3.5 GREECE

SPACE SYNTAX–EVALUATING SPATIAL ACCESSIBILITY OF THE CITY OF VOLOS

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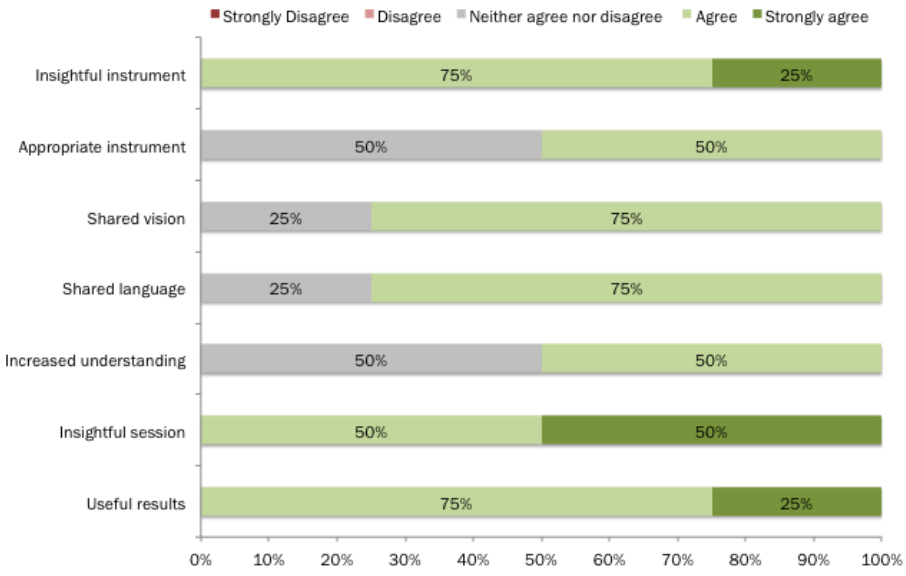
Participants' profile	# Participants: 4
Male | Female	3 | 1
31–45 | 46–60	3 | 5
Transport planner | Urban planner | Surveying Engineer	1 | 2 | 1
Public organisation | Private organisation	2 | 1

Views about the session and the instrument



Space Syntax – angular segment analysis by metric distance

The instrument used is Angular Segment Analysis (Hillier and Iida 2005; Charalambous and Mavridou 2012). It belongs to the wider theoretical and methodological field of Space Syntax, developed originally in the Space Lab of University College London (Hillier and Hanson 1984).

Space Syntax focuses on the role of spatial networks in shaping patterns of social and economic transaction. Through a configurational analysis of street networks, the Space Syntax methodology investigates relationships between the spatial layout and a range of social, economic and environmental phenomena (Carpenter and Peponis 2009; Chiaradia, Hillier and Schwander 2009; Legeby 2009). Research using the Space Syntax approach has shown that pedestrian movement patterns in cities are powerfully shaped by the street network (Hillier 1996; Hillier et al. 1993). Pedestrian flows are related to patterns of security, to land use development, and to the dynamics of urban life. Space Syntax methodology analyses the movement network to quantitatively measure 'spatial accessibility'. This approach utilises graph theory indices of accessibility, which measure spatial separation. The key focus is to describe the spatial impedance factors that separate locations, without considering the nature of the activities separated. Also it measures accessibility from a particular location to either all other locations in the study area or to all other locations within a certain distance from the study location.

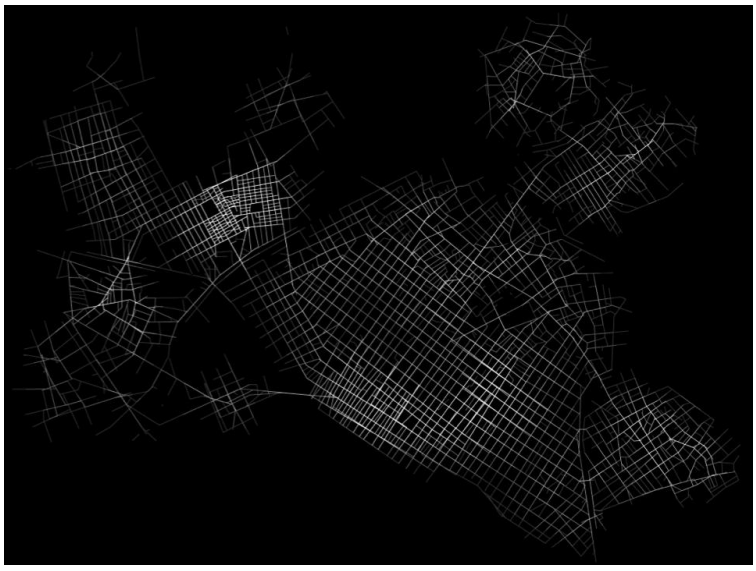


Figure 3.11: Angular segment analysis by metric distance of Volos

The instrument offers an evidence-based approach to supporting decision-making by providing information on the accessibility and walkability of an urban area and by helping to test strategic interventions and design proposals (Karimi et al. 2007). The value of the instrument in the planning outcome and in the decision-making process is that it gives a scientific and objective tool by which the proposals could be tested and evaluated regarding spatial accessibility and pedestrian movement and how these attract land use.

