Support for spatial interventions and contributions to the planning process based on tracking and mobile technologies

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Themes and Round Table Workshops

Position paper: support for spatial interventions and contributions to the planning process based on tracking and mobile technologies.

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Introduction

From 2003 until present we have conducted various experiments with the use of GPS tracking; and combinations of internet/mobile phone based questionnaires, and/or PDA based applications, and GPS tracking; as survey instrument in the context of urban planning. This work has involved simple testing of reasonably prices equipment (Garmin, MIO, HP, care4all) and small surveys: adults from Aalborg; employees at Danish Centre for Forest, Landscape and Planning; children from Glostrup; children from Hjerk-Harre; and lastly high school students from Aalborg. The Aalborg studies have been carried out in co-operation with students from Aalborg University, whereas the 'children' studies have been carried out in co-operation with 'The Research Unit for General Practise in Copenhagen' at the University of Copenhagen.

Our main aim has been to prepare for a new type of survey of activity patterns in time and space that will add a new perspective on spatial interdependencies and spatial effects, for the benefit of urban planning. Our 'position' on what kind of spatial interventions that would be supported by such contributions, and what role these might have in the planning process is described in the following.

Spatial interventions supported

Our work with GPS tracking and mobile technologies have been carried out, mainly with the following areas of application in mind: the effect of increasing 'virtuality' on the use and role of urban space; effects of urban form upon spatial behaviour, transportation, environment and safety; as well as use patterns, use contexts, promotion of use, especially in a health context.

Virtuality and spatiality
Our main hypothesis here is that the increasing use of ICT and especially web-based communication, socialising, search for information, shopping etc. is changing the use and role of urban space. Thus there is a need to think anew on the planning of urban space – in contrast to the functional hierarchies that still dominates within the field. GPS based tracking and surveying based on mobile technologies, would be a tool to explore this new reality and thus inform and guide urban planning.

Urban form – spatial behaviour, transportation, environment
Both authors have done their PhD in the field of urban form and spatial behaviour: road hierarchies and accidents; and transport behaviour respectively. The main issue here is to build neighbourhoods, urban expansions, road networks etc. in a form that affects spatial behaviour in a desirable manner: towards greener transportation, traffic safety etc. GPS based tracking theoretically makes a precise survey of spatial behaviour possible, including routes travelled, durations of stay, and with registration of movements at the micro-scale as well as the macro-scale. Thus tracking greatly improves the basis for the evaluation of urban form as well as many aspects of urban design.

Use patterns / use context, health promotion
Tracking is already used by advertising professionals to evaluate exposure to commercials. Urban planning for the 'common good' can also benefit from the use of tracking as a source of knowledge, that allow exposure, access or use to be optimised. First of all combinations of digital maps and tracking allows for exposures to be assessed, second, general tracking based surveys allows for visitors and users at the micro-scale to be linked with the macro-scale (other urban functions, infrastructure etc.). As the potential restorative effects of urban green spaces is becoming more and more important in urban planning, tracking based surveys is likely to be able to add information on how exposure and contacts with green space can be increased – and which configuration of urban form, urban design and green space that will induce the most physical activity.

Other fields of application considered by the authors have been: the application of tracking to a study of fear of crime in urban spaces; tracking studies as a potential source of information on user populations that could inform evacuation planning; and tracking as a source of knowledge on interaction patterns that could inform planning for disease breakouts and potential paths of contamination/dispersal.

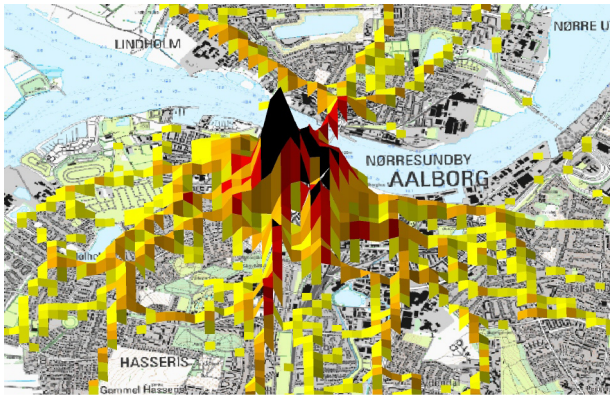
Tracking technologies in the planning process

The types of spatial interventions described above mainly points to the use of tracking and mobile technologies for analysis and elaboration, and presentation/dissemination in dialogue with the public.

