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One polygon at a time – trying to manage a graffiti-scape's spatio-temporality

Geert Verhoeven[1*], Jona Schlegel[1]

[1]Ludwig Boltzmann Gesellschaft - LBI ArchPro, Franz-Klein-Gasse 1, 1190 Vienna, Austria
geert@projectindigo.eu, jona.schlegel@archpro.lbg.ac.at

[*]Corresponding Author

ABSTRACT:

Project INDIGO aims to document, disseminate and analyse the contemporary graffiti-scape surrounding the Viennese Danube Canal (Austria). Despite its focus on present-day graffiti, INDIGO is considered an archaeological project. The authors take the stance that archaeology is an academic discipline trying to understand (our complex relationships with) the material remains of the stratified past, whether that past was centuries (i.e. the remote or ancient past) or days (i.e. the contemporary or recent past) ago. From this point of view, it should not be surprising that INDIGO applies (and improves) various tools and workflows commonly used for acquiring and managing data in more conventional archaeological projects.

However, outsiders might find it strange to hear that a discipline examining space- and time-bound anthropogenic activities has only developed tools to properly analyse and visualise the two-dimensional spatial component of archaeological data. Effective practical approaches to handling the third spatial dimension, let alone the temporal aspect, are generally lacking. INDIGO wants to leverage its focus on "less old" things to advance the management, visualisation and analysis of the uncertain spatio-temporal boundaries characterising "older things".

Post-depositional processes like erosion, ploughing, animal digging, and soil formation increasingly bias and fuzzyfy the spatial and temporal information obtainable from common archaeological remains like Bronze Age ditches or Celtic ceramics. Because modern artefacts like graffiti are typically less influenced by post-depositional processes, and since their continuous "layering" (which archaeologists call stratification) can be documented *in situ*, contemporary graffiti-scapes lend themselves well to develop archaeologically-relevant ways of dealing with spatio-temporal complexities.

Despite considerable effort, monitoring the dynamic nature of graffiti along the Danube water channel still poses problems concerning data quality and completeness. INDIGO's initial spatial and temporal (meta)data only accounts for when (and if) a graffito was photographed. Whether the graffito production occurred hours or days before typically remains unknown, while some graffiti even go undocumented. INDIGO relies on a polygon for each graffito to address these challenges. This polygon is first indicated on – and stored within – each graffito's overview photo via the bespoke software GRAPHIS. AUTOGRAF – another tool coded within INDIGO – transforms this image-bound two-dimensional polygon into a three-dimensional geometric entity correctly located in a real-world coordinate reference system.

A GeoJSON file stores each graffito-polygon. This human- and machine-readable file complements the polygon coordinates with various attribute fields for temporal data. Some fields can be populated upon creating the polygon, while other temporal data might be automatically inferred from subsequent polygons. At the end of the process, each polygon should provide a digital, nuanced representation of one graffito's spatial and temporal dimensions. Through their combination, we hope that INDIGO's online visualisation platform can extract the various explicit or implicit spatial and temporal relationships among the thousands of documented graffiti.