

Representation & Visualization in GIS: Emerging Trends, New Methods

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Outline

Pushing pictures – displaying and communicating data,
spatial data – it's all about Web 2.0!

GMapCreator and **ImageCutter**

MapTube: a kind of **YouTube** + **Napster**

Pulling pictures – pulling spatial data – crowdsourcing,
Survey Mapper

Seriously Capturing and Scraping Data: Twitter and
online streaming, London Bikes

2D to 3D: GIS to CAD and back and on the web

The future – disseminating spatial data in multimedia –



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We will begin by

Pushing pictures – displaying and communicating data,
spatial data – it's all about Web 2.0!

GMapCreator and **ImageCutter**

MapTube: a kind of **YouTube** + **Napster**

Using Maps to Visualize Pictures



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Tooth courtesy of
Johan Lundin
Biomedical Informatics Research Group
Department of Oncology
University of Helsinki
<http://www.webmicroscope.net/>



The Kremer Collection

<http://www.thekremercollection.com/>



<http://chs75.harvard.edu/manuscripts/>



One of my key points in this talk is that software being developed for a particular spatial application often easily generalises to a quite different one But let me first outline my talk before elaborating



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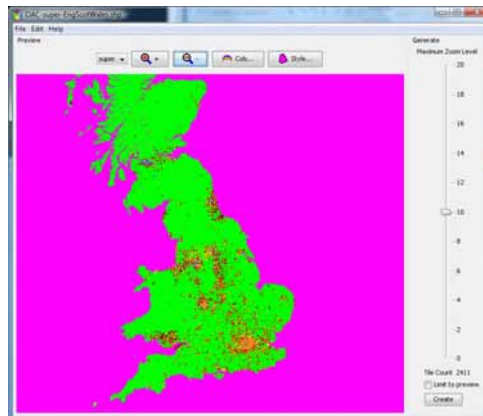


GMapCreator and ImageCutter

The **Google Map Creator** creates **Google Maps** websites from thematic data contained in shapefiles.

It effectively layers your map on top of a **Google Map** or the **Google Map**

For audiences other than yourselves, I always have to make the point that a map is not a picture – it is a bunch of vector geometries and a set of attributes – and a shape file is a proprietary but widely used format by ESRI

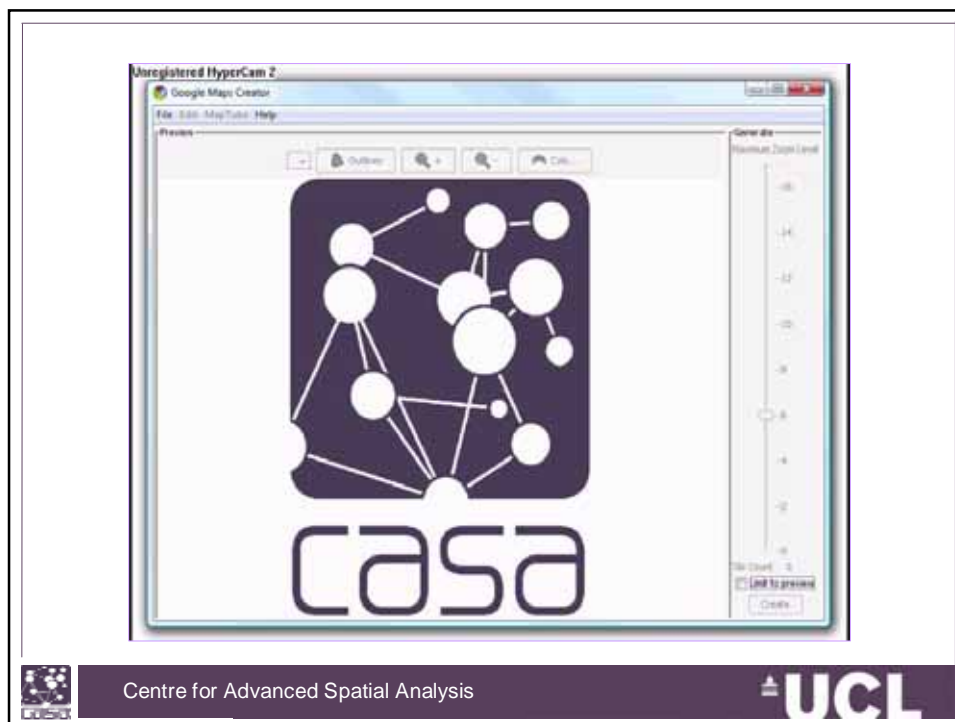


Let us see how it works



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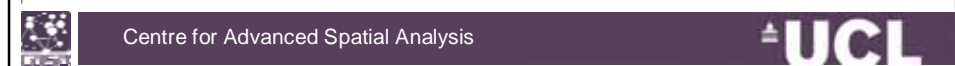
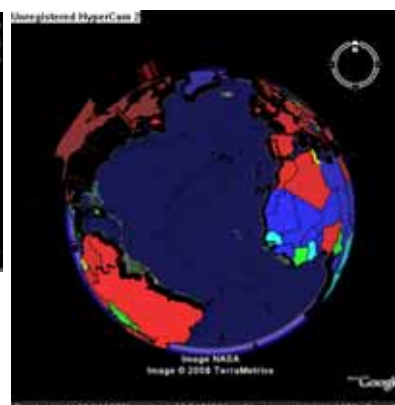




