Mental Geography, Wonky Maps and a Long Way Ahead

Alan Dix

Talis
The Exchange
19 Newhall Street
Birmingham, B3 3PJ, UK

HCI Centre
School of Computer Science
University of Birmingham
Birmingham, B15 2TT, UK

alan@hcibook.com
http://alandix.com/academic/papers/GeoHCI2003/
http://alandix.com/alanwalkswales/

ABSTRACT

Spatial and geographic cognition are not only important for designing mapping and mobile applications, they also underlie, at a metaphorical and neurological level, many other aspects of abstract and digital reasoning. Digital maps need to respect this rich human understanding of space, which is not always found in the Cartesian regularity of standard maps. Instead it is often embodied in quirky and irregular local maps and effective use of these alongside 'standard' maps is not only good for interaction, but can also be a statement of community empowerment. These and other issues are being explored in the author's ongoing practical work on mobile local heritage applications and a three month, 1000 mile, IT-focused walk around the entire periphery of Wales.

Author Keywords

maps, mental models, local empowerment, mobile user interfaces

ACM Classification Keywords

H.5.2 User Interfaces ; K.4.2 Social Issues; J.5 Arts And Humanities

General Terms

Human Factors; Design

INTRODUCTION

I have four reasons for interest in this workshop and topic, two dating back many years and two recent and current.

First, I have a life-long love of maps: as a tiny child wondering at the coloured dots on a metal globe; on family holidays buying maps of seaside towns when others would choose sticks of rock; as a teenager finding old cloth maps of Welsh valleys and Turkish coastline amongst the old shoes and abandoned clothes after church jumble sales; and, still, the feel of folded paper, the magic of seeing clustered contour lines and enigmatic icons and finding myself, in imagination, transported to a distant place, the land under my feet and the vistas growing from the page into my mind.

Second, for something like the last 15 years, I have had a professional interest in the way human spatial and geographic understanding and metaphors are intimately connected with our understanding of all information, and, in particular, how they inform the design of digital information 'spaces', whether 'navigating' menus, working out 'where you are' in an interface or (a now half-forgotten phrase) 'lost in hyperspace'.

Third is the practical development of a mobile map-based application for opening up the archives of An Iodhlann, the local island heritage centre on Tiree, to make them available to visitors as they walk and drive in the landscape ... a task made more complicated by the total lack of mobile signal on the majority of the island.

Finally, in the months following CHI, I will be walking around the entire periphery of Wales, over 1000 miles of hillside and valley, rugged coast and wind-swept dunes, fading seaside towns and industrial docklands. The walk is taking an IT focus, considering both the walker's experience and the local communities through which I pass.

MAPS OF THE MIND

There is obviously a close connection between the way we encounter spatiality and the rich way we talk about information and user interfaces. While this language is sometimes metaphoric in a superficial sense, it almost certainly reveals deeper metaphorical connections of the kind Lakof suggests for simple spatial relationships [5]. In the past I have considered how this may help us as we design information spaces, both more spatially felicitous virtual realities and more schematic interfaces, from ATMs to the web [3]. It is known that many mathematicians use spatial parts of their brains as they deal with highly abstract concepts. More speculatively, conjecturing that this reuse of spatial neurophysiology is both deeper and more general, I have investigated at a philosophical level the close relationship between the growing geographic understanding of the child and the way in which abstract concepts and the links between them form [4].

At a practical level, we have three zones of embodied spatial encounter with the world: a fully 3D body space; a 2D/2.5D 'vista' space of what we can see, but need to walk to reach; and a more loosely topological and networked world of the obscured and distant. The latter two are often conflated in discussions of spatial cognition. Maps,

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especially older, local and personally drawn maps, can reveal these internal spatial models, but maps are also a way in which we shift between these zones, bringing the distant out-of-sight world into body space.

WONKY MAPS AND LOCAL EMPOWERMENT

It has never been easier to create your own maps, creating data mashups with Google Maps and similar tools and embedding them in web pages. This has benefited tourism and commerce, and has also revolutionised many areas of social activism, allowing open government data and other public (or leaked) data to be visualised in ways that may subvert or offer alternative views to the official narrative.

However, like all maps, digital mapping embodies a particular politics and world view [6]. As you zoom in and out of a Google map the locality becomes no more than an insignificant fragment in a wider world, the lover's lane or skating pond reduced to WGS84 coordinates. This is often seen as the true/proper/definitive map, but individuals and communities do not perceive the world in this Cartesian straitjacket: Steinberg's "*View of the World from 9th Avenue*" is not a Mercator projection.

Local maps emphasise significant places and routes, 'distorting' geometry or scale, maybe shifting a road slightly from the coastline to make it more legible, The An Iodhlann project and the Wales walk seek to use local maps (e.g the mural map, Fig. 1) as well as 'standard' Ordnance Survey maps, partly for reasons of familiarity and connection to existing paper leaflets and books, and partly as an expression of local identity and empowerment, rather like Common Ground's '*Parish Maps*' project in the 1990s [1].

I am using Delaney triangulation with linear interpolation (augmented to extrapolate to map boundaries) to perform rubber sheeting, as is common for historical maps [7], although always to geo-code features and location onto the map, not distort the map itself. However, this is not perfect, sometimes introducing anomalies, especially when linear features, such as roads, are used as reference points.

OUR FEET TELL OUR STORIES

For the walk linear maps will also be needed. Geography and narrative, place and identity are intimately bound. This is common in older maps (e.g. [2]), and is also true today which becomes evident when you ask people to draw their own maps. Routes are more about points of personal significance than geographic coordinates. How can we create digital interactions that harness the power of GPS and global mapping and yet still invite a personal encounter with the path beneath our feet?

WHERE PATHS AND PLACES MEET

Recent conceptualisations of space and place are often in terms of threads or trajectories, the anonymous flows of strangers through airport or service station, or the long-term meeting of life paths of next-door neighbours. The long-distance walker, like the nomad, cuts across the bounds of space, threading together through movement the more tightly bound hanks of each location.

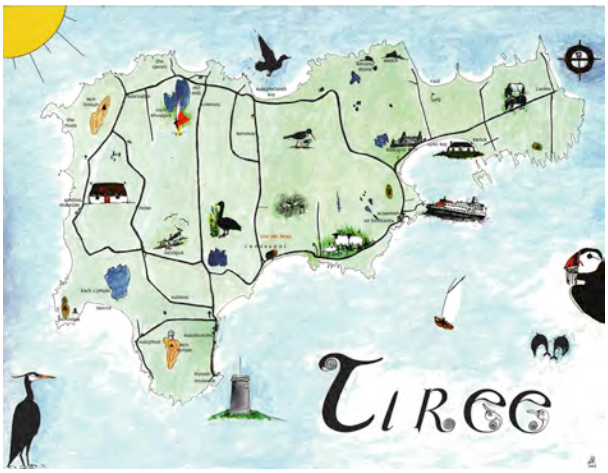

Figure 1. Tiree Mural Map

As a researcher this is methodologically both deeply embedded and certainly embodied, and yet one is also stranger, interloper, outsider – spaghetti-western science. At a cartographic and interaction level how does one transition between the maps of movement and the maps of locality?

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