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SPACE SYNTAX – ASSESSING MULTIPLE URBAN DEVELOPMENTS IN LIMASSOL – FROM A TRAFFIC PLACE TO A PEOPLE PLACE

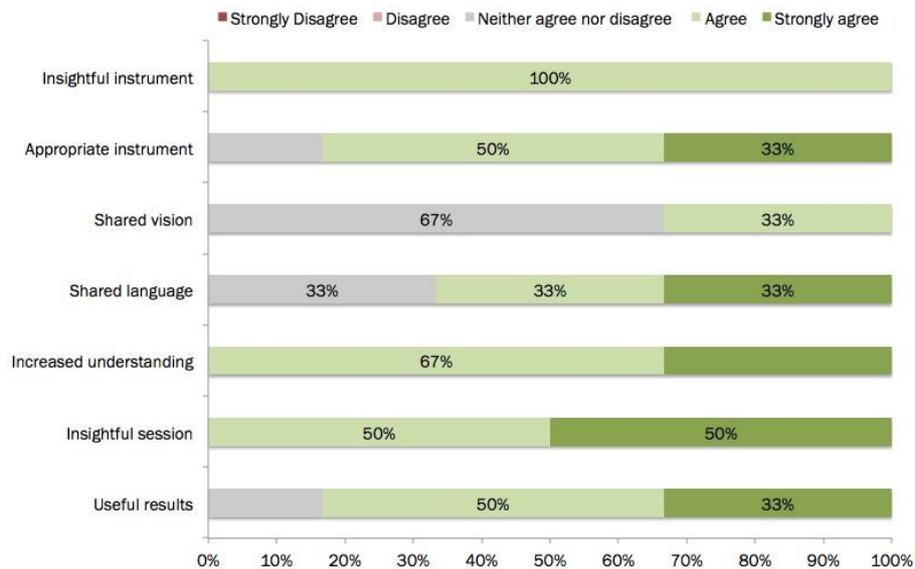
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Participant profiles	# Participants: 6
Male Female	4 2
31-45 46-60	1 5
Transport planner Urban & Transport planner Architect Other	1 1 2 2
Public organisation Private organisation	4 2

Views about the session and the instrument
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Space Syntax

Space Syntax is both a *theory* of urban planning and design as well as a software-based *technology*. It is an evidence-based approach, which provides a spatial analysis of the aspects and structure of space, and helps to describe social activities and human behaviour from a spatial configuration perspective (Jiang et al. 2000). Space Syntax has been used to estimate the connectivity and, consequently, accessibility of architectural or urban spaces (i.e. buildings, open spaces, streets and cities) (Hillier 1996). It is also able to define movement patterns and degree of difficulty in mobility. Moreover, the tool can be used for other applications including land use distribution, criminal activity, estate prices and other spatial characteristics.

Space Syntax methodology seeks to quantitatively measure 'spatial accessibility' by analysing the movement network. 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 that fall within a certain distance from the location under study. All destinations are accounted as equals and land uses are not considered during the initial analysis. Three different types of distance calculation can be considered in accessibility analysis by using Space Syntax: metric (shortest), topological (fewest turns) and geometric (least angle change).

Space Syntax addresses a number of issues relevant to the formation of a land use strategy and location considerations: promotion of economic growth, revitalisation of central areas, increase of social sustainability and enhancement of cycling and pedestrian access. The instrument offers an evidence-based approach to decision-making by informing on the accessibility and walkability of an urban area, and by helping to test strategic interventions and design proposals. The value of the instrument in the planning outcome and in the decision-making process is that it gives a scientific and objective tool to test and evaluate proposals regarding spatial accessibility and pedestrian movement (as well as their effects on land use). The information that the instrument produces can be relevant for planning practitioners on several points. First, it can inform them on the constraints and opportunities of urban areas, with regard to the street network and how it can attract or deter pedestrian movement (allowing for adjustment of the land use strategy). Second, it offers insights into how the area can be optimised regarding its commercial viability, the potential for retail, the design of sustainable development, and the creation of vibrant and lively urban spaces. Third, it offers the possibility to test different strategic guidelines and design proposals.