We can do the same sort of thing in 3D of course with **GEarthCreator** – the key is to convert the shapefiles to KML files – and there are many other maphacks using similar open map bases like **Open Street Map**



From all of this we have devised an open resource for maps called **MapTube**





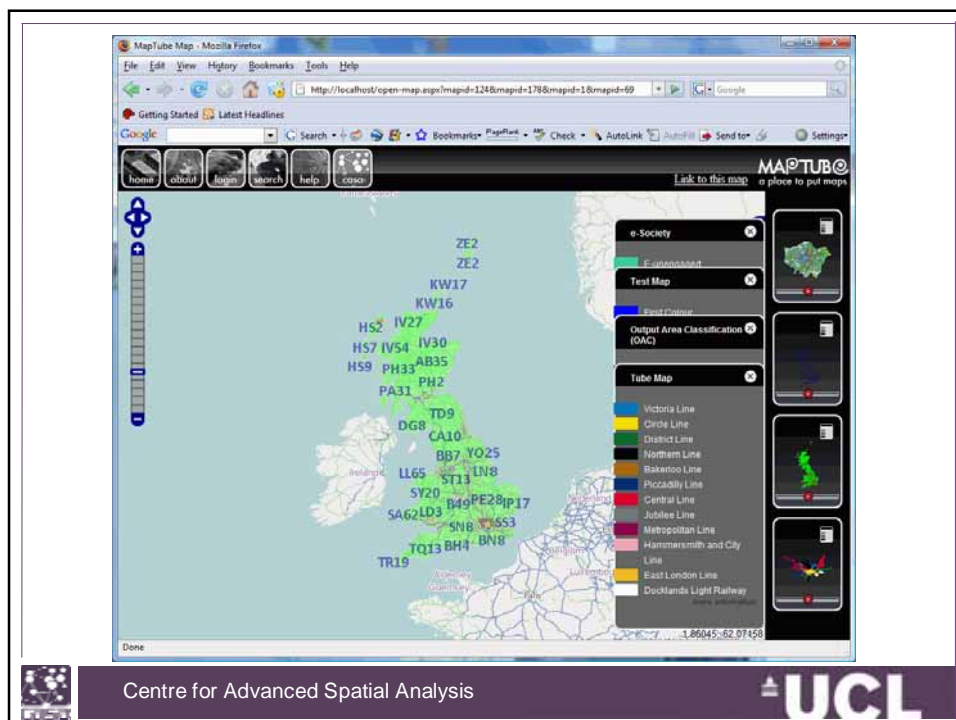
MapTube: a kind of *YouTube* + *Napster*

Let me explain: every time someone downloads our software, there is a high probability they make a map.

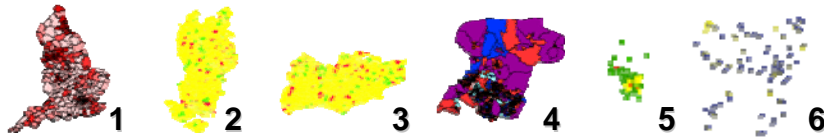
As it sits on a common base – a **Google Map** – if they create the map of some place and someone else creates another map of the same place, it would be nice if we or they could compare them as layers

However, in the UK map bases are copyrighted – you can't do for copying OS map data and it is serious –

So we ask the user not to put their map created from our software on our site, but to give us their URL where their map is and thus **MapTube** is a bunch of pointers to URLs - this is what it looks like with demo

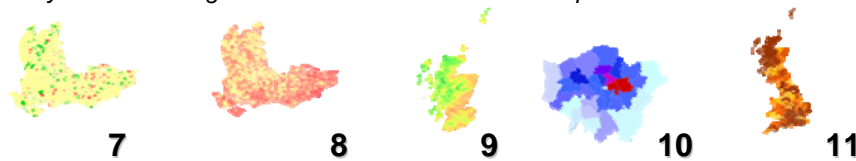


Here are some of the user map data in/on **MapTube**



1. Knife Crime Update, 2. SC IMD Score, 3. SEC IMD Score, 4. PCT Obesity, 5. NO₂ Bristol, 6. AGFC Wildlife

The data behind the knife crimes map (1) has been in the news the last few days after it emerged that the Government had manipulated the data.



7. Southeast IMD, 8. Southeast IMD (LSOA), 9. Wild Land Quality Scotland, 10. NSSeC L8 (never worked)%, 11. CO₂ index



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Pulling pictures – pulling spatial data – crowd-sourcing

We have turned all this around and basically used the system to record spatial responses to topical questions

We broadcast the questions through TV and radio and then ask users to respond and key in their post code – 7 digit in UK but actually only record postcode sector – first three or four digits

