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Going Back to Basics

The challenges and limitations of teaching Space Syntax through short course programs within mainland China

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ABSTRACT

Within recent years Space Syntax theory has continued to enjoy an ongoing growth of interest from mainland Chinese higher education establishments. Academics, students and professionals alike have been given access to an extensive knowledge base through online accessibility and numerous conference events, including the 12th Space Syntax Symposium held in Beijing in 2019 and the 6th Chinese Space Syntax Symposium held in Guangzhou in 2021. In addition, Tongji University now offers a master's program specifically tailored to delivering space syntax theory. However, the authors suggest that beyond the mainstream academic circles, an awareness of Space Syntax theory remains relatively limited within both more local Schools of Architecture and Local Design Institutes (LDI's). As the idea of teaching research-based design becomes more popular (Karimi 2019) and the argument for evidence-based design gains a stronger footing within the industry, this paper proposes that through the use of tailored short course programs it may be possible to extend the knowledge of Space Syntax to undergraduates and postgraduates within a broader scope. A more comprehensive understanding and practical application of this theory can be developed by extrapolating key core principles and delivering these through an abridged short course program to architectural and urban design students. This paper outlines the structure of the space syntax program developed to be delivered to the students at Hunan University and Changsha University of Science and Technology, highlighting the limitations and challenges of this pedagogical approach. It takes a number of real-time projects to which students have applied this knowledge and highlights how effective these methods are when utilized by students within their own design and research work. Results from these courses see an enhanced understanding of socio/spatial relations amongst participants, with students implementing analysis and predictive modelling methods to add an additional layer of scientific rigour into



their own work. This often translates into improvements within their approach to design, seeing an increasing willingness to adopt a more evidence-based approach to their own work.

KEYWORDS

China, Space Syntax, Pedagogical, Evidence-based, Research-based

1 INTRODUCTION

Now within its fourth year, and open to architecture and urban design students from Hunan University and Changsha University of Science and Technology, the “Introduction to Space Syntax Theory and Methodology” short course program has seen an ongoing level of interest from both undergraduates and postgraduates alike. Taking its foundation from the Space Syntax program of study offered at the UCL, and with two of the authors both being past students of related courses there, the workshop aims to provide participants with basic knowledge about Space Syntax theory and methodology, with a parallel focus on the research of commercial spaces.

Initially delivered as a 12-week program, the course was shortened to 8 weeks in 2021 due to time limitations. Taking a 2-hour lecture/workshop format delivered weekly and complemented by regular group tutorials, participating students were expected to develop a broader and more focused understanding of socio-spatial relations. Students were not only encouraged to apply this knowledge in a research case study, culminating in a report and presentation towards the end of the course, but also to consider a more evidence-based approach in their own methods of work. In conclusion, the course sees a possible improvement in their future design with more efficient spatial layouts and an enhanced user-friendly experience.

2 METHODOLOGY

As the course structure has evolved over time, a balance has been sought to provide theoretical content, practical application and ongoing tutor feedback in equal measure. The first two workshops of 2021 were focused on showing a comprehensive overview of Space Syntax theory, including its historical development at the Bartlett School of Postgraduate studies, through to more recent applications with projects from Space Syntax.com. Key terminology and ideas were introduced and expanded upon throughout these sessions, as well as case studies from an urban scale down to a complex building scale. Fieldwork methods of observation were also discussed, emphasising the importance of observing people’s behaviours within different spatial environments using qualitative and quantitative methods of data collection. Ideas of movement and occupation and how to begin to record these phenomena through movement trace, gate counts, snapshots being outlined.

Week 3 saw the introduction of the case study topic coupled with the walking lecture (peripatetic talk) that covered the main retail areas within the commercial centre of Changsha city, Hunan Province. The students were divided into groups and allocated an area of study dependent upon their own area of interest. For example Urban Design students were encouraged to focus on the case study from an urban perspective. In contrast, architecture students were asked to consider a complex building scale research question. However, it was suggested that students kept an open mind when considering each respective area of interest – with cross over enquiries welcomed wherever feasible.

Since the course began four years ago, introducing a case study project that could run in parallel to the taught part of the course has always been considered necessary. In the first year, the students were given three subjects to choose from, of different typologies. However, after the second and third time this was delivered, the focus of the course was changed to one core area of interest: commercial malls within the main city area. Here the authors` own area of research was introduced to allow the students to actively participate in a more comprehensive research topic if they wished, culminating in potential research papers to be submitted for the Space Syntax Symposium. This was especially useful for fieldwork and data collection – where the sheer scale of these commercial spaces and respective logistics of collecting data necessitated a significant number of volunteers to assist with this (Figure 1).



Figure 1: Snap shots of selected commercial malls, presented within final report.

In the fourth session, students were asked to reconsider how individuals view space and the built form and introduced the idea of Spatial Types and Spatial Structures. J Graph, step depth and integration were also discussed again in greater detail, followed by a recapitulation of Hillier’s Theory of Natural Movement. Wherever possible, exercises were introduced to help underpin these principles, from drawing axial lines to generating Justified Graph diagrams. The fifth

session was based on understanding Depthmap Software, including axial/segment analysis, convex, isovist and visual graph analysis (VGA), concluding with a short introduction to agent-based analysis.

The final taught session focused on an effective way to present ideas and data, with previous students dissertations used to illustrate examples of Urban Scale Research projects. The penultimate two sessions were structured to allow students to develop their ongoing research questions through group tutorials and discuss some of their findings from their own fieldwork. The program concluded with all participants invited to present their final report to their peers and respective tutors. Presentation times were limited to 20 minutes per group with 10 minutes for comments (Figure 2).

