Issue 66 www.wrti.org.uk

Inventique©

The newsletter of Wessex Round Table of Inventors May 2006

New series DESIGN FROM NATURE See page 4

WRTI engineers support

INSTITUTION OF MECHANICAL ENGINEERS SPONSORS INNOVATION AWARD

THE INSTITUTION OF Mechanical Engineers (IMechE) has agreed to support the *WRTI Innovation Awards 2006* for the most innovative final-year project presented by Southampton Solent University students at the SSU' Project Showcase exhibition on Friday 16 June.

This year's categories include the Engineering Design Award and the Product Design Award. Prizes for both categories include a cheque for £250, one year's free membership of the WRTI and a winner's scroll, to be presented at Southampton Guildhall on SSU Graduation Day.

"This is a wonderful gesture by the IMechE in support of both the WRTI and Southampton Solent University students," said Professor Richard Penson, external development consultant to the university's faculty of technology, and deputy chairman of the WRTI.

Here comes the judge

Representatives from the WRTI and the Institution will judge the event. During the free WRTI membership period, every effort will be made to assist with the development of the winning projects, using the resources of the WRTI and the technical facilities at Southampton Solent University.

Luca Giancardo, winner of last year's event with his tftMouse™(it strands for The Face-Tracker Mouse), is now a researcher with Real Time Tracking in Henley-on-Thames as a direct result of gaining the award. Real Time tracking applies computed (or 'artificial') intelligence to image data.

Rocket man

Founded by George Stephenson, of Liverpool and Manchester Railway and *The Rocket* fame, the Institution of Mechanical Engineers was established in 1847 and is the leading organisation of its kind. With a 75,000-strong worldwide membership , the IMechE is the UK's qualifying body for chartered and incorporated mechanical engineers. ■

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London SW1H 9JJ
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www.imeche.org.uk

Next WRTI meeting
WEDNESDAY 10 MAY

A club visit to the Hovercraft Museum, Lee-on-the-Solent, will replace the normal monthly meeting. 6pm for 6.30pm tour. Members wishing to attend should contact chairman@wrtico.uk as soon as possible.

● *www.wrti.org.uk/events*
www.hovercraft-museum.org

WRTI INNOVATION AWARDS 2006

ENGINEERING DESIGN AWARD • PRODUCT DESIGN AWARD

To apply for an award you must be a final-year student at Southampton Solent University. Please explain in no more than 200 words why your project is innovative, indicating any unique features that may exist, the market potential, estimated development costs and any other aspects that may assist the judges.

Entries should be e-mailed to award@wrti.co.uk by Friday 9 June 2006 (one week before Project Showcase Day), clearly indicating your name, course, project title, e-mail address, home address and telephone number. Entries will be judged by the WRTI and IMechE on Project Showcase Day, Friday 16 June.

Wessex Round Table of Inventors meet at 6.30pm on the second Wednesday of each month at Southampton Solent University, East Park Terrace SO14 0RP

VIEW FROM THE CHAIR

ACCORDING TO REPORTS earlier this year, Audley Bowdler Williamson, from Belper, left £1.5m to charities close to his heart. Wouldn't it be lovely if we could all do that!

But we can... all we have to do is to invent something that lots of people want. Mr Williamson invented Swarfega, that green gel which has been removing engine oil, printing ink, grease etc from the skin since the 1940's – and people are still getting nice and greasy in the 100 or more countries where the product is still sold.

A neat solution to an age old problem. Rather like Marion Donovan's solution to one of the oldest problems ever... she dreamed up the disposable nappy. This lady spent years and years after 1946 trying to convince people that she had created a useful item until, in the late fifties it was spied by Victor Mills, the creator of Pampers® – and the rest is history.

Which all goes to show that sometimes an investor and entrepreneur are an essential add-on to an inventor. And this makes a nice link to my next point, because this is what the *Innovention 2006* exhibition at Winchester's INTECH science and technology centre on Friday 23 June is all about. Make a date for it in your diaries and pay special attention to the great inventions from WRTI members that have been voted by members to represent the club at the show.

Innovention 2006 is where the household products of the future are paraded in front of the people who can help them to market. It's really a competition – I'd like want everyone to win the £20,000 on offer – and you'll be very impressed by the ideas on show.

If you haven't entered your product yet, get cracking – entries close on May 8. Competition rules and entry forms are available from Innovention@sehea.co.uk.

Sincerely, Richard

RICHARD LITTLE, WRTI Chairman

INVENTORATOR Larry Elliott

Better design requires better products...

