

Geo-ICT and the role of location in Science, part 7: Sociology

‘GIS and modern sociology: from “space of place” to “space of flows”’

Sociology is all about making sense of human group behaviour. In recent decades, one strand of sociology has specifically concerned itself with spatial behaviour. The Bicocca University is famous for its contributions to this sub-discipline. We went to Milan to speak to Professor Guido Martinotti about his past experiences with using Geo-ICT and his expectations for the future.

Leiden, 1978. A number of prominent European sociologists have gathered for an ambitious project: the development of a model for ‘the modern city’. Among them is the Italian scholar Guido Martinotti, now Professor in Urban Sociology (and vice-rector) at the University of Bicocca, Milan, who had been studying urban communities since the 1960s.

Martinotti recalls: “After a series of presentations and discussions in the morning, we climbed the Sint Pieter’s Church in the afternoon. From up there, we had a tremendous view over Leiden: its inner city, with grand buildings, squares and a web of canals, surrounded by suburban areas, with scarce patches of greenery. In all, a typical, modern European city. But what I remember most of that trip, is how we got on a coach after dinner, and were transported through the *polders* (countryside) for several miles before being dropped off at our hotel. Then I realised: the boundaries of the modern city, physically, but certainly also sociologically, lay far beyond what the human eye can comprehend.”

It is in cities like Leiden and Amsterdam that we can see how Martinotti’s research object (“urban communities”) has in recent decades been transformed. For many centuries, large European cities were dominated by two populations: “inhabitants” and “commuters”. But thanks to increasing wealth (leisure time) since the Second World War and the introduction of fast transport- and communication-devices (increased mobility), a third group has joined these traditional two, classed by sociologists as “city users”. Amsterdam has just over 800.000 inhabitants and thousands of commuters find their ways to Amsterdam offices daily, but on top of that, the city receives another 40 million “users” yearly, mostly tourists and foreign businessmen. This *influx* has left clear marks on the city’s infrastructure (most clearly in extended transport networks, short-term accommodation and shopping areas to facilitate these visitors) and its mentality (cosmopolitanism).

Mapping mobility behaviour

How do urban sociologists deal with this revolution? To what extent do their studies do sufficient justice to this increased mobility? And which role can Geo-ICT play in their attempts to do so? Martinotti argues that, despite a transforming study object, many of his colleagues continue to apply “traditional types of analysis”, merely focused on the city’s inhabitants. On the other hand, more and more sociologists acknowledge the need for a methodological transformation. In *Space, technologies and populations in the New Metropolis* (2003) Martinotti argued for a shift in emphasis from ‘space of place’ (‘where people live’) to ‘space of flows’ (‘where people go’) and for the introduction of new tools to measure, analyse and visualise effectively the whereabouts of all urban populations (inhabitants, commuters *and* city users). “There are strong indications that Geo-ICT will play a crucial role in this transformation.”

Martinotti's department has recently carried out two pilot projects which use GPS-systems to map the mobility behaviour of elderly citizens and commuters in and around Milan. Although these systems do not yet produce optimal data, their functionality is limited in closed spaces and their storage memory is limited, Martinotti is convinced that their use is the right way ahead. Funded by the Italian Ministry of Education and Science, and in collaboration with researchers from the Universities of Bologna and Trento, his department will carry out large-scale follow up studies, including one during the annual carnival festival in Venice, spring 2007. Using PDA's and Geo-ICT software the researchers will try to geographically capture the mobility behaviour of individual festival-goers.

In the past, many cities have adjusted their infrastructure to events like these: Barcelona's inner city and transport system, for example, were significantly improved in the run-up to the 1992 Summer Olympics. By analysing the actual use of these facilities during and after the event, lessons can be drawn which allow future host cities to adjust their facilities more effectively to visitor's spatial needs. Martinotti believes that, besides an improved 'ease of use', this may also result in improved security for visitors and participants. To explore the legitimacy of this assumption, Martinotti's department has recently applied for a research grant for a study into 'political tourism' (e.g. the mass-demonstrations during the annually G8-summits).

However, other strands of sociology (besides urban sociology) also deal with spatial issue, hence could benefit from the use of Geo-ICT. A good example is a study that Martinotti is carrying out in collaboration with MIT on the social and spatial impact of ICT-use in an academic setting. How do the use of wireless networks, GSM's, PDA's, e-mail and other location-based technology affect scientists' behaviour? And what consequences does the fact that they are less bound by location (thanks to the use of such technology) have for their relationship with fellow-researchers, lecturers, students and administrative personnel? But also, how can the faculty's interior design be adjusted optimally to the changing use of space? Although on a smaller scale, this is still sociology, and location and mobility play a central part. Interestingly, in this case Geo-ICT is used as both a *tool for* research (to measure, visualise and analyse the use of space) as well as an *object of* research (to explain changes in the use of space).

Lying with maps

Martinotti describes the use of Geo-ICT in his discipline as "promising, yet limited." This is partly due to a lack of usable data. Because of its ambitious objectives, 'to reconstruct group behaviour based on data on individuals', sociology is dependent on large quantities of data: it is a 'data-driven science'. However, most of the traditional databases, although some contain geo-referenced data (e.g. 'census register') cannot simply be imported for 'dynamical' studies into mobility.

Moreover, there are serious potential pitfalls with the use of Geo-ICT. Although (dynamic) maps may seem much more straightforward and accessible than tables and graphs, and can thus be used effectively for presenting scientific findings, their potential misuse cannot be overlooked. A classical example is the 'intelligent' use of maps by the American Intelligence services during the Cold War to raise public awareness of the 'communist threat': with the Soviet Union prominently in the centre of the map, coloured in dark red. Similarly, scientific findings can be easily manipulated in a map.

Nevertheless, Martinotti believes that Geo-ICT could experience a general breakthrough in sociology. For that to happen, however, it is necessary that sociologists join together with other social scientists to gather usable data and to contribute to the further conceptual and technological development of GIS. A project that operates based on this philosophy is the recently launched *Qua_Si Project*, of which Martinotti is the project leader. This project brings together scholars from different countries and different disciplines to establish an integration of research, teaching and technology development.

It consists of four research units, in which researchers and PhD students in sociology, psychology, economics and educational studies study the evolution of ICT and their impact on society, and two so-called Multimedia Production Centres (MPC). In these MPC the scholars from the research units work together with computer engineers to develop a range of (Geo-)ICT tools, varying from a digital learning environment for universities to software that supports the GPS- and GSM-systems used in Martinotti's pilot projects.

Initiatives like these could make a successful integration of GIS in sociology happen. But despite an increasing awareness of the importance of spatial issues and although some sociologists actively experiment with Geo-ICT, there still is a long way to go.

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