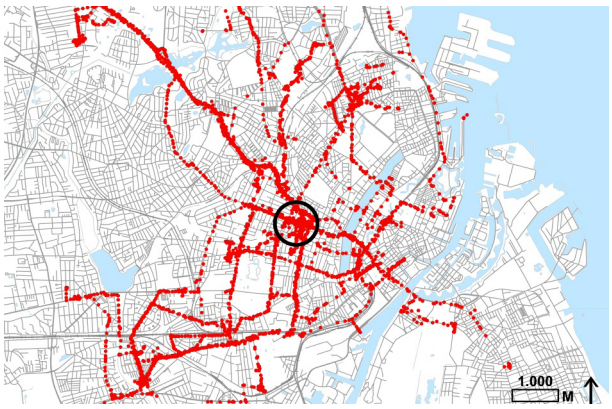
Analysis and elaboration – improving the knowledge base – decision support
The use of GPS tracking and mobile questionnaires as survey technology implies a mainly scientific use of the possibilities offered by the new technologies. Given that new knowledge on aspects of urban form, road design or the like is produced this is likely to enter the planning process as a sort of decision support.

Mapping and revealed behaviour as integral part of the planning process
Our experience from the Danish context have been that visually appealing, easily interpretable, representative maps of, e.g. commute behaviour, seems to promote the interest of the media and a wider public than usually. Furthermore the content of the media gives the impression that information on what 'we' do, and how and why 'we' do it is popular reading. Thus it is suggested that the newness of tracking and mobile technologies as a survey device, combined with appealing forms of presentation, is likely to be able to foster a renewed interest in urban space and how it is used. This interest could be used to promote the participation and general interest in urban planning.

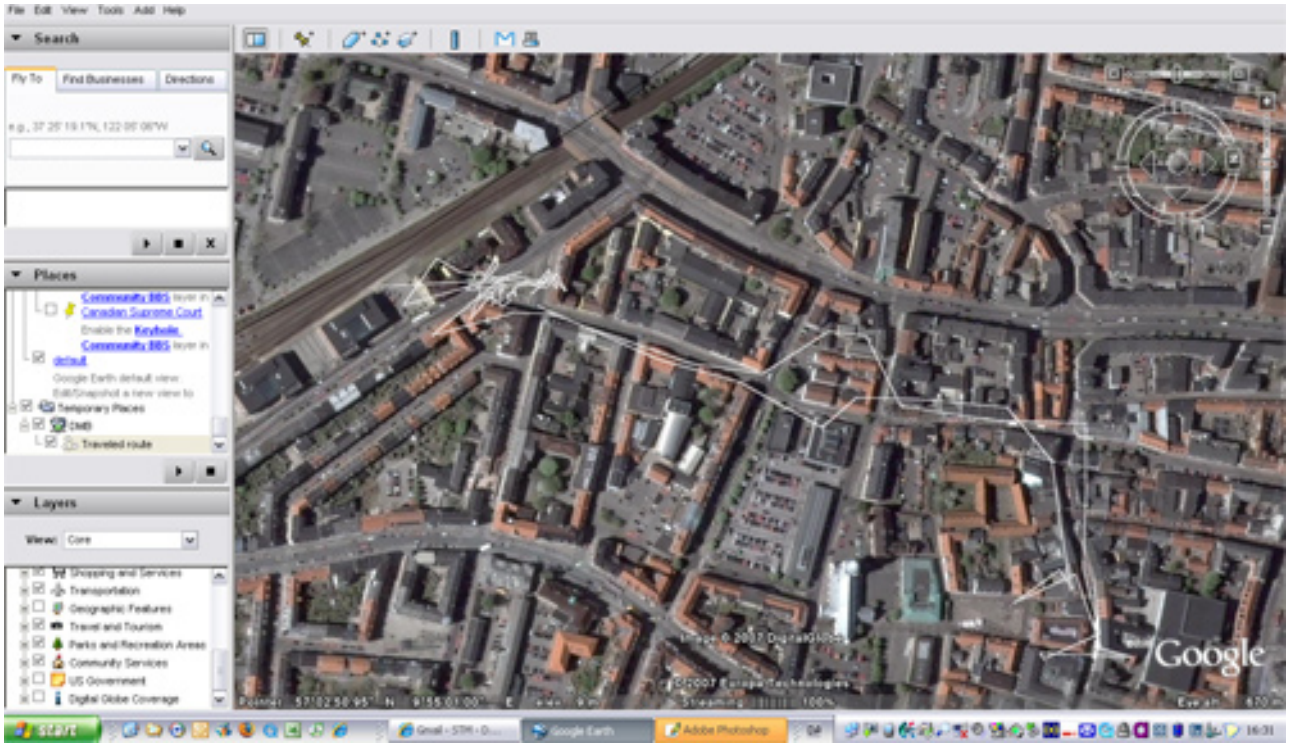
I a wider perspective the tracking of Citizens (GPS or GSM based tracking of volunteers?) could be built into the planning process as an interest and discussion raising feature. Tracking and representation of spatial use patterns may also be combined with an interactive dialogue (voting by SMS, web or Bluetooth, general or place specific) as well as dissemination of information (SMS, web, Bluetooth, phone numbers, place specific or general).



The 'common ground' for 50 high school students in the city of Aalborg. The map indicates the proportion of the respondents that visited the grid-cell during one week.



One week itineraries for 10 employees at the Danish Centre for Forest, Landscape and Planning in Copenhagen.



Online waypoints in presented in Google Earth