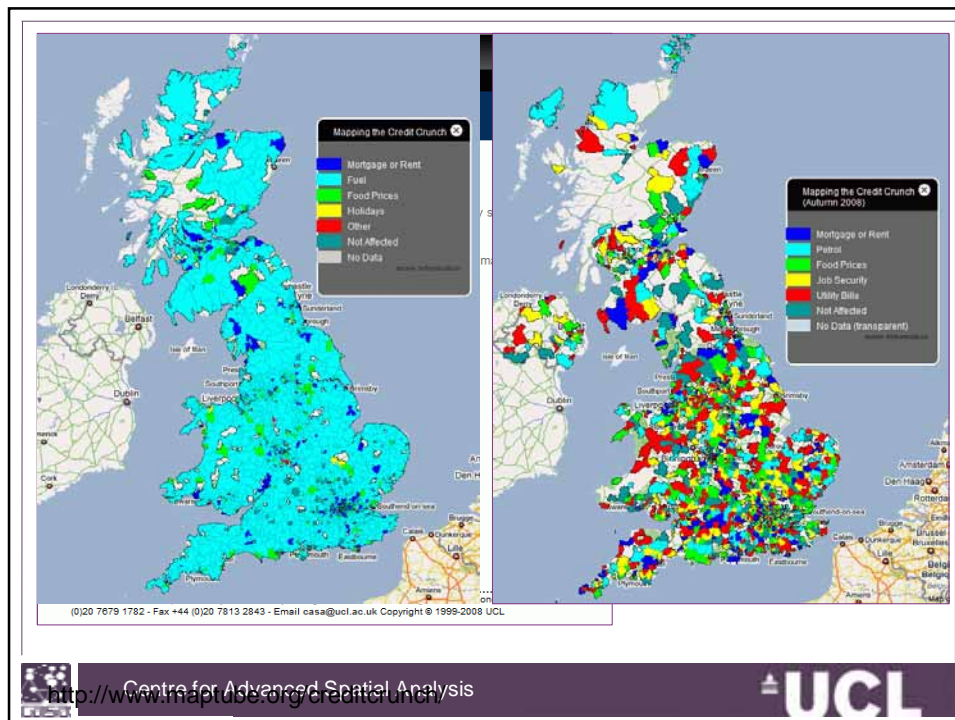
Then our server issues a request to scan the continually refreshed database and rebuilds the map on the fly so to speak, every half hour, using GMapCreator etc

We have so far looked at the credit crunch, antisocial behaviour and the Manchester road pricing proposal

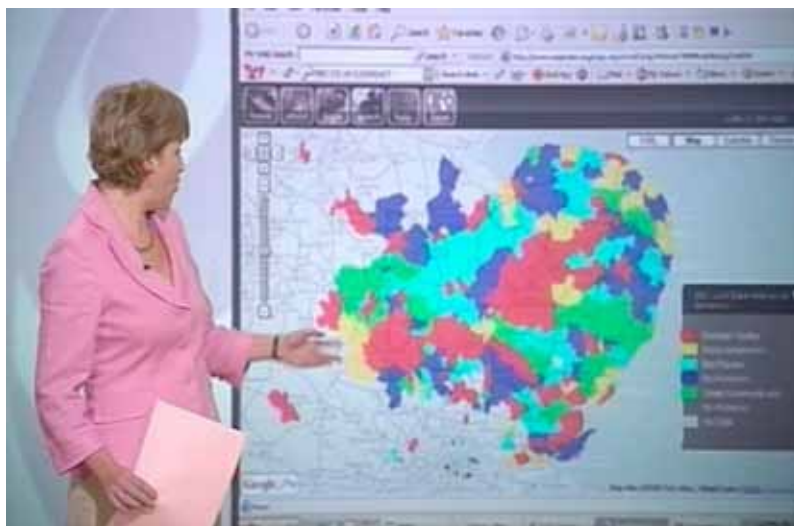


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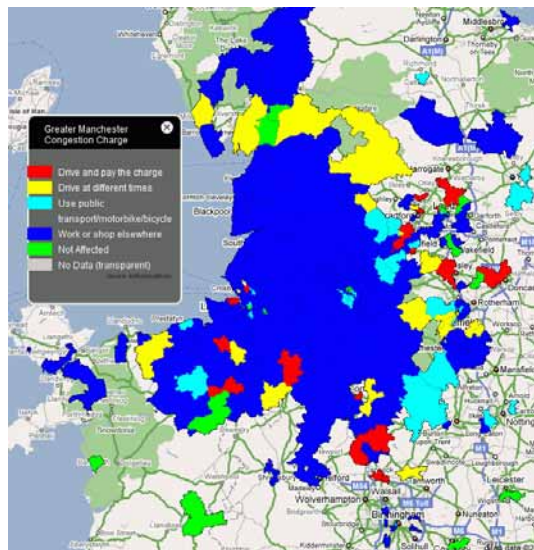
BBC Look East: Anti-Social Behaviour



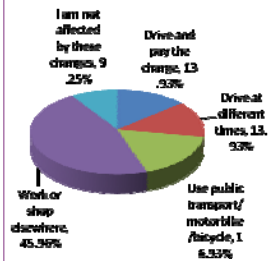
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Manchester Congestion Charge



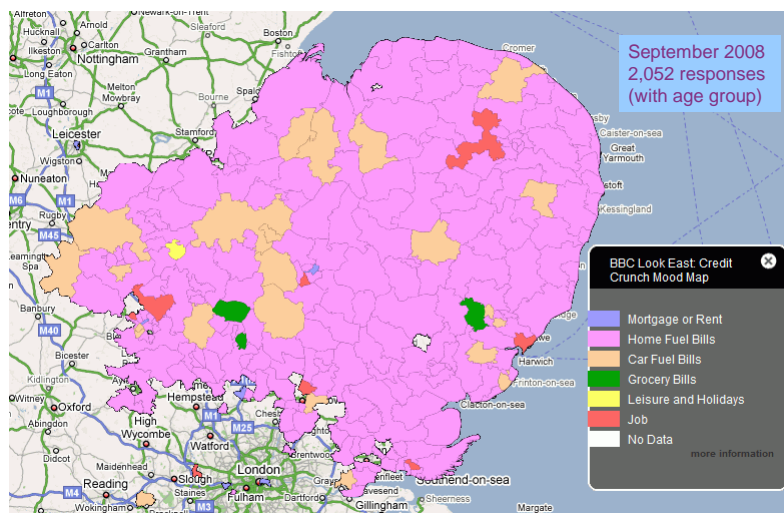
15,902 responses
October to December 2008