Describing the workshop

The workshop took place in the Volos on 19 September 2013. The city itself was the case study of the working process. We have decided to include both professionals from the municipality directly involved in planning or decision-making as well as freelance planners. We invited professionals who did not know the instrument beforehand so that all participants would have the same level of understanding of the indicators and the results. We discussed whether to include the freelance planners who are involved with the city (i.e. are working on current planning problems) and decided against this idea, in order to avoid any previous personal or professional conflicts of interest affecting the workshop process. Four professionals participated at the workshop:

- N. M. (male, 31–45 years old) a lawyer, with a master's degree in urban planning, the vice mayor who supervises the Municipal Department of Planning;
- Y. P. (male, 45–60) surveyor engineer, head of the Municipal Department of Construction and Development;
- K. K. (male, 31–45) transport planner, working at the Municipal Department of Sustainable Mobility;
- X. K. (female, 31–45) urban planner, freelance professional.

None of them had worked before with specific accessibility instruments. They deal with accessibility mainly empirically, based on personal experience and public participation methods. Some of the participants referred to the analysis of existing geometry, to distribution of population and land uses analysis.

The workshop process started with an introduction to the basic theoretical ideas and academic research findings that guided the development of the instrument. We considered this phase as an important initial step towards understanding the context and the assumptions of the instrument. Then we presented four case studies where the instrument was tested on a professional level. The first two case studies were the restoration of the central historic core of the city of Jeddah (Saudi Arabia) and the urban extension of the city to the north (2006). The third was the design of the King's Cross area in London (2001). All three projects had an urban scale and were presented on a master

plan level. The fourth was a smaller scale project of the urban redesign of Trafalgar Square in London (2001) (all projects can be consulted on the Space Syntax website, www.spacesyntax.com). Special emphasis was given to the consultation process, which had been a crucial part in all four projects and to the design ideas produced after the implementation of segment analysis.

Figure 3.12: The Volos workshop in progress

After presenting the basic theoretical ideas and the relevant case studies we moved on to explain the representational and technical aspects of segment analysis as well as the necessary input data. Special care was taken not to use special or complicated terms.

The third phase focused on the specific case study, the city of Volos. We had already completed the analysis for the whole city beforehand, and we had prepared a basic set of visual maps showing the results of the analysis. We explained the blue–red colour spectrum of visual representation of accessibility (blue for the less accessible, less integrated spaces; and red for the most accessible, most integrated ones). We took special care not to present all the possible outputs and the variety of indicators and constrains that one can introduce into the analysis process. Then, we proceeded by introducing some changes and presenting the impact they could have on the overall urban grid in terms of accessibility. The city of Volos is traversed by the Krafsidonas River. The bridges that connect the two banks enable pedestrian and vehicle traffic. We showed the participants that bridging gaps through the construction of more bridges could affect the overall grid in general. Segment analysis can help us choose which bridges would maximise accessibility effects.

After the completion of the main presentation, we moved to the next step of evaluating interventions and developing strategies. We had decided not to deal with a specific urban problem (although that was our original intention) but to invite the participants to discuss what kind of current planning issues could be

dealt with angular segment analysis. This process proved to be immensely successful. The participants started immediately to examine specific projects with reference to their accessibility. The location of the new Court of Justice was the first issue put forward by the vice mayor for discussion. How accessible should this kind of facility be? Should it be equally accessible by public transport, private vehicles, and pedestrians? Should it be located somewhere centrally (higher pedestrian accessibility) or in the periphery (higher vehicle accessibility)? Are there political implications when locating such a public service in a highly accessible area? The head of the Municipal Department of Construction and Development introduced a similar problem referring to the location of the Police Headquarters. Should it be in a central area where pedestrian accessibility is high, but vehicle accessibility is constrained, or in the periphery? Are there political considerations in the centre–periphery dilemma? A more accessible location could enable protests and picketing in case of police violence, for example.

The vice mayor brought forward a third issue. The city's master plan still contains a number of streets that have not been completed due to incomplete land expropriations. How should the municipal council decide which street receives priority status? The absence of a coherent evaluation system makes the decision-making process vulnerable to political pressures. Accessibility measures, as produced by the instrument, could provide a convincing argument for choosing where to invest under current financial constraints.

Lessons on usability

Two main issues emerged during the workshop. First, information outputs should be kept to a minimum. Even though, an instrument may be able to process many different parameters, indicators, visualisations and levels of analyses, only two or three main important elements should be presented. The participants need to understand the basic concepts behind the instrument and the way it visualises the findings. Additional information complicates things, derails understanding and can potentially jeopardise the entire process.

The second issue refers to the visualisation of the outcomes, which seems to be its most important aspect—both for the success of the workshop and for the usability of the instrument. The angular segment analysis visual outputs are easy to understand, not only by professionals but also by ordinary citizens (as confirmed by participant comments). Therefore, it could be a useful and convincing tool with a broad application potential.

The use of angular segment analysis in a workshop setting seemed to be quite successful, as the tool is easy to grasp, easy to visualise and easy to experiment with. Although the real-time capabilities of the instrument are also

very satisfying (as confirmed in similar settings), they were not explored in the workshop. The participants seemed to be overloaded with information even before the real-time presentation of the tool started; therefore, we considered that it would be better not to include it in the workshop.

The participants were interested in using the instrument immediately in their work, and they started reflecting on cases where it can be used. It was very interesting that they felt that it would be suitable for persuading politicians and citizens during the public participation stages of a project. The freelance professional felt also felt that it would be useful in both testing design proposals (selection of best possible solution).

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