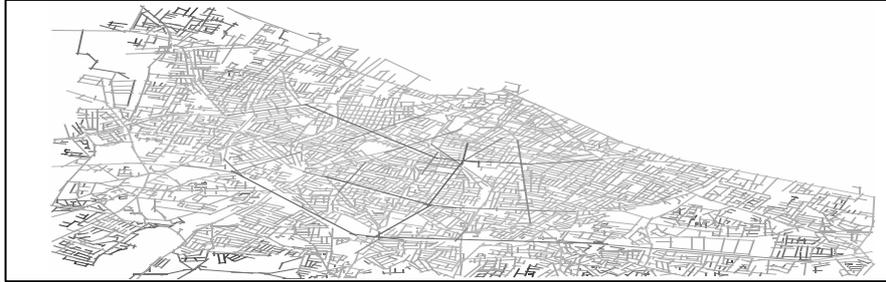


Figure 3.4: Limassol's integration (light grey – less accessible; dark grey – easily accessible)

Setting the scene

The workshop was organised in Panos Solomonides Cultural Centre, in Limassol on 8 July 2013. The local organising committee invited a small group of seven participants to join the local workshop, in an attempt to facilitate an in-depth interface and understanding of the usability of Space Syntax by planning practitioners (as well as gather insight on ways to improve it). An attempt was made to include practitioners involved in a number of planning disciplines, in order to ensure a diverse view on the usability of the instrument, with a twofold aim:

- to invite participants involved in local planning who deal with planning issues, strategies and decision-making on a daily basis;
- to invite participants from a number of disciplinary backgrounds, in order to test the usability of Space Syntax as a professional language between the different planning disciplines.

Consequently, the invited participants included urban planners, transport planners and architects/urban designers.

The workshop

Pre-step 1

Initially, potential users were invited to participate in the workshop by email or telephone. Following acceptance, the local WU contacted each participant by telephone and/or personal visits to their place of work. During this first contact, each end user was introduced to the aims of the workshop, the accessibility instrument proposed, and was invited to complete the pre-workshop survey. The results of this survey facilitated the collection of information from each end user: their background, their familiarity with accessibility instruments and indices, the kind of accessibility-oriented question that are of interest, and their opinion on a number of issues related to accessibility instruments.

Step 1

Three weeks before the workshop, a meeting took place with most of the end users present (two end users were unable to attend and were contacted before the meeting by phone). During this first physical meeting, a discussion took place in relation to a relevant planning question to be addressed during the forthcoming workshop. The end users also discussed with the local WU the presentation of the accessibility instrument (Space Syntax) so that it can support the exploration of the planning question to be addressed.

The end users highlighted the problem of many, simultaneous and abrupt changes in the centre of Limassol, with the respective changes to accessibility due to rapid planning developments—all approved by the town planning authority of Limassol. The common concern/question raised was whether or how the cumulative impact of individual urban developments on the city's urban form in relation to accessibility could be assessed by the planning authorities before they grant approval. The urban/planning challenge at hand was the possible application of a suitable accessibility instrument to assess urban change and developments. A thorough discussion took place, which was necessary for translating this issue into accessibility terms and deciding on the appropriate presentation means. Accessibility was defined in this case as 'spatial accessibility', measured from a particular location to either all other locations in the study area or to all other locations that fall within a certain distance from the location under study (in this case the urban centre of Limassol). Space Syntax methodology will be utilised to analyse the movement network (both vehicular and non-motorised) and to quantitatively measure and describe the spatial impedance factors that separate locations (without considering the nature of the activities separated). The spatial indices derived from such an analysis reflect the extent to which a space (or node) is integrated and connected with other spaces (or nodes) in the studied area.

In order to measure accessibility in Space Syntax, the transport network and the associated lengths of the network links need to be drawn in the form of axial lines. Axial lines are lines of unhindered movement used in measuring accessibility, and they are defined as the least number of longest straight lines. This is illustrated with a connectivity graph where axial lines are represented as nodes and line intersections as links. The results are then presented in the form of maps (in several scales of colours showing different ranges of accessibility values) and in tables with relevant numbers.

All participants agreed that ongoing redevelopments in the centre of Limassol could then be analysed; a forecast could be attempted regarding the way the city will react to them in terms of accessibility; and consideration could be given to the authorities' rationale for approving the developments.