CREATIVE EFFORT SHOULD HELP TO IMPROVE MANUFACTURED GOODS, NOT JUST TART THEM UP

Continued from last month

Perhaps the best example of what design can do for a business is the remarkable transformation of Apple as a result of the iMac and the iPod, both the brainchilds of Jonathan Ive, who was born and educated in Britain but who moved to Silicon Valley in the 1990s. Ive, too, met the chancellor last year, and there is much that British business could learn from his experience.

This is not to say, as the academic James Heartfield said in a recent critique of the creative industries, that design can tart up a duff product. The iPod is far more than a lovely piece of kit.

"Apple's celebrated iPod MP3 player and storage device combines (a) FireWire and Flash memory; (b) a single scroll-wheel to navigate – a near-perfect simplification of the controls; (c) dedicated but Windows-compatible iTunes software; (d) the signature elegance of the iPod itself.

"Just as important as Jonathan Ive from Newcastle Polytechnic have been hard drives from Toshiba. Here design is the proper accomplice of investment in new technologies, not a faddish attempt to circumvent that investment. Good business may lead to more and even better design. But more and better design does not, by itself, lead to good business."

Cox will come up with a list of recommendations. Foster is keen on a national centre for design; Brown is a big fan of R&D tax credits; there will doubtless be calls for schools to do more. In the end, though, the problem is more cultural than financial. Too many firms treat design as a luxury, or even worse as a cynical device to con consumers into thinking they are getting a new and better product. Brown is right to point out that that way lies ruin. But that culture is deeply embedded in Britain, and it will be mightily tough to shift. ■

● *Larry Elliott is economics editor of The Guardian newspaper and author of* Age of Insecurity, *ISBN 1859842259. Reprinted with the kind permission of the author from The Guardian, 21 November 2005.*

www.guardian.co.uk

DATA PROTECTION ISSUES - 4

Continued from last month

ROSANNA COOPER CLARIFIES THE LEGAL POSITION FOR INVENTORS AND ENTREPRENEURS

AS MENTIONED last month, 'subject access request' is a request to be granted access to certain personal data which an organisation holds about an individual, including the right to be provided with information about:

- The purposes for which the organisation processes those personal data.
- The source of the data, and the identity of any person to whom the data have been disclosed.
- The logic behind any automated decision-making processes.

If a data subject makes a request for his or her data, under the current case law you are entitled to give to that individual all the data that you hold in manual or electronic form (this aspect of the law is under review).

What is clear is that a data subject is entitled to compensation if s/he makes a successful claim for compensation against a data controller, and has the right to:

- Prevent processing which is likely to cause the data subject damage or distress.
- Prevent processing which is taking place for the purposes of direct marketing.
- Object to automated decisions being taken about him or her (decisions which do not have any human involvement).
- Claim compensation for any damage or damage and distress which is caused to the data subject (or another person) as a result of a company's breach of the DPA.
- Request the Information Commissioner to make an assessment of the way the Company processes personal data relating to the data subject.

Sanctions

A controller can also be prosecuted for such offences as:

Notification offences. Several offences may be committed in respect of data controllers' obligations to register and maintain such registration.

Unlawful obtaining or disclosing of personal datal. It is a criminal offence to knowingly or recklessly (without the consent of the data controller) obtain or disclose personal data.

Enforced subject access. The DPA prohibits enforced subject access; it is a criminal offence to require any data subject to request subject access in connection with recruitment, employment or provision of services.

Information notices. It is a criminal offence to fail to comply with an information notice issued by the Information Commissioner.

Enforcement notices. The enforcement notice may require the data controller to stop processing: (i) any personal data; or (ii) personal data of the type specified in the notice. It is a criminal offence to fail to comply with an enforcement notice. ■

Continued next month

● *Dr Rosanna Cooper is a partner at RT Coopers, a commercial law firm focusing on inventors and business start-ups.*

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Startups Awards 2006

THE THIRD ANNUAL Startups Awards is open for entries, with a deadline of 9 June.

Startups Awards endeavour to recognise, celebrate and reward the best business startups in the UK with cash prizes at an awards ceremony at the Royal Garden Hotel in Kensington, London on Friday 20 October.

This year's judging panel consists of successful entrepreneurs including Sahar Hashemi of Coffee Republic, Sarah Tremellen of Bravissimo, Adrian Chiles from Working Lunch and Trevor Baylis, inventor of the wind-up radio.

Two new categories have been added for this year's competition: Business Plan of the Year is open to potential businesses that have written a business plan, while International Business of the Year is aimed at companies trading successfully overseas.

Other categories include Retailer of the Year, Manufacturing Business of the Year and a Silver Fox Award for mature entrepreneurs. Winners of each category will compete to be named NatWest Business Startup of the Year and win a £5000 prize.

