Will it save town centres? – a network systems analysis

ADAM Urbanism has been refining a mathematical technique for analysing how towns work. Robert Adam explains

Town centres are in the new. Boarded-up shops have set in motion a spiral of decline. A combination of the recession and changing retail patterns – most notably the rise in on-line shopping – has been turning provincial high streets into ghost towns.

This wasn't good for a government keen to show that it could engineer an economic recovery. First the government tried New Labour's PR trick of appointing - what the press call - a 'tsar' to sort it out. A famous person would scatter fairy dust and the problem would go away, or at least the fame of the tsar would make it look as if it might go away. Mary Portas was appointed to make high profile visits to encourage the expenditure of pathetically small grants to re-stimulate 12 provincial town centres called 'Portas Pilots'. Her formula was that, like her television shows, the whole thing could be solved not just by practical measures like the reassessment of rates (which she actively promotes) but with creativity and imagination. This Canute-like performance has not been a resounding success.

Then, last month, the planning minister Nick Boles announced that, following the earlier change to allow commercial property and floors above shops to be to housing without a planning consent, the rule could apply to whole retail premises. It seems that, at last, it has been realised that the change in retailing is a seismic transformation of the way we shop, not the fault of unimaginative provincial shopkeepers or something to be cured by an economic recovery.

But what will be the impact of this change? Planning departments, generally unhappy with any loss of control, will have to stand back and watch as the structure of town centres changes - and we can expect the use of bureaucratic tricks to try and hold the line. In a few years, however, will they look back and say that giving back the structure of town centres to the market was a mistake and claim back their power to control? Or will the change work?

Retail trade depends on footfall. Shoppers will come more frequently to premises they are likely to pass by and pedestrians will pass by places that are on the way to other places or are centrally located. So retail trade should be most accessible to most people. On this basis, the shopping areas that would be most likely to be converted to housing would be those that are on roads with less pedestrian traffic and most removed from a central area.

Accessibility and centrality may seem to be simple. But as many past failures illustrate, the complex pattern of streets, lanes and alleyways that people choose to take can be hard to judge and the precise limits of a town centre are not fixed. And, as anyone who uses an historic town regularly knows, the most convenient route might need exploration and can be unexpected. Add all these factors together from everyone everywhere in a town and you have a complicated situation that lends itself to mathematical analysis.

At ADAM Urbanism in the last two years we have been refining just such a mathematical technique for analysing how towns work. This is based on the Multiple Centrality Assessment systems analysis that has been developed for urban planning over several years by the University of Strathclyde, École Polytechnique Fédérale de Lausanne, and the Italian National Institute of Nuclear and Particle Physics. It draws on research into complex networks in nature, society, culture and technology which emerged in the late 1950s and have gained momentum since the 1990s. We have called this Place Logic. There are similar processes available but Place Logic uses the most up-to-date systems analysis and is applied to GIS (accurate vector maps containing geographical information) which can then be illustrated to scale and overlaid on maps or aerial photographs.

Once set up, Place Logic is a simple-to-use graphic methodology for establishing which part of a place is most central and

which streets are likely to have most people passing through them. We decided to use it to test out the viability and likely impact of a loss of shops to housing and we thought it might be most interesting and relevant to run tests on a couple of the towns selected as Portas Pilots. We chose Bedford and Liskeard as typical but different.

By applying the Place Logic analysis to these towns we could quite rapidly and using existing maps chart the parts of Bedford and Liskeard that are most likely to have the highest level of street activity. The level of activity is shown as moving from hot – high activity – shown in red and cold – low activity – shown in blue, with graduated colours between. This gives a very clear graphic indication of the underlying structure of movement in the towns. The central and active area in both towns becomes immediately apparent.

When a survey of the current retail uses are added it also becomes clear that significant parts of existing retail uses lie outside the most active areas. If retail activity is to reduce, over time, it would be expected that this would take place in the 'cooler' or less active areas.

One way to test the model out is to see if it provides an accurate representation of an existing condition. If the model is to be a reasonable predictor, in towns and cities that have grown up organically it will be expected that retail and other public activity will take place in areas that read as hot on a Place Logic analysis.

When the pattern of retail uses in 1870

(available from old street directories) is laid onto the maps of Bedford and Liskeard the shopping streets correspond with some accuracy to the hot areas in the existing street pattern. This is, indeed, a consistent finding when Place Logic is applied to historic towns around the world. Towns and cities have grown up precisely because of the ease of movement for trading and not only does the record of that developmental process remain in the street plans but it is also relevant today.