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BBC Look East: Credit Crunch



September 2008
2,052 responses
(with age group)

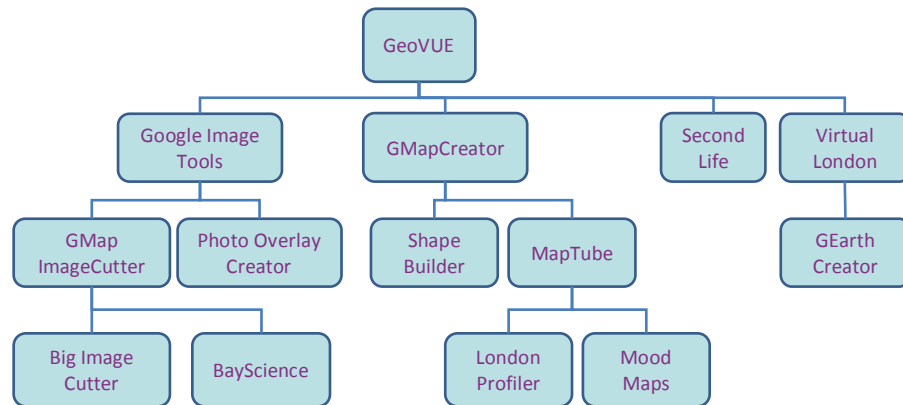
<http://www.maptube.org/LookEastCreditCrunch/>



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GeoVUE Family Tree



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Most Popular Live Surveys

CuteMap

There are a wide range of opinions about the "Cute" that will be announced in the Comprehensive Spending Review. I want to discover whether there are any spatial or demographic patterns in the distribution of these opinions.

Started: 01/10/2010 Ends: 31/12/2010
88 views 47 responses

Safety Parks Survey

Making sure that our local parks are safe for everyone to use and enjoy is very important to us. Please take a few moments to tell us how you feel about your local park.

Started: 27/09/2010 Ends: 28/10/2010
58 views 17 responses

What is a thing to you?

Things are being spotted in London and in North Carolina. Help us at Teapostop define what a thing is.

Started: 23/09/2010 Ends: 31/12/2010
47 views 14 responses

Most Popular Surveys (All time)

How Happy Are You?

Are you happy or sad?

Started: 15/06/2010 Ends: 31/08/2010
552 views 254 responses

Public Perceptions of Crime - Beta Testing Survey

Survey to see perception of crime mapped to postcode

Started: 24/09/2010 Ends: 31/08/2010
533 views 3,100 responses

World Cup 2010

Who do you think is going to win the World Cup final?

Started: 08/07/2010 Ends: 11/07/2010
448 views 140 responses

Top Ten GeoCodes

GeoCode	Responses	Percentage
TW11	3	6.25%
DY10	2	4.17%
DT6	1	2.08%
CV13	1	2.08%
CR6	1	2.08%
CF71	1	2.08%
CB22	1	2.08%
BT5	1	2.08%
BS39	1	2.08%
BN15	1	2.08%

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Seriously Capturing and Scraping Data: Twitter and online streaming, London Bikes



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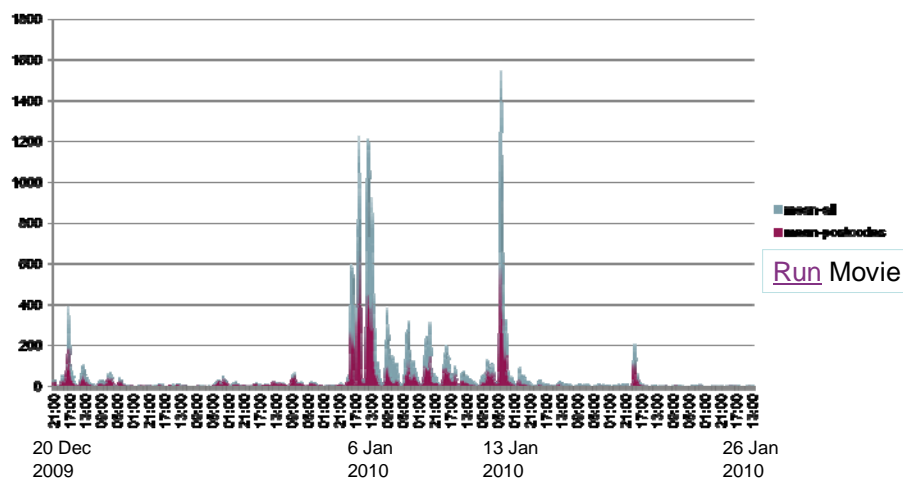
10953	<i>Drafted cold snap has killed the car battery...£70 for a new one...#uksnow</i>	21/12/2009 22:53	pablothecat (pablothecat)
5788	<i>Steady heavy snow in Chesham HP5 #uksnow</i>	21/12/2009 15:57	iotaMEDIA (Gordon O'Neill)
5789	<i>#uksnow SG10 3/10</i>	21/12/2009 15:57	domsparkes (domsparkes)



