

The Private Eye – an essential fashion item for the would-be technomad?

Technomadness

Think beyond the small scale revolution of technologies like Hot Java and encryption, and you might imagine the free-wheeling world of the Technomad. Or so says Sean Clark.

While it may be true that the Internet makes many aspects of geographic location irrelevant – allowing people from around the world to communicate, work together, and generally interact without concern for national borders – it is also true that on a personal level access to the Internet is currently very dependent on your physical locality. Quite simply, most of us need to be near our desktop computer, modem and – most restrictive of all – telephone line in order to use the Net. Yet have you wondered just how useful it would be to have access to all the information contained within the Internet whilst on the move, or away from your home or office?

As reported in issue 10 of *Internet and Comms Today* (p.40), the ability to access the Internet when mobile is, to some extent, already here – with the UK's digital mobile telephone networks (Cellnet GSM, Vodaphone GSM and Orange) now offering data services to those customers who are willing to pay the high set-up and usage charges involved. Just plug your (expensive) digital mobile telephone into your (even more expensive) portable computer via a

(fairly expensive) interface card and you can be on the Internet at a reasonable 9.6Kbit/sec from almost anywhere in the UK, and much of Europe. The cost and clumsiness of such a set-up may mean we don't yet have 'mobile data for the masses', but prices will no doubt fall as the technology improves and its use becomes more widespread. After all, who would have thought that in less than 10 years the mobile phone would turn from a breeze-block-sized 'yuppie accessory', costing thousands of pounds, into a 250g mass product costing a mere fraction of its original price?

The Coming of The Technomads

With the development of mobile networking a new type of Internet user has emerged – the 'technomad'. This term – a hybrid of the words 'technology' and 'nomad' – refers to a person who aims to combine the freedom of a travelling lifestyle with the benefits of global network connectivity.

The archetypal and pioneering technomad is undoubtedly US West Coast traveller, Steve Roberts. A bearded, self-styled 'engineer' (due to his dropping-out from engineering



school), Roberts came to world-wide attention in the late 80s and early 90s following the development of his BEHEMOTH 'megacycle'. BEHEMOTH – Big, Electronic, Human-Energized Machine, Only Too Heavy (!) – is a 580lb eight-foot long recumbent bicycle with an attached trailer. Unlike a typical recumbent bike ('recumbent' meaning that the cyclist sits back in the vehicle rather than sitting upright on a saddle), BEHEMOTH is not simply a means of pollution-free travel – it's also a complete mobile office with a multi-platform computing system, fax- and data-transmission facility, wireless communication link and self-sustaining power supply.

The complete specification of BEHEMOTH reads like a well-equipped computing lab. At the front of the vehicle is a Macintosh portable with helmet-mounted cursor control. At the rear there is a Sun workstation that acts as a state-of-the-art communication node. And finally, to complete the 'set', it has its very own PC clone which is connected to a 'Private Eye' head mounted display.

Communication with the outside world is via a cellular telephone with a fax and data modem that can be used to access email and the Internet. What's more, BEHEMOTH can also access the Microsat amateur radio satellite network. So even if Roberts is out of cellular range he can still exchange data with other radio amateurs and Internet users.

