

Medieval space and population

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Abstract: In September 2013 an international collaborative project was launched involving the Humboldt-University of Berlin, Museum of London Archaeology (MoLA) and, since 2014, Allen Archaeology¹. It centers on the osteological study of the medieval population of Berlin's former twin town Cologne (Cölln on the river Spree, not to be mistaken with Köln, the former Roman town on the river Rhine), recorded by the excavations at St. Peters Square (Berlin-center) from 2007-2009² and the osteological data from the London Spitalfields' cemetery excavation³.

Keywords: GIS, osteology, cemetery, spatial data of graves

Cöllns foundation date is unknown as well as the foundation date of Berlin. Archaeological evidence, especially dendrochronological samples from timber structures of the earliest settlement period, indicates that both settlements could have already existed in the second half of the 12th century⁴. The earliest surviving written document for the history of Berlin is a charter from 1238, witnessing an event that happened in the year 1237 in the nearby town of Brandenburg⁵. On the 28th of October 1237 some of the most influential regional dignitaries met in the Latin school in the town Brandenburg to solve a controversy about the church tax in the state of Brandenburg between the margraves and the bishop of Brandenburg. As one of the witnesses of this legal procedure Symeon plebanus de colonia, priest of the town colonia/Cölln, signed the charter. Symeon is therefore the earliest known "Berliner". But during excavations in two of the two oldest churchyards in Berlin and Cölln archaeologists have found the remains of people who lived and died probably long before Symeons time. One of the oldest series of skeletons was excavated in 1956 inside Berlins St. Nicholas church by E. Reinbacher⁶. Reinbacher found beneath the 13th century brick church of St. Nicholas the lime stone foundation of an unknown, so called Romanic basilica as predecessor of the brick church which is still present in a restored version. The limestone foundations of the basilica cut through older graves. But the excavators were not able to date the graves from beneath the basilica at the time of the

¹ <http://killgrove.org/research/projects/>, <http://ag.geschichte.hu-berlin.de/migela/projekte/MPaS/MPaS>.

² Melisch/ Sewell 2014. 169-183.

³ Connell et al. 2012.

⁴ Heußner 2009.

⁵ Huch/Ribbe (Ed.) 2008, 47–48. Schuchardt 1987, 7–36.

⁶ Reinbacher 1957, Reinbacher 1958, Reinbacher 1963.

excavation. Their assumption was that the basilica had been erected around 1230, when Berlin and Cölln became cities⁷. Therefore the graves had to predate 1230, but still today nobody knows how old they really are. There is also a long tradition of scholarly debate, that one of the settlements could be older than the other⁸. So the information from St. Nicholas church is not directly transferrable to the contemporaneous situation in Cölln. At the site of the oldest church of Cölln, St. Peter's church, first excavations were carried out in 1967 by H. Seyer after the last church, a Neo-Gothic building, had been demolished by the East German government in 1965⁹. Seyer was expecting to find at St. Peter's a similar situation as Reinbacher eight years before at St. Nicholas church. But there was no basilica as predecessor of St. Peter's church, but an older hall church from the Romanic period as Seyer stated¹⁰. Underneath the oldest foundations of St. Peters church were graves too. But the exact date of the graves could not be established.

In 2007 new excavations at the former site of St. Peter's church started under the direction of C. Melisch¹¹. From 2007 till 2009 a total of 3,126 graves were unearthed there, containing the remains of 3,717 individuals¹². The churchyard was closed in 1717¹³ and since then graves were compacted over time to a 2,50m thick layer of burials with not much soil in between at all (fig. 1).

East London. The hospital of St. Mary without Bishopsgate was founded in the 12th century and became one of the largest hospitals in Britain. Prior to a redevelopment proposal for the territory of the former Spitalfields market several archaeological excavations were carried out in the years 1991-2007. During the main phase of excavations from 1999 to 2002 the remains of more than 10,500 individuals have been recovered. The Berlin excavators learned about the recording strategies used by the London team and were able to benefit from their extensive experiences and recommendations. It was decided early on, that the Berlin project would use a similar recording system to that of MoLA and that the Berlin project would use its own database, programmed from scratch by André Teper¹⁴, in order to collect data from the Berlin/Cölln site, that would be comparable to the London dataset¹⁵. From a retrospective point of view, this was the most important decision of all, because it enabled the Berlin team to analyze the graves from St. Peter's churchyard by using the same methods that worked out so well for Spitalfields. At Spitalfields a targeted program was applied, to

⁷ Badstübner 1987.

⁸ Klöden 1839, Fidicin 1840, Klöden 1841, Mehrling 1841, Kaeber 1953.

⁹ Seyer 1968, Seyer 1969, Seyer 1987.

¹⁰ Seyer 1967, Seyer 1969.

¹¹ Melisch/Wesner 2008, Melisch 2009.

¹² Melisch/Sewell 2011, Melisch/Sewell 2013, Melisch/Sewell 2014.

¹³ Friedländer 1902.