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Tweets Per Hour (#uksnow)



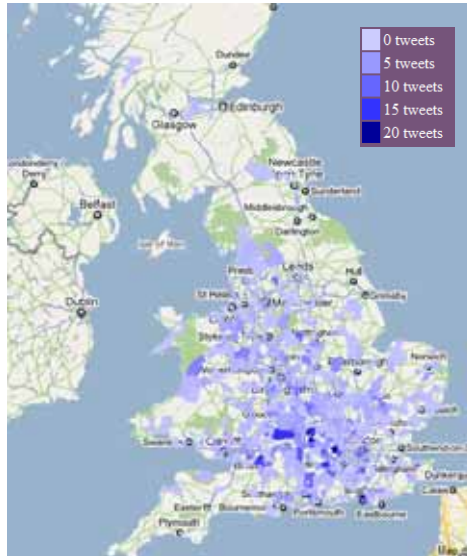
Tweets using the #uksnow tag shown as tweets (grey) and those containing a valid postcode (red)



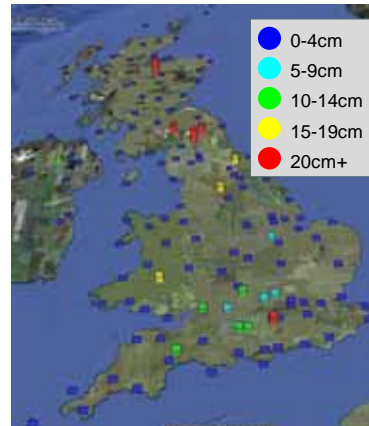
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#uksnow tweets: Wed 13 January 2010



Tweets using the #uksnow tag for Wednesday 13th January 2010 plotted as a count by postcode for the whole day, compared to UKMO data for 12Z



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Tweets as Background Radiation about Dynamics in the City



Urban Tick

Urban Tick is a new blog which is written by Fabian Neuhaus who is studying rhythms and cycles in the city for his doctoral work. An important way of looking at cities is through the fast processes that define the functions of the urban environment of which local movement is key. Tracking individuals and relating their space-time trajectories to their behaviours and the activities that their frequent and use is basic to the way cities are organised. We can begin to define spatial structures in terms of such movement and tracking individuals is fast becoming one of the ways in which such structures can be defined. Contemporary IT with embedded GPS is central to all of this and Urban Tick seeks to record what is moving and shaking this fast developing field.

<http://urbantick.blogspot.com>



About this blog

Cycle studies are the science of everyday life, as normal as it gets. Its focus is the daily routine, with its habits and rhythms as they occur in most citizens' lives. It is the power of the normal that brings stability and the routine that ensures security. But is the cycles's dynamic of flow and continuation that prevents life from freezing. Cycles therefore stand for stability but are at the same time the engine of change.

With this blog the research on cycles and rhythms will be embedded in the most recent developments in technology, covering a range of areas with a focus on space-time related technologies.



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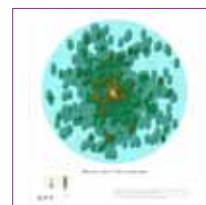
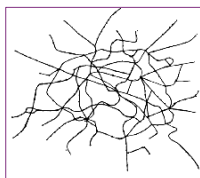
New York



London



Paris

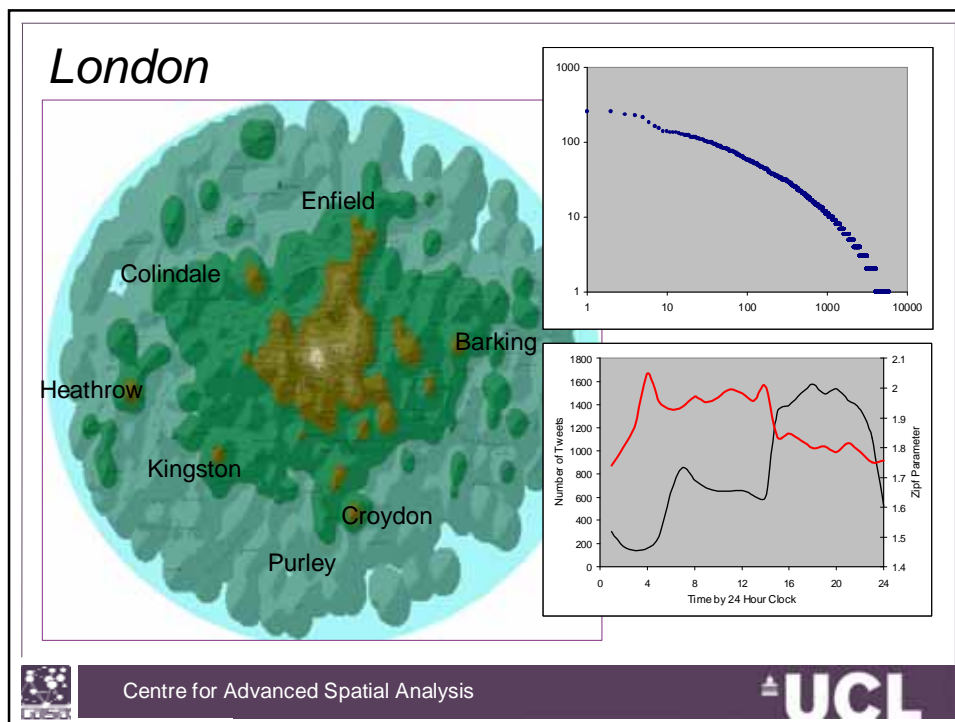


Moscow



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Scraping Data: The London Bikes Experiment