To be eligible to enter, businesses must have been trading for less than three years, be privately owned, and employ fewer than 60 people. Finalists will be announced on 14 August.

● For more information about this year's awards and how to request and entry pack, visit: www.startupsawards.co.uk

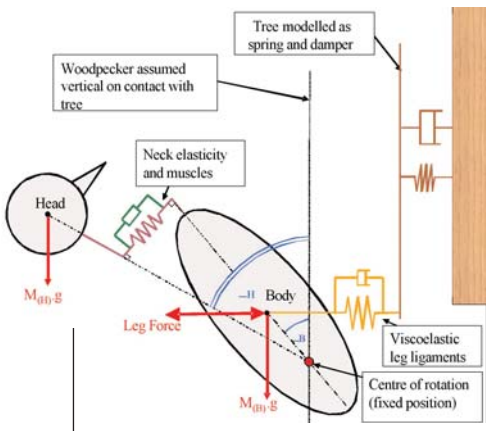
Design from NATURE THE WOODPECKER HAMMER

WHEN ONE MENTIONS the words 'woodpecker' and 'biologically-inspired design', most people think 'crash helmet'. How does the woodpecker manage to hit its beak so hard on the tree and not get a head-ache?

Wrong question. (In fact, the woodpecker's brain is tightly contained within its skull so that it can't rotate when the head decelerates so sharply, and the bird closes its eyes on impact so that they don't pop out, so no help there.)

The proper question to ask is: "How does the woodpecker manage to accelerate its head so violently that we think it *needs* any sort of protection?" Because just before it hits the tree, it's head is travelling at about 4 metres per second, reaching this speed over a distance of about 5cm. And if that's the case, why doesn't the woodpecker fall off the tree?

We wanted to answer these questions, because it seemed like an interesting model for a novel type of hammer. A fourth-year Mechanical Engineering student at the University of Bath, William O'Shea, applied standard engineering techniques to try to discover the answers.



Caught on camera

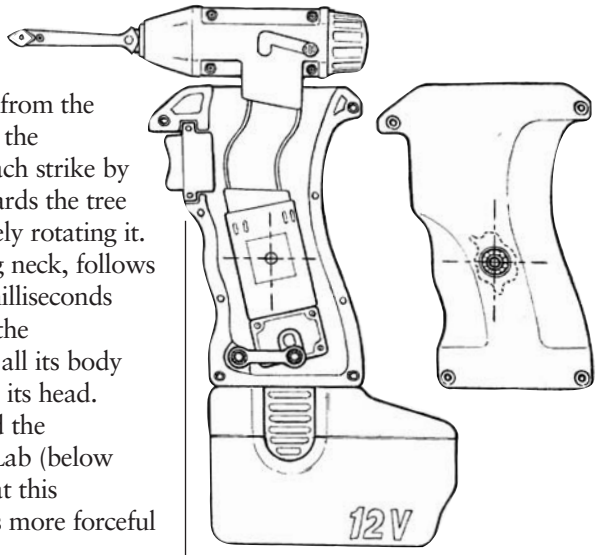
Video footage taken from the internet showed that the woodpecker starts each strike by pulling its body towards the tree with its legs, effectively rotating it. The head, on its long neck, follows like a whiplash 50 milliseconds later. In this fashion the woodpecker can use all its body muscles to accelerate its head.

William modelled the woodpecker in MatLab (below left), and showed that this technique is 20 times more forceful than using the muscles available in the neck. So just as, when throwing a ball, humans rotate their body with the arm accelerating the action, so the woodpecker is 'throwing' its head at the tree.

In accordance with Professor Vincent's commitment to the principles of Open Access, the ideas presented here are freely available. In demand as a lecturer and consultant to industry, he welcomes consultation or research enquiries by companies and entrepreneurs.

The woodpecker's head is relatively light (9g in a total body weight of 70g, in our bird) and is optimised to deliver its blows kinetically rather than using inertia in the normal way one thinks of a hammer. Even so, the woodpecker has to hold tight onto the tree with its long claws, and it has stiff tail feathers to brace itself.

This suggested a design for an electric hammer by Graham Whiteley (above), using an oscillating motor in the handle to generate the energy, which drives a flexibly attached, low mass hammer head rapidly back and forth, delivering a rapid succession of blows to its target.



This hammer is light and, because the main masses oscillate, generates no net inertial forces, though there will be resistance when it hits an object. It is therefore of use as a tool for astronauts. And I'm sure there are many other uses, since one can fit all sorts of tools into the hammer head. Do let me know if you build a prototype! ■

Julian F V Vincent is Professor of Biomimetics at the University of Bath. Biomimetics is the concept of taking ideas from nature and implementing them in another technology, such as computing, design or engineering.

