

Guest Editorial: What Can We Learn from Accessibility Modelling?

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Since Hansen (1959) first introduced the accessibility concept, a well established body of research has emerged in social science dealing with how accessibility affects land-use planning and spatial interaction. In Hansen's words, accessibility is "the potential of opportunities for interaction" (p.73). It is well known that transport systems constitute a necessary condition for spatial interaction, and, as a consequence accessibility analyses generally include some measure of the costs of spatial interaction for certain groups in some determined geographical area.

The concept of accessibility is open to different types of study regarding the activities that can be carried out, to multiple transport systems, and to different individuals or groups, so it is not surprising that in the literature we can find many definitions (Geurs and van Wee, 2004; Bruinsma and Rietveld, 1998; Reggiani, 1998; Vickerman, 1995; and Morris et al., 1979). In this introduction we will use the review by Geurs and Van Wee (2004) to analyse the papers included in the special issue. On the basis of a literature review the authors distinguish four main components in the accessibility analysis: (a) the land-use component that encapsulates the potential activities; (b) the transportation system that facilitates the participation in activities; (c) the time component which should reflect the restrictions for some activities at certain periods of time³, such as shopping on Sundays; and (d) the individual component which needs to reflect the particular characteristics of the actors under analysis, e.g. age, income, education, etc.

Handy and Niemeier (1997) consider that it is difficult to suggest the best approach to measure accessibility because the wide variety of situations and purposes demand different approaches. In view of this comment, it is clear that there will be a number of alternative methods with different components in the analysis. We see that three of the papers in this special issue are empirical and use different land use, transport systems, time, and individual components.

The individual component is analysed in the paper by Haugen (2011), where the method is based on a survey made at the individual level. In this case, it was possible to analyse how satisfaction with residential location is affected by individual characteristics. As some authors have pointed out, in some cases, accessibility is more sensitive to individual activity patterns than to aggregate land-use components of areas unit of analysis (Miller, 2005; Kwan, 1998). Weber and Kwan (2003) explain that place-based accessibility indicators are often incomplete, because individual and

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³ The time dimension has gained momentum in recent years in social research, and some applications can be consulted in Ettema et al. (2007), Schwanen and Kwan (2008), and Neutens (2010).

household characteristics can have a much stronger influence on accessibility than place. Similarly, Kwan (1998) shows how different people in the same home or workplace can have strikingly different activity, travel, and interaction patterns.

This special issue aims to discuss some recent trends in accessibility analyses. In the agenda, it is necessary, first, to further investigate under the umbrella of accessibility analysis some important issues such as equity and other social considerations, e.g. social exclusion; and, secondly, to provide an additional point of reference that can be used by other researchers in future applications.

This Special Issue has its origin in the very first NECTAR⁴ (*Network for European Communication and Transport Activities Research*) Workshop on Accessibility, organized in Las Palmas de Gran Canaria, Spain, in June 2008. Within this framework, the editors wish to thank the University of Las Palmas de Gran Canaria and its staff for their great scientific input and organizational support.

From the Conference papers and other specially invited papers, we have gathered four particular contributions that aim – as mentioned – to develop new accessibility models and to analyse the results on the basis of different components included in the analysis. We now briefly describe each of the papers included in this number.

Van Wee and Geurs (2011) give an overview of different aspects of equity and social considerations that, so far, have usually been neglected in accessibility analysis. They conclude that decision makers need an adequate appraisal of distributional effects, related equity considerations and social exclusion, so accessibility analysis should no longer ignore these important aspects. They present a discussion based on each of the components included in the accessibility studies.

Haugen (2011) explores how people's preferences for living close to areas where activities such as work, service, leisure and social activities can affect satisfaction with general residential location. Her results suggest that 'proximity preferences' are structured by both practical and social rationales, and that individual characteristics, such as gender, age and type of residential environment, have an important influence on their preferences. She also finds that residential location satisfaction is related to type of residential environment, dwelling type/tenure, and whether the respondents had considered moving to increase their proximity to certain destinations. She analyses the transport system in Sweden with respect to some activities without considering time effects, but does incorporate individual characteristics in her study.

Condeço-Melhorado, Martín and Gutiérrez (2011) propose a method to analyse territorial cohesion. They assert that spillovers produced by transport master plans have not been measured using a valid and solid methodology. In their paper, they address conceptually how regional spillovers of transport investments proposed in the Spanish master plan ("*Plan Estratégico de Infraestructuras y Transporte*" 2005–2020) will affect territorial cohesion. They calculate regional spillovers by accessibility gains measured in terms of economic potential units, and find two different typologies of regional spillovers, according to the direction of the effects: upstream and downstream. They finally conclude that the '*Plan Estratégico*' favours the territorial cohesion of Spain, but the degree of territorial cohesion produced by each region is not uniform. They analyse the road transport network for two different periods in Spain without considering time restrictions and individual components.

Finally, de Montis, Caschili and Chessa (2011) analyse commuting accessibility in the municipalities of Sardinia, in Italy. They calculate two commuter accessibility indicators which are constructed according to two different approaches based, respectively, on a travel cost and a spatial interaction model with an impedance function calibrated in both exponential and power

⁴ <http://www.nectar-eu.org/>

form. Both indicators are compared by analysing a number of other relevant socio-economic and infrastructure characteristics of Sardinia. They conclude that the travel-cost-based accessibility indicator has a municipal spatial distribution strongly influenced by the transport system. By contrast, the spatial interaction indicator is more related to the characteristics of the area units of analysis with regard to the leading socio-economic role of the municipalities that constitute the metropolitan area of the capital town Cagliari.

We hope that the recent methodological directions discussed in this Special Issue will trigger new research in the area of accessibility analyses. There are still many questions that remain open: see, for example, the paper by van Wee and Geurs for a research agenda about how the link between accessibility and equity considerations could be reinforced.

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