Improving skills on architectural students to understand an urban environment of constant change through data visualization

Covadonga Lorenzo, Epifanio Lorenzo

CEU University

Nowadays, learning Urbanism using open source software tools and open data is essential in the education of future architects, as this discipline is related with the study of how inhabitants interact with a built environment of constant change. Architectural students must learn in the early years of their university’s studies new tools that will be required during their academic and professional development that promote a better understanding of the surrounding environment in a complex world.

This paper describes a project based learning approach to teach Urbanism, that raises students to create maps using open data and free and open-source software to map the database. The main goal of the paper is to discuss a pedagogical approach that provides instruction on new tools for understanding the urban environment through innovative visual data tools, and also proposes a historical approach to data visualization in order to find out best ways of visualizing complex urban data based on good practices. Looking for dating back the first data visualizations, some examples will be analyzed as the Catalhöyük map, the Ebstorf map, the clover leaf map discovered
in Itinerarium Sacrae Scripturae, William Playfair’s graphics, Minard’s flow diagrams, Götz’s maps, Neurath’s isotype diagrams, Beck’s tube maps, Caron’s plans and Holmes graphic designs.

The paper will also discuss the approach to urban data visualization as a discipline that deals not only with the representation of urban physical features (the morphology of the city), but with the city sense, an idea based on Kevin Lynch theories more related to explore a sort of connections hidden beyond the evidence that organize complex urban environments. Our aim is to explore data visualization as a tool to develop diagrammatic representations to describe and unveil all those non tangible connections.

• Author(s) Biography (200 words each):

Covadonga Lorenzo is a Doctor in Architecture (PhD), Master in Architectural Design, Director of FabLab Madrid CEU and Associate Professor at Madrid-based CEU University, where she teaches Architectural Drawing, Drawing and Geometry and Digital Fabrication for Architectural Design and researches in the group Digital Fabrication for Distributed Environments, exploring next generation technology to improve learning methods using gamification, multisensory & multimodal learning and interactive augmented reality to improve the learning experience in a Fab Lab.

Epifanio Lorenzo is Fab Lab Technician at the Department of Architecture and Design of the Institute of Technology at Madrid-based CEU University, where he is also Fab Academy Instructor of the Advance Program in Digital Fabrication: Fab Academy. He researches in the group Digital Fabrication for Distributed Environments, exploring next generation technology to improve learning methods using gamification, multisensory & multimodal learning and interactive augmented reality to improve the learning experience in a Fab Lab.