An empirical examination of historic town centres shows how retail uses expanded, usually in the late nineteenth and twentieth centuries. On the periphery of the older shopping areas houses were gradually converted into shops.

The new planning regulations could, in these kinds of towns, be not so much the conversion of peripheral retail premises to housing as the return of older housing stock or housing areas to their original use. These analyses show that this new regulation is a logical response to new retailing conditions that will fit in with the underlying urban structure of historic towns. If there is an increase in residential use close to the centres of towns general street-level activity will increase and create more lively places, in turn more attractive for shopping and more sustainable.

Place Logic can be used for this kind of analysis but has much wider applications. As a simple-to use analysis of urban structure different options for changes to street arrangements can be tested out; new master plans can incorporate an effective layout for maximum accessibility that can then feed directly into highway design; the outcomes of these and other analyses can be tested at different scales from neighbourhoods to regions; and the results are based on and can be presented directly on existing maps and aerial photographs. Place Logic will be available later in the year and will continue to develop to provide increasingly sophisticated analytical relationships between use and movement. ■
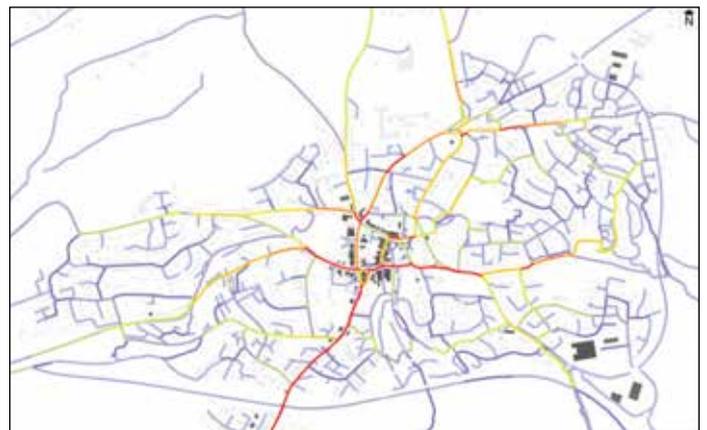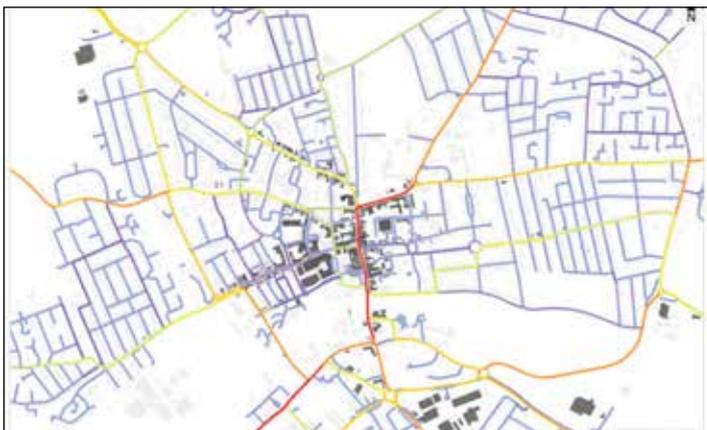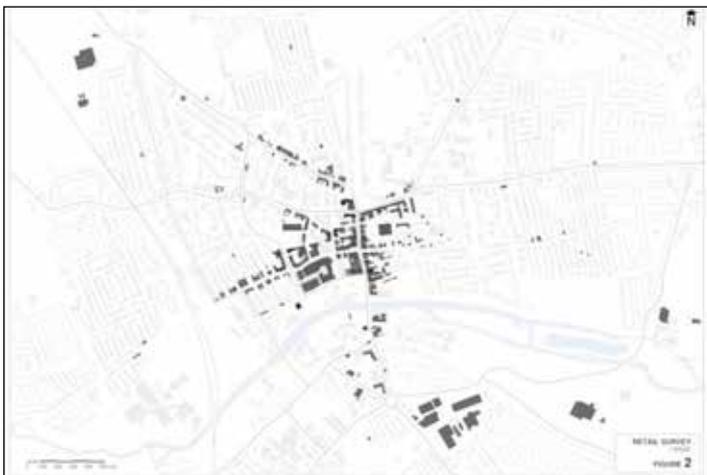
Bedford over the years

Liskeard over the years