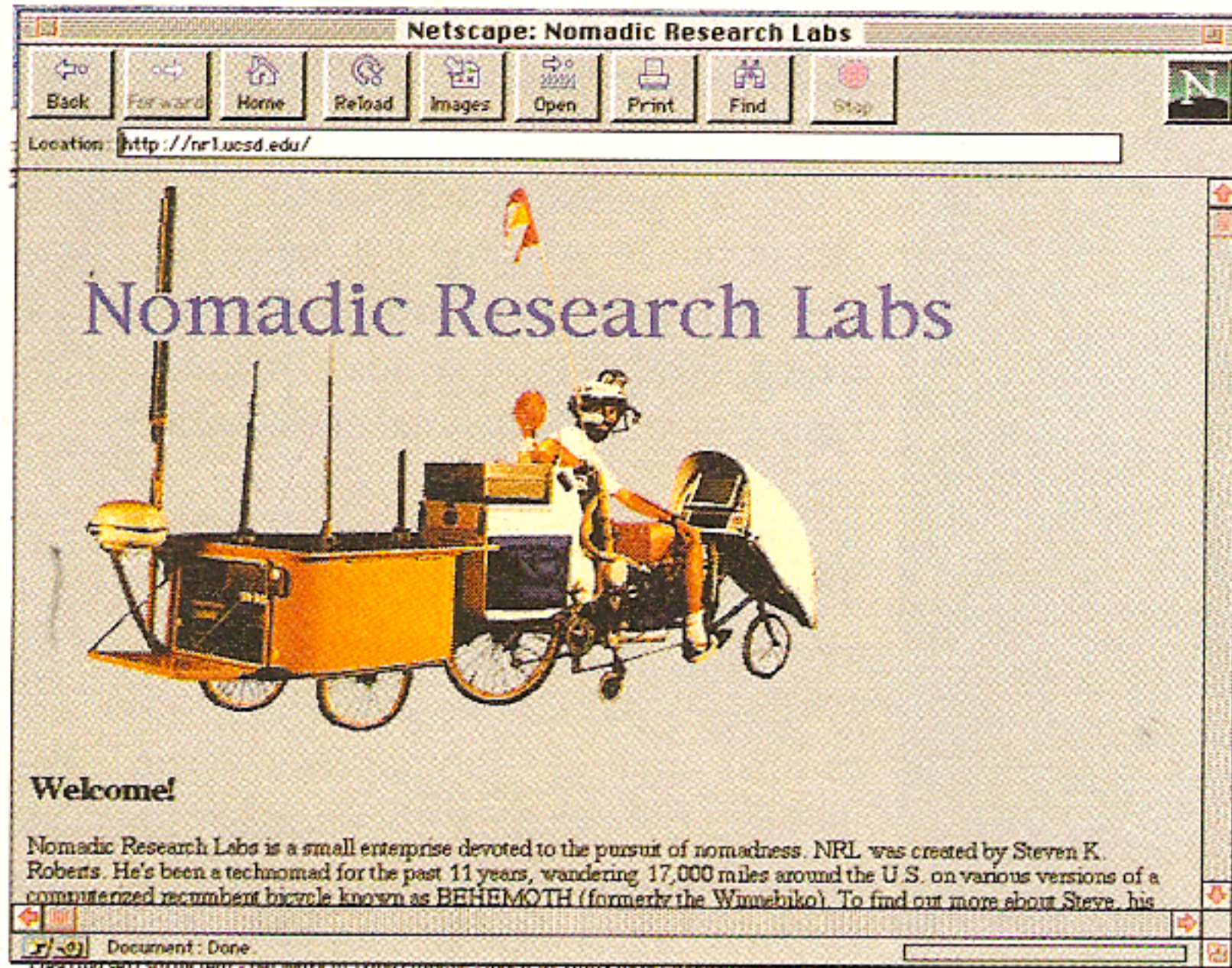
The whole communications system is powered by solar panels and pedal power and its batteries can be 'topped-up' by household mains or car-batteries if necessary. Hence, BEHEMOTH is a completely self-supporting vehicle, allowing Steve Roberts to travel almost anywhere in North America and still maintain contact with his base-station and the Internet community.

But BEHEMOTH is not just a high-tech toy. Over the years Roberts has used it as his main place of work – having based his R&D, writing and consultancy business 'on the road'. And with the support of friends and colleagues he has demonstrated that it is possible to live a nomadic lifestyle and still participate in the communications revolution. Much of Roberts' written work can be found on the Internet at the Nomadic Research Labs Web site. The articles contained there discuss Steve Roberts' approach to 'high-tech nomadness', detailing the various insights he has gained from living such a lifestyle.