Locally called Boris's Bikes

Essentially a scheme to introduce public bike transport to central London to take people out of cars and trains and even buses and to promote sustainability, as well as counter obesity



4200 bikes, 340 stations, access via online registration or by paying on a credit card at the local bike station – so all online data



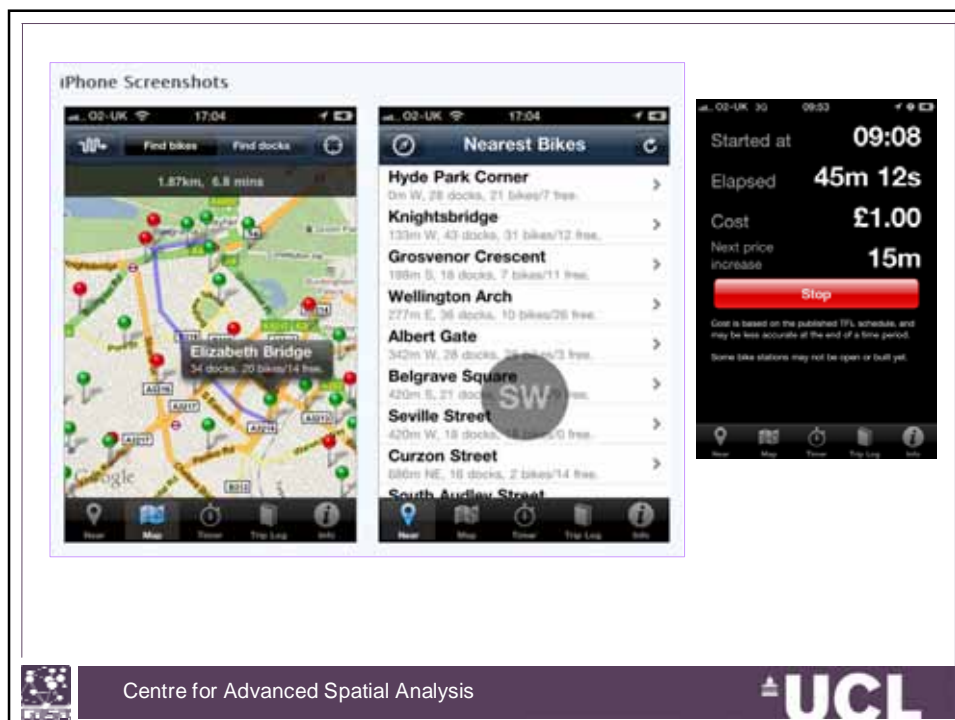
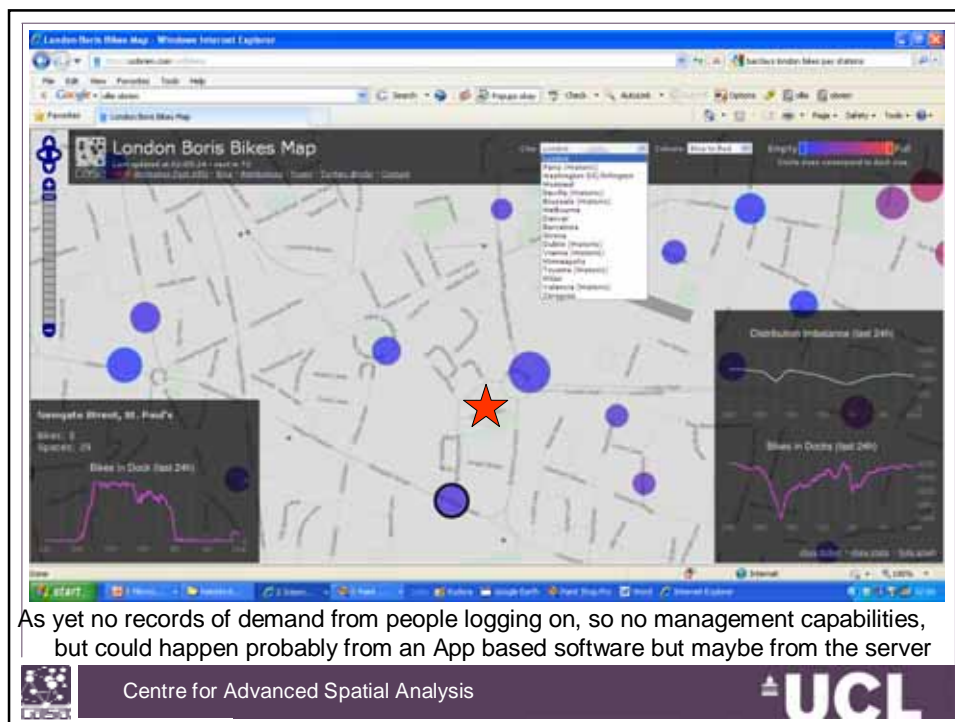
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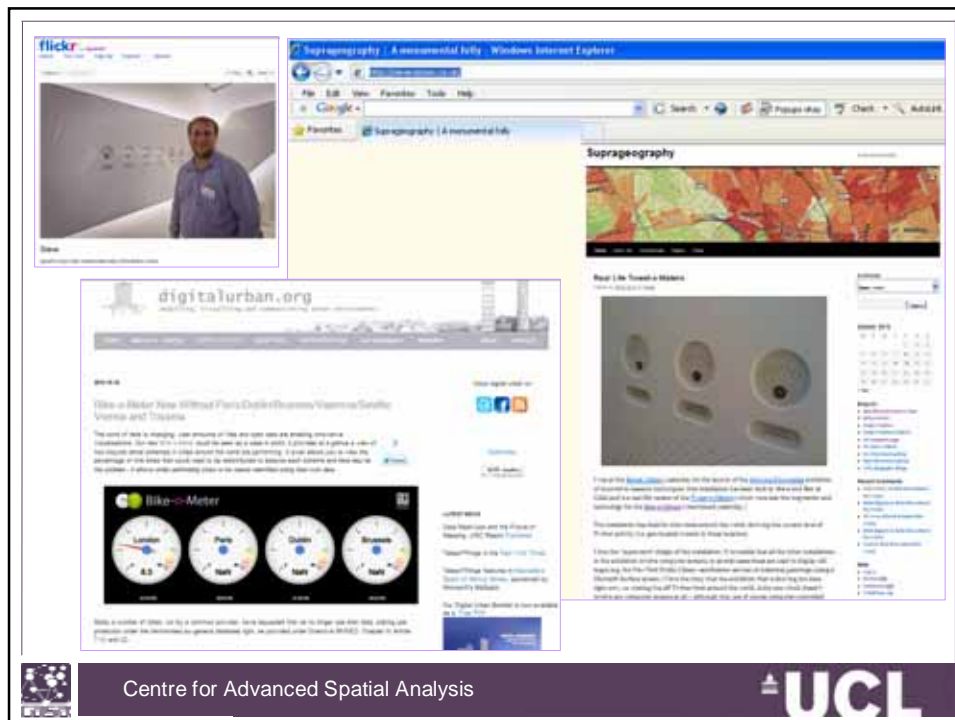


