40.

SIRC concludes that "hype and exaggeration" about an epidemic of child obesity can lead to "inappropriate health interventions". It is high time that the Government stopped force-feeding us fattened-up data to support its public health crusades. The unfortunate fact that a relatively small number of children are obese is no excuse for treating us like a nation of fatheads.

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# Patient fat could allow 'grow your own' breast implants

Mark Henderson reports on the meeting in Washington of the American Association for the Advancement of Science

SILICONE breast implants could be replaced within a decade by natural tissue grown from a patient's own cells, after groundbreaking research in the United States.

A new technique for growing fat tissue from adult stem cells promises to transform plastic surgery by allowing surgeons to create natural implants that are safer and more realistic in feel and appearance.

Instead of performing breast reconstruction or enhancement with bags of silicone or saline solution, surgeons would extract stem cells from a patient's bone marrow, or possibly from fat. These would then be grown into fat over a scaffold, to create a biological implant of the desired size and shape made up of living cells of the same genetic make-up as the patient.

There would no longer be a risk of rupture or leakage, and the operation would form less scar tissue, which can leave patients with hard and painful breasts. Natural implants grown in this way would also last longer: saline or silicone versions generally have to be replaced after 15 years, and often lose their shape. They can also interfere with diagnostic techniques, such as mammography, used to detect cancer.

The same technique could also be used in other cosmetic procedures, particularly the reconstruction of facial tissue, according to Jeremy Mao, of the University of Illinois in Chicago, who is leading the research. His team should be ready to begin patient trials within ten years, he told the American Association for the Advancement of Science conference in Washington yesterday.

The possibilities have

emerged from a study in which Dr Mao took human master cells found in bone marrow known as mesenchymal stem cells, and seeded them on to a biological frame. This scaffold, made from a substance called hydrogel, mimics the environment in which fat forms in the body, and moulded the cells into a small breast-like shape.

The implants were then placed under the skin of laboratory mice with defective immune systems, where they grew into small parcels of fat-generating cells that still retained their size and shape after four weeks.

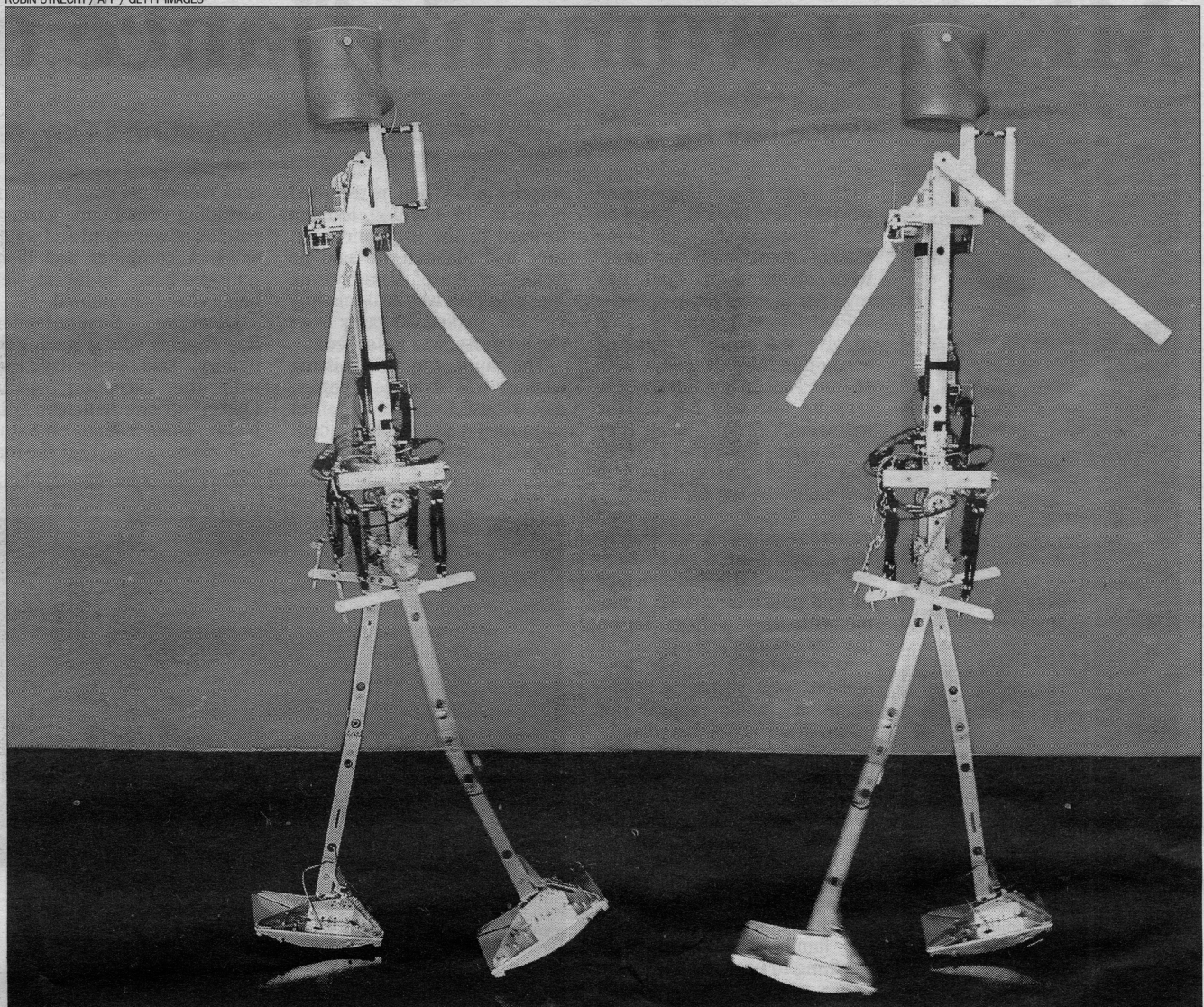
Dr Mao, whose work is published in the journal *Tissue Engineering*, said it could have huge implications for patients: "What we foresee is that, say Jennifer Smith is unfortunate enough to have breast cancer surgery, and needs breast reconstruction, you can take adipose stem cells from her and do the same procedure."

