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Project Acronym: COMPUS

Project title:

Civic community and public space in the ancient Near East.

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Guide to the Use of the Open Data

1. Introduction

The present document is a deliverable of the COMPUS project (Marie Skłodowska-Curie IF-2015-GA703187), funded by the European Commission Research Executive Agency (REA). The purpose of this document is to provide a general description of the open data generated by the project, which are at free disposal of the scientific community for further use and evaluation.

The COMPUS project studied the use of public space of the ancient Near Eastern cities using 13th-century Ugarit as the main case-study. The 13th-century street network of Ugarit has been mapped, reconstructed and analysed in a GIS environment and using the free multi-platform Spatial Network Analysis software *DepthmapX*, downloadable at <https://varoudis.github.io/depthmapX/> (last access date 30/01/2019).

2. Description of the datasets

Interested users can download through ARCA three sets of data generated in the framework of the project.

2.1 COMPUS Dataset 1: Reconstruction of the Street Network of Ugarit

The first dataset includes three shapefiles with a reconstruction of the street network at Ugarit in the 13th century BCE: a shapefile with the excavated areas, a shapefile with the proposed reconstructions, and a shapefile merging both into one proposal. It is important to note that the open spaces within the royal compound, sometimes called “Royal Plaza” in the literature, have not been included, since they have been considered private areas.

2.2 COMPUS Dataset 2: Spatial Network Analysis Graphs

The second dataset is a file to be opened with the free software *DepthmapX* (v.6.0.6). The file contains a Visibility Graph Analysis (VGA) and an Axial Graph Analysis of the street network at Ugarit, including attributes such as isovist areas, choice, connectivity, and integration.

2.3 COMPUS Dataset 3: Urban Network Analysis

The third dataset collects the results of a spatial network analysis done with the free *Urban Network Analysis Toolbox* for ArcGIS. Although the toolbox itself can be freely downloaded at <http://cityform.mit.edu/projects/urban-network-analysis.html>, it requires ArcGIS software with an ArcGIS Network Analyst extension. The results obtained by this project are shared as shapefiles and can be viewed in any GIS software.

Unlike topological network analysis tool such as *DepthmapX*, the UNA tools take the significance of buildings into account. At Ugarit, three kinds of Very Important Buildings (VIBs) have been included in the analysis: temples, buildings for communal gatherings, and significant private mansions. These buildings are drawn in the shapefile COMPUS_Ugarit_Weighted_Buildings.

Four network centrality measures have been computed: *Reach*, *Betweenness*, *Closeness* and *Straightness*.

The *Reach* measure captures how many surrounding VIBs each VIB reaches within a given search radius. This measure has been computed for 100, 200 and 500m search radiuses. The *Reach* measure is a measure of opportunity that are reachable (in this case, by pedestrians) along the actual street network. It is a significant predictor for VIBs location choices.

The *Betweenness* of a VIB is defined as the fraction of shortest paths between pairs of other VIBs. This measure captures the potential of passerbys and can be a significant location factor in explaining the spatial distribution of VIB.

The *Closeness* of a VIB is the inverse of the total distance of the VIB to all other VIBs. It indicates how close each VIB is to all other VIBs. It is a predictor of land value.

The *Straightness* of a VIB illustrates how closely the shortest network distances between the VIB and all other VIBs resemble as-a-crow-flies distances. Straightness is a useful measure for detecting urban landmarks