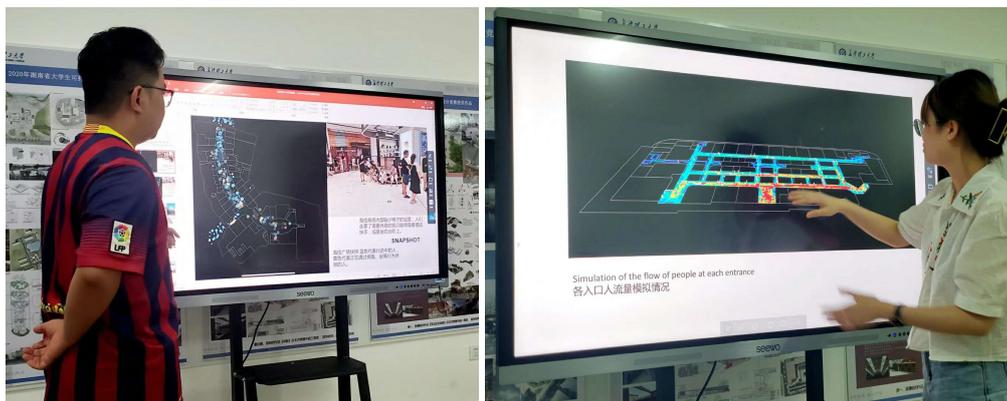


Figure 2: Students from Changsha University of Science and Technology presenting their final reports

3 RESULTS

Following completion of the course, a number of student groups were encouraged to develop their case studies further, taking the data and observations to supplement part of a larger urban regeneration project. The results will be presented here with the focus is on one project only: Wuyi Square Regeneration. Located in the Changsha city centre, Wuyi Square used to be one of the city's most prosperous commercial places, although its popularity has declined over the last ten years. However, it remains an important node of city infrastructure and carries historical and cultural significance. Taking the research-based design approach, the Wuyi Square Regeneration group formulated three research questions from macro, meso and micro levels:

- 1) What are the possible reasons for the decline of Wuyi Square as a commercial space?
- 2) How could the Wuyi Square be better connected to the community to improve the urban vitality?
- 3) What is the relationship between people's behaviour and the spatial characteristics square?

To answer these questions, the students adopted a methodological framework to combine data collection and analysis. Data collection includes four main methods: gate counts, movement

traces, snapshots and observations. Data analysis starts with spatial analysis, including axial map, convex map and J-graph. In addition, statistical analysis was employed to better understand the relationship between human activities and the spatial layout. The students attempted to find comprehensive answers to the research questions and provide spatial strategies to set up a base for their design proposal through the analysis. After interpreting and visualising their analysis, the students developed their design concepts from the analysis (Figure 3). This evidence-based design process strengthens the rigour and approach towards the project.



Figure 3: Student's final materials for the Wuyi Square Regeneration Project

4 DISCUSSION

As one of the critical limitations is time, the challenges of effectively condensing such a rich and diverse knowledge base into a short course based deliverable product was paramount. In particular, as the course was reduced further from 12 weeks to 8 weeks, compromises were inevitably made. As it was impossible to include all theoretical materials, emphasis was made on understanding the fundamental principles. In order to counter issues of misunderstanding, online discussion groups were set up to allow information to be shared more efficiently amongst the participants, including translation of all seminars and accompanying slides from English to Chinese.

Coupled with students' other study commitments, it is difficult to measure how much information was effectively disseminated by the participants. However, the additional tutorial sessions were arguably invaluable in not only allowing the research question for each group to be developed



and agreed, but also the scope of understanding to be tailored to that specific area of interest. It should also be noted that as the course was open to both undergraduate and postgraduate students, there may have been a disparity between levels of understanding of course content. However, the results from the final presentations do not necessarily support this hypothesis.

Students were also encouraged to ask questions at the end of each session. However, it was noted that individuals tended not to ask questions within the group, preferring to contact the tutors directly online.

Groups were asked to undertake two days of fieldwork to collect data to support their final reports. The purpose of this was twofold, firstly to carry out snapshots, movement trace and gate counts, secondly to begin to make more social observations (ethnographical), photos, note-taking etc. Dates were agreed with tutors being available throughout the day to assist and answer any questions on site. One of the problems here was the consistency of data collected – in particular with regards to gate counts. In hindsight a session to carry out pilot studies to go through the procedure would have been helpful. Other issues included some groups changing the day of their fieldwork and not staying until the end of the day. However, again, the main difficulty was the limitation on time and the general logistics of undertaking 10 hours of data collection.

5 CONCLUSIONS

The significant challenge for this program has been time limitation coupled with the sheer wealth of information to condense and summarise into a deliverable short course program. However, within these limitations the authors have been continually surprised by the rigor at which the students embraced the case study within the program. In addition, as with each iteration, the course has evolved considerably – the emphasis towards understanding and finding effective ways to apply some of this knowledge within the participant own design projects has also grown. This was particularly effective within the program delivered at the Changsha University of Science and Technology, where given more time the students applied their research findings from the case study to their own project for this particular urban area, in effect developing an evidence-based approach with their own process of design. It is hoped that the Introduction to Space Syntax Theory and Methodology short course program can continue to be developed and delivered to interested participants from undergraduate and postgraduate related disciplines. Feedback from the students after the course programme was positive, with the participants of which 28 of the 33 students thought the course was highly useful and practical, and may bring benefits for their future study or work. Furthermore, many commented that the course opened a new window for them, inspiring them to focus more on practical problems and the design process within an analytical and research-based work frame, rather than merely putting emphasis on functions, layouts and visual representation.



The possibility to extend this condensed method of study to the Local Design Institutes own program of CPD should also be considered, as it is within this context to provide design professionals with another apparatus of thinking, that these methods may be applied to a broader range of real-time projects allowing for a more evidence-based approach to be nurtured.

REFERENCES

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