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NEWS IN BRIEF

● HOT TOPICS SEMINAR

GRAHAM THOMPSON, Professor of Mechanical Engineering Design at the University of Manchester, will present the latest Hot Topics Seminar entitled *Creativity: is copying better business than inventing?* at the University of Portsmouth on Wednesday 17 May at 6pm.

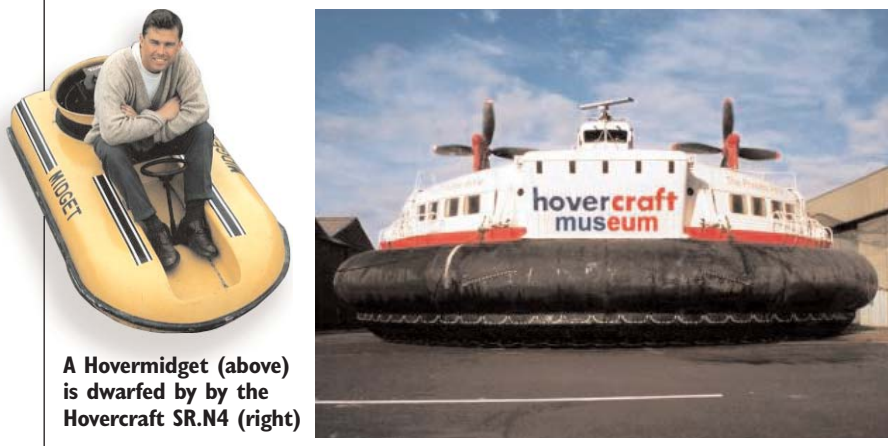
In addition, Arturo Casciaro from the university's Faculty of Creative Industries (and previously a commercial director with Marconi, Logica, Oracle and Cable & Wireless), will give a lecture on converting creativity to profitability, including examples and illustrations of new product development.

● Admission to Hot Topics Seminars costs £15. To reserve your place, contact:
Allyson Bailey
Portsmouth Business School
Richmond Building, Portland Street
Portsmouth PO1 3DE
Tel: 023 9284 4046
Allyson.Bailey@port.ac.uk.

CENTRE OF EXCELLENCE The Hovercraft Museum

Cockerell's legacy

VOLUNTEERS SAVE UNIQUE CRAFT FOR POSTERITY



A Hovermidget (above) is dwarfed by by the Hovercraft SR.N4 (right)

IN 1986 a group of hovercraft enthusiasts saved a number of early designs from being scrapped, and used them to form the basis of the Hovercraft Museum. This has particular resonance for members of the WRTI, because the club's first Chairman, the late David Nicholas MBE, worked with Hovercraft inventor Sir Christopher Cockerell on building the craft, and the world's largest manufacturer is still based in Southampton.

Skimming into the past

The bulk of the museum's collection is stored at the former HMS Daedalus naval dockyard at Lee-on-the-Solent, with an overspill arrangement in Portchester. It is hoped that one day the entire collection will be displayed at one purpose-built site, and an independent assessment is being undertaken to secure a National Lottery grant for this purpose.

Apart from the larger craft familiar to cross-Channel ferry passengers, the museum has a number of ex-Royal Navy craft in its care, in addition to commercial, private and one-man 'midget' craft. These include a Clarkushion, a GP Too, a Hovermidget, Hoverlark and Hoverscout, a Skima 4 and a Skima 12 purchased from the Sultan of Oman.

The Hovercraft Museum Trust also maintains numerous manufacturer's concept models – including a 1:6 scale SR.N1 model (now fully restored with the aid of a Carnegie grant), built to demonstrate the craft before the full-sized item was built.

Sir Christopher Cockerell's coffee tin experiment (one of the first radio-controlled models to prove the hovercraft concept), is also housed at the museum, which administers the largest film, book and video library on Hovercraft in the world.

SR.N4 Mk II Swift was acquired in 1994 and is the largest craft in the collection. Recovery of this craft cost a total of £44,000; insurance and the sea tow for the move being paid for by Hoverspeed, the remainder being found via museum fundraising.

Visiting the site

Although the museum is not yet permanently open to the public, volunteer staff attend the site on most days, and working parties are held on most Saturday mornings, where volunteers assist with cleaning and restoration work (new volunteers are welcome).

Groups wishing to visit the museum should contact the trust at the address below. ■

● The Hovercraft Museum Trust
Building 40, HMS Daedalus
Argus Gate, Chark Lane
Lee-on-the-Solent PO13 9NY
Tel/fax: 023 9255 2090
enquiries@hovercraft-museum.org
www.hovercraft-museum.org
Registered Charity No. 1003689

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