Step 2

During the actual workshop day, the local WU presented to the participants maps and tables with the current syntactical characteristics of Limassol city centre, assessing its spatial properties, the way this urban form is functioning and the problems it currently faces. In other words, the current accessibility situation was represented and explained to the end users in an attempt to create a shared understanding and to facilitate discussion and decisions on future urban interventions. The maps presented in several scales of colour facilitated a relatively 'easy' understanding of the accessibility problems under study. All workshop participants understood the representations in the form of maps; most had a difficulty to understand them in the form of tables and numbers. The local WU thus focused on providing representations utilising axial maps rather than tables and statistical measures.

Step 3

Following the assessment and analysis of the existing accessibility situation, a plenary discussion took place in relation to new urban developments, either ongoing, or proposed and already approved by the planning authorities. Since most of the participants were involved in these planning decisions, they were familiar with these proposals and welcomed the opportunity to forecast/assess their possible impact on the city's urban form in terms of spatial accessibility. The plans of three important proposed developments were presented in the forms of both printed maps and digital projected images, and were overlaid on the map presented in step 2 (existing accessibility situation). Ongoing redevelopments were then analysed, and the effects of the planning interventions on spatial accessibility were presented. The analysis revealed that the cumulative impact of new and/or proposed developments caused improvement of local accessibility, but despite this slight increase in connectivity increased slightly global integration decreased. As a result, the system as a whole became even less accessible by cars and pedestrian visitors. These observations—shared and understood by all participants—further highlighted a) the potential of the accessibility instrument to serve as an impact assessment tool, which can enhance understanding of the accessibility dimension of different planning alternatives; and b) the necessity an analytical framework to support planning decisions. The spatial accessibility analysis facilitated an understanding of the initial question/problem dilemma: Did the local authorities consider the existing situation and the developments cumulatively in terms of whether they would have a beneficial impact on the urban configuration? or Did they only considered how each development would perform individually within its own boundaries, regardless of the impact on the

existing city, the interaction with other areas (hence disregarding a holistic view of the impact of their planning decisions)?

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Land use maps were also presented after the spatial analysis in order to facilitate understanding of the possible relations between the spatial characteristics of locations (in terms of axial lines/spatial accessibility) and activities. Participants proposed possible alternatives to overcoming the problem that each new/proposed development was shown to function as a separate entity, despite a token attempt to connect the old port and the marina through a small pedestrian bridge. All participants agreed on the opportunity to use the redevelopment in the Limassol marina to improve the linkages between the centre and the promenade. Despite many connections, they are separated by a major vehicular road, and the pedestrian crossings are not aligned with the streets perpendicular to the promenade. The segment analysis clearly showed that, despite the vicinity of the promenade to the local integration core, it is disconnected from the town centre and remains so after the developments. The participants, thus, proposed perpendicular connections or crossings aligned with the vertical streets between the promenade and the city centre, in an attempt to improve 'local to global' accessibility. The proposed interventions by the end users revealed that they understood the changes in accessibility that resulted from the changes in the urban form.



Figure 3.5: Setting of the workshop in Limassol

Lessons on usability

The workshop provided a valuable experience to the participants. The local WU had the opportunity to reflect on the usability of the accessibility instrument and its potential to support planning decision-making in practice. At the same time, it gave the opportunity to local stakeholders involved in planning decisions to experiment with accessibility instruments and understand how such instruments can help them in their daily planning work. These tools can

meet the need for evidence-based guidance in dealing with the complexity of the spatial, social and political context as well as the potential long-term cost of incorrect planning decisions.

Space Syntax methodology proved to be a valuable and user-friendly tool for quickly assessing the impact of multiple developments with overlapping timescales in real time, which is valuable in all cases where fast redevelopment is occurring at different scales and time. However, in order to develop a strategic master planning system, the application of the tool should be enhanced by close consultation with relevant stakeholders, in order to compare and enhance the results of the analysis. Possible interpretations of spatial phenomena need to take into account additional information that is not readily available through configurational analysis alone.

The whole process highlighted the difficulty of performing such a task. First, more time is needed in order to develop a shared language and understanding of accessibility terms, since participants with different backgrounds have different understandings of accessibility terms. Second, an effective interface between different stakeholders may be difficult to establish, since objectives in urban development differ and sometimes there is conflict between different stakeholder groups. Third, appropriate knowledge and tools are needed in order to be able to analyse and assess urban developments, including enhancing the understanding of relevant stakeholders of the impact of the changes to the spatial configuration and accessibility of a city, which is necessary for informed, constructive urban development.