And he does this all the time, so if you log onto his web site – his blog in fact

Then you will get all this data – let me show you some pictures of it – I may even log on and show it now live but it is slow in Explorer on this machine







2D to 3D: GIS to CAD and back and on the web



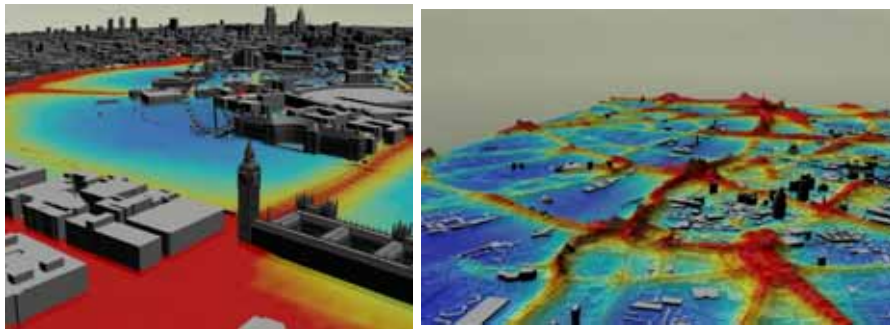
We are attempting to integrate much of this data with more conventional spatial information

And to construct and make this available in various kinds of multimedia from 3-D GIS to CAD to movies to virtual exhibition spaces based on virtual worlds



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The key issue for us is to populate this data base of 3.6 million building blocks with socio-economic data

This is linking geometry to geography in a way that will explode the data base to levels much more reminiscent of large scale databases in the physical sciences than the rather modest social data bases based on aggregates of population

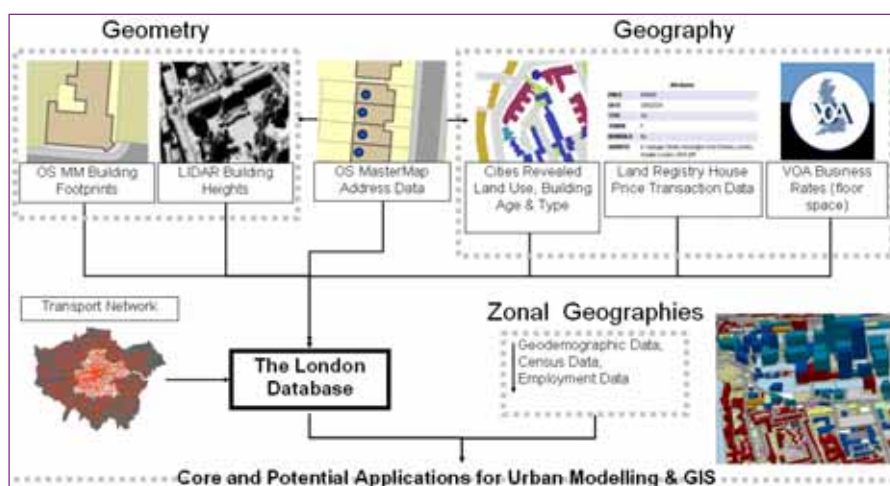
Linking these to individual address point data is another related issue too as well as tagging buildings to populations