The technique could be used for elective cosmetic surgery, to enhance breasts, he said. "Much of how fast this will progress is a matter of regulatory issues that are hard to predict. But the technology should be mature within a decade.

"There are several disadvantages of current procedures. They can rupture or leak, and they can block breast cancer detection in the future. The technique is also applicable for other soft tissue facial tissue such as the lips," he said.

As mesenchymal stem cells are also thought to exist in fat tissue, it may be possible to take fat anywhere on the body to extract stem cells that are then grown into a breast implant.

ROBIN UTRECHT / AFP / GETTY IMAGES



Delft University's Denise puts her best pneumatic foot forward to become one of the first three robots to walk like a human

## Robots finally learn how to walk but an ant can out-think them

SCIENTISTS have developed robots that mimic the human gait, bringing a shade closer the prospect of machines familiar from science fiction.

The creations of three independent research teams, all much more sophisticated than any previous model, were shown yesterday.

But the machines still have some way to go to match the capabilities of the acrobatic Sonny, which put Will Smith through his paces in *I, Robot*, or even the clunky C3PO from *Star Wars*: their computing power barely matches the brain of an ant.

Even so, the advancements suggest that it will eventually be possible to build humanoid robots to perform useful tasks.

The developments should also improve the design of prosthetic arms and legs, and assist efforts to build artificial limbs controlled by the brain.

"These innovations are a platform upon which others

will build," said Michael Foster of the US National Science Foundation, who contributed to the research. "This is the foundation for what we may see in robotic control in the future."

The most exciting robot is Toddler, developed at the Massachusetts Institute of Technology (MIT) by a team led by Russ Tedrake.

Toddler learns to walk in similar fashion to a child, but becomes expert rather more quickly, taking about 20 minutes or 600 steps to devel-

**'It is the first to learn to walk without prior information built into the controller'**

op an accomplished gait.

"It is one of the first walking robots to use a learning program, and it is the first to learn to walk without any prior information built into the controller," Dr Tedrake said.

This could eventually allow it to walk over uneven terrain, rather than only flat surfaces.

The second robot, Tad, was built at Cornell University in New York state, and uses much less energy than existing designs. "Already our robot seems to be at least ten times more efficient than anybody else's," said Professor Andy Ruina, who led this research.

The final robot, Denise, was developed by Martijn Wisse of Delft University in the Netherlands. Details of all three are published today in the journal *Science*. All three designs employ the same principles as toy robots that walk downhill by swaying from side to side.

But each uses a different mechanism on the flat or to

move uphill. Tad senses when the forward leg hits the ground, and then tells the backward leg to "push off" using a motor that stretches a spring.

Denise has a similar mechanism controlled by pneumatics, while Toddler uses electric motors that move its ankle joints directly. All have arms synchronised to swing in time with the opposite leg, to provide balance.

Steven Collins, a former member of the Cornell team who now works for the University of Michigan, is applying similar techniques to the development of a powered prosthetic foot for amputees.

Another application is in building robotic arms that can be controlled by the brain. Scientists from the University of Pittsburgh reported yesterday that they have trained a monkey to feed using a robotic arm moved with its brain signals.

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## DNA chart may give clue to the origins of diseases

A GENETIC map that charts the way DNA varies across three racial groups will illuminate the origins of health problems as diverse as heart disease and mental illness, scientists said yesterday.

The completion of the mapping project by Perlegen Sciences, a company based in

California, will help researchers to pinpoint genetic variants that contribute to disease and promises to lead to more effective, tailor-made medical treatments.

The study, published yesterday in *Science* and also presented to the meeting, is the first of its kind to be made public.

It has identified 1.58 million changes in single "letters" of DNA among 71 individuals of Caucasian, African-American and Chinese-American backgrounds.

Analysis of these variants, known as single nucleotide polymorphisms, or SNPs (pronounced "snips"), will enable

scientists to identify patterns that work together to trigger illness, or which affect how individual patients are likely to respond to particular drugs.

While 99.99 per cent of the human genome is shared by all people, millions of mutations in single DNA letters have accumulated during our

evolution. Some of these SNPs occur in patterns particular to certain populations that share common recent ancestry; others are peculiar to individuals. They account for some of the differences between both people and ethnic groups, affecting traits as diverse as blood pressure and eye colour.

Geneticists believe that mapping and understanding SNPs will be critical to harnessing the medical benefits of the Human Genome Project.

Donald Kennedy, the editor-in-chief of *Science*, said: "This will provide an invaluable resource for genetic research to improve human health."