To quote one of Roberts' recent postings, "The whole thrust of this technomadic concept, ever since my early days aboard the Winnebiko [BEHEMOTH's predecessor], is the notion that physical location becomes irrelevant once you move the essence of your life to the vapors of the Net." He adds, "While this doesn't replace physical relationships (at least for most of us!), it does decouple you from the bonds that normally tie people down." Finally, he observes that, "The basic trick is to add one level of indirection to all business matters, depending on a base office and electronic communications for all activity. This only works if your business is information-based or deals in portable things."

In these statements, Roberts hits upon both the great strengths and problems of the technomadic dream. Firstly, many people will no doubt find that – as Roberts evidently has – mobile Internet technology gives them the freedom to live the individualistic lifestyle that suits them. They may discover that they will be able to work, maintain a circle of friends and keep up-to-date with 'local' and national news without concern for geographic location. On a simplistic level this may mean that you'll be able to work just as easily at home, or on the train, as in the office. Or, as with Steve Roberts, you'll be able to pack your bags and go on the road and still pursue your professional activities.

However, as Roberts himself notes, it may only be 'information-workers' – writers, freelancers, computer programmers, consultants etc. – who will be able to take



The Nomadic Research Labs WWW home page.

advantage of this freedom. What if you work in a factory? Or in a shop? Technomadism would appear to have little to offer you. After all, even Steve Roberts would be hard pressed to stick an industrial lathe on the back of a bike!

It would seem clear therefore that if technomadism is to become an option for professional people then similar benefits need to 'filter down the chain' to manual and non-professional workers. In this context the technomadic ideal becomes part of a larger movement towards more flexible working practices for all people: flexi-time, job-sharing, multiple part-time jobs and more incentives for parents to share the day-to-day responsibilities of childcare – all of these would ideally be part of a society that supports the technomad.

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More recently, and after 17,000 miles of pedalling, Steve Roberts has begun the development of the next stage in his technomadic research – the 'Microship'. The Microship project aims to build a 'Virtual Technomadic Flotilla' consisting of sea-faring travellers from all over the world, linked tightly through the Net and sharing base-office resources. Roberts' craft for this project is the Microship catamaran: a "high-tech multihull with an extensive network of embedded control systems, a satellite Internet link, console Macintoshes, ham radio, 1080 watts of solar panels, deployable kayaks, self-trailer capability, on-board video production, and whole new levels of technomadic gizmology." This exciting project is based at the University of San Diego and up-to-date details of



Is it for you? A state-of-the art Nokia digital mobile telephone retailing for around £200 – £450.

Steve Roberts, the archetypal technomad.





The Private Eye

If just 30 years ago you were to suggest that people would soon be wandering around the street wearing hi-fi headphones listening to music on silver discs you would have been taken away to the techno-prophets loony bin! Well, could this little device, the Private Eye, become as ubiquitous as the Sony Walkman or Compact Disc in the next century?

The Private Eye is basically a monochrome head-mounted display that is able to project a high-quality 720x280 pixel image of a computer screen on to the wearer's retina. The device, which is only the size of a box of matches, gives the illusion of having a standard-sized computer monitor floating in space in front of the wearer.

The technology used consists of a spinning, counter-balanced, mirror and a row of Light Emitting Diodes. This effectively scans the computer-screen image over the user's eye, line by line, producing a very high-contrast and stable image. For more details about the Private Eye contact the UK distributor, InfoDisp, by telephoning 01420 479791.



its progress can be found at the Nomadic Research Labs Web site.

Steve Roberts can be contacted by email at wordy@ucsd.edu. To join his technomads mailing list send an email message to technomads-request@ucsd.edu. The Nomadic Research Labs Web site is at <http://nrl.ucsd.edu/>.

The Way Collective

Interest in technomadism is not just limited to West Coast Americans. Here in the UK a group calling themselves 'The Way Collective' has plans to establish their own Technomadic Research Centre at their base in South Wales. The collective's Paul Sergeant describes the group as: "an informal group of environmental scientists, multimedia artists, DJs, musicians, poets and writers who share resources and meet regularly to plan projects." It was established as a collective a year ago in response to a brief set up by a tutor at Newport College of Art and Design.