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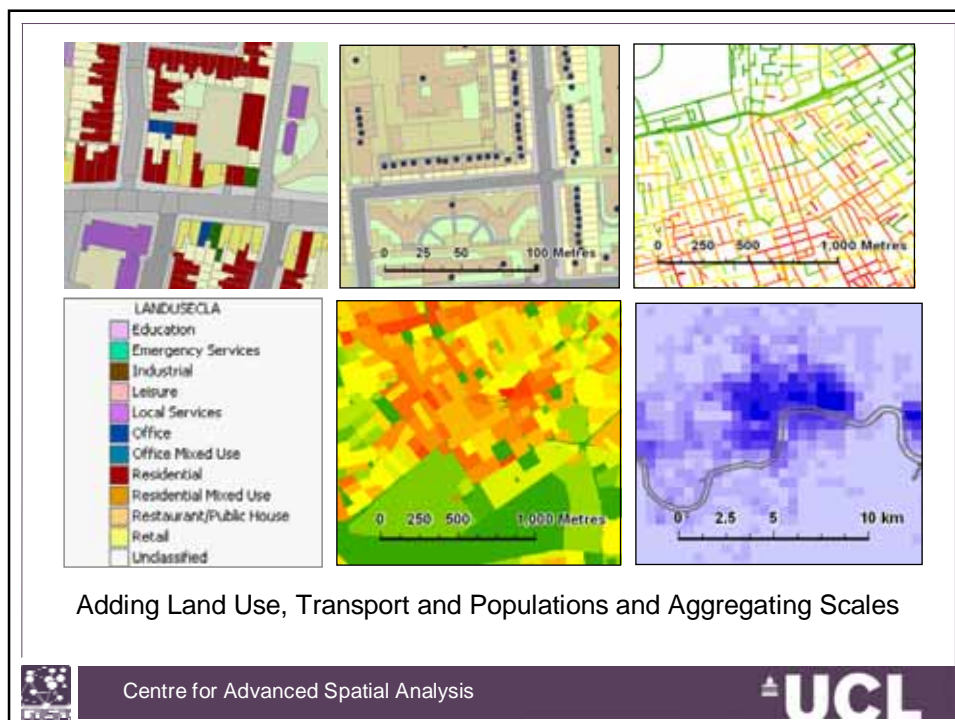
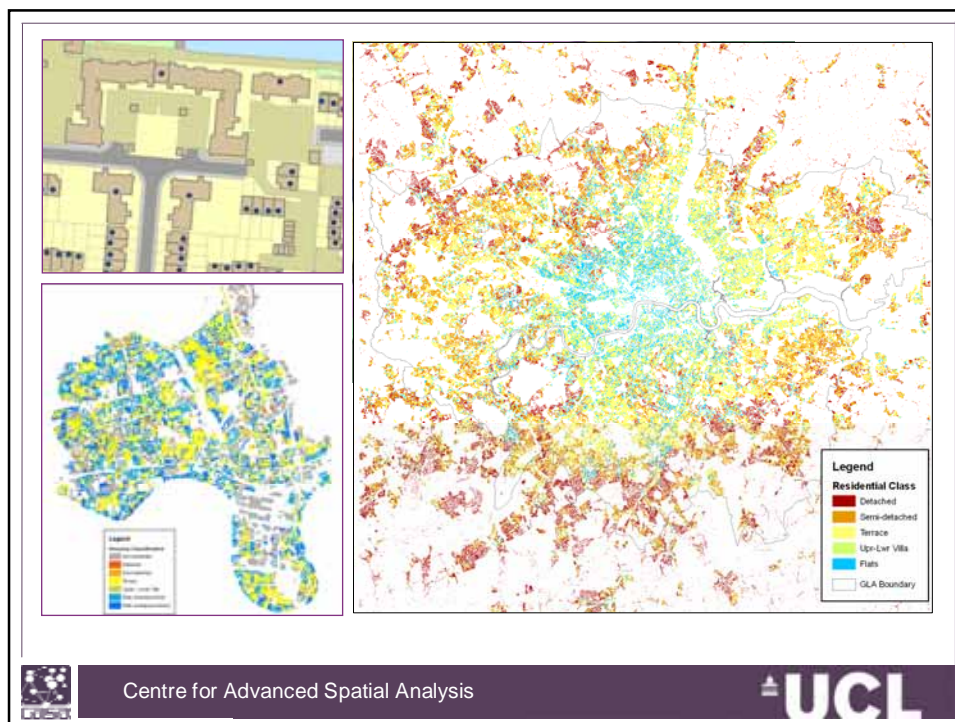


From geometry to geography and back – populating really large spatial data bases



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Part of this future is disseminating spatial data in multimedia – games and virtual worlds



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Thanks, Any Questions?

Look at our web sites

<http://www.casa.ucl.ac.uk/>

<http://www.surveymapper.com/>

<http://www.maptube.org/>

<http://www.oobrien.com/>

Our Blogs

<http://www.digitalurban.blogspot.com/>

<http://gisagents.blogspot.com/>

<http://www.genesis.ncess.ac.uk/>

Credits

**Andy Hudson-Smith, Ollie O'Brien, Richard Milton,
Steven Gray, Duncan Smith, Fabian Neuhaus**



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