One of the collective's recent projects was a gathering at this year's Glastonbury Festival where the collective could be found in the Green Futures field with a mobile data system: a portable computer and Nokia mobile telephone with a data card.

I&CT asked about the collective's involvement in technomadism. "We're interested in how technology can be used by alternative cultures. And in particular by people who are trying to create some kind of

autonomy in their lives by living outdoors." Paul's vision of the future is one of society as a network of self-sufficient tribal groups where people have the option of living nomadically or in fixed locations. People would be able to communicate using communications equipment, drawing electrical power from renewable energy sources. He feels that, "allowing people to communicate in this way would remove many of the social tensions that often hamper tribal societies."

While his view of the future may currently seem idealistic, Paul argues that research into this way of living needs to be done to see if it is viable - hence the call to establish the Technomadic Research Centre. He's also aware of the dichotomy that exists at present - in that the equipment



The real Microship under construction at UCSD.

needed to support a technomadic lifestyle is currently out of the reach of those who would want to use it as part of an alternative way of living. Still, he's confident that this situation will change in the near future as prices begin to fall.

One of the most interesting things about the Way Collective's involvement in mobile Internet technology is that it forms part of an increasing trend for environmentally-minded people to become involved in comms technologies. It seems that far from being part of the 'big brother' society once feared, computers and computer networks are now seen by many members of 'alternative culture' as potential aides to a freer society. However, the fear is that this new-found freedom will be undermined by restrictions (e.g. the Criminal Justice Act) on people's right to choose the lifestyle that suits them. Similarly, there is a belief that commercialisation and legislation resulting from a genuine fear of abuses of the Net will destroy the Internet as an agent for positive social change.

The Way Collective is currently looking for sponsorship to continue its technomadic activities. They can be contacted by email at eschaton@wayout.demon.co.uk, or by telephone on 01633 220501.



The Way Collective's dome at this year's Glastonbury Festival - located in the Technotribe space in the Green Futures field.

The Future?

So, with its Megabikes, Microships and techno-tribes, it would appear that future mobile Internet technology

will liberate many of us from the constraints of fixed-location living and working. As Steve Roberts has shown, and the Way Collective are investigating, access to specialist equipment does make it possible to realise the technomadic ideal of freedom to travel and continuous network connectivity. And, with this equipment becoming more widely available, maybe it won't be too long before many of us will be sharing at least some aspects of the technomadic lifestyle?



Sean Clark can occasionally be seen making mobile telephone calls whilst on his mountain bike - which almost makes him a technomad... His email address is seanc@drci.co.uk.

Resource Guide

The Nomadic Research Labs Web site contains up-to-date details of Steve Roberts' technomadic activities and can be found on the Web at <http://nrl.ucsd.edu/>.

The World Wide Web Virtual Library has an extensive entry for mobile and wireless computing at: http://snapple.cs.washington.edu:600/mobile/mobile_www.html.

The Nokia Home Page at <http://www.nokia.com/> contains information on

their range of data-compatible digital mobile telephones and their PCMCIA mobile data card.

The Unofficial Orange Page is at <http://info.mcc.ac.uk/Orange/> and contains coverage maps, technical information and a form for joining the Orange users' emailing list.

Vodafone has a Web site at <http://www.vodafone.co.uk/> which includes details of their DataWorld mobile data tariff.

Mobilis is the 'mobile computing lifestyle magazine' and contains features, news and

reviews it can be found at: <http://WWW.VOLKSWARE.COM/mobilis/>.

For information about non-polluting forms of power generation point your Web browser at the Centre for Alternative Technology Web site at <http://www.foe.co.uk/CAT/>.

The International Human Powered Vehicle Association has a Web presence at <http://www.ihpva.org/>, although at the time of writing this site was not available. For alternative sources of information on recumbent cycles try searching the Lycos catalogue at <http://www.lycos.com/> with the keyword 'recumbent'.