¹⁴ <http://www.teper.de/das-team.html>

¹⁵ Melisch/Sewell 2013.

combine the relative (stratigraphic) and absolute (radiocarbon) dating methods. This way a hitherto unprecedented accuracy in dating and phasing was achieved. The Spitalfields burials were divided into four chronological periods: Period 14, 1120-1200; Period 15, 1200-50; Period 16, 1250-1400 and Period 17, 1400-1539. For the Berlin graves the same chronological periods have been applied to produce comparable subsets for osteological purposes. The archaeological interpretation follows the historical conventions of absolute chronology. According to the absolute chronological results of the Berlin series, the graves from St. Peter's churchyard don't seem to predate 1150.



Fig. 1 – Graves of some of the first inhabitants of Berlin/Cölln, honored with flowers and candles during the excavation at St. Peter's square in 2008

All graves were recorded on site with a tachymeter and inserted into a CAD-Plan (fig. 2). Already during the first weeks of the excavations in Berlin/Cölln it became evident, that at St. Peter's churchyard a large number of graves would have to be lifted. At this point the Berlin excavators contacted their colleagues at (MoLA) because they had dealt with probably the biggest ever excavated series of medieval graves at the Augustinian monastery and hospital of St. Mary without Bishopsgate (later known as St. Mary Hospital) in London osteologists began in 2003 with the enormous task of investigating the burials of St. Mary Hospital and the results from 5,387 individuals have been recently published¹⁶. Among the most important discoveries was the detection of some of the earliest cases of syphilis in Europe. The results provided a unique insight into life in medieval London and stimulated discussions about the effects of urban life on the health of

¹⁶ Connell et al. 2012.

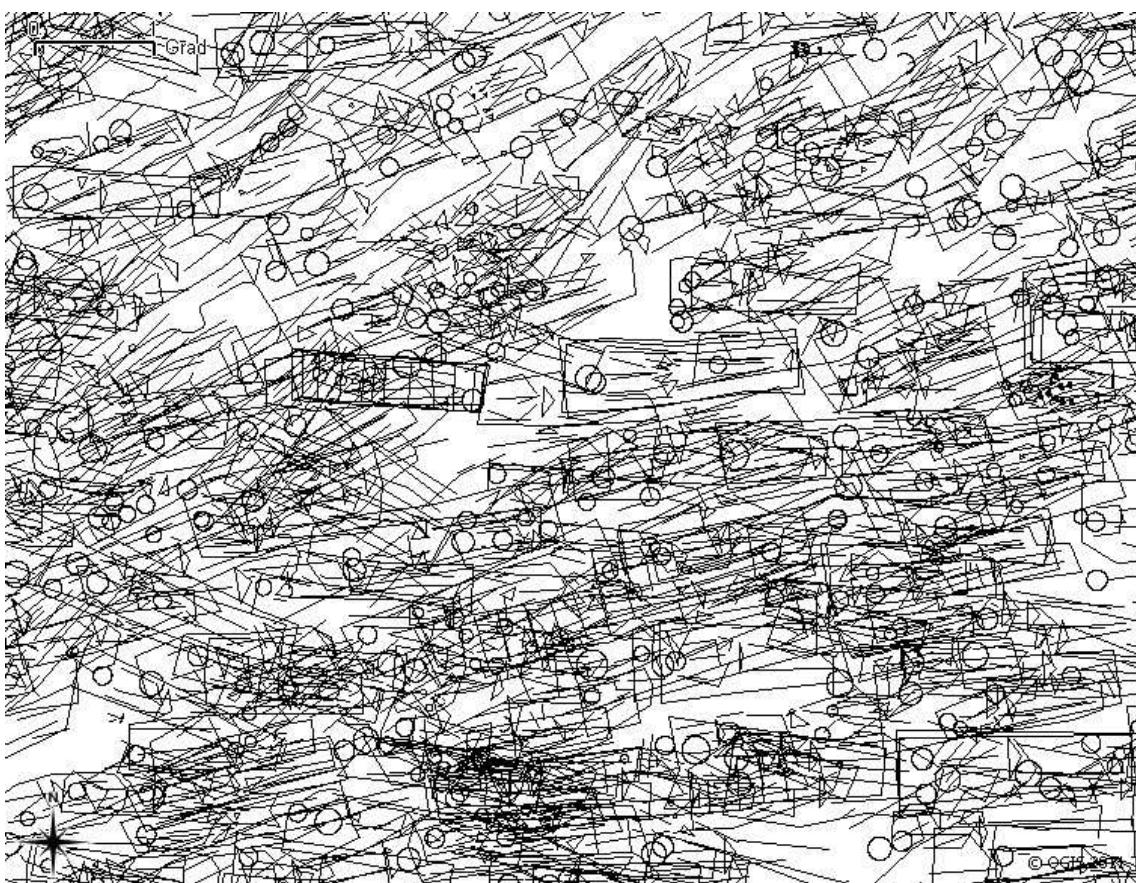


Fig. 2 – Cölln: CAD-plan of the graves in St. Peter's churchyard, an impenetrable cloud of lines

children, the role and influence of the medieval hospitals, and the reasons for mass burials of nearly 4,000 people. The mass graves of Spitalfields mainly stemmed from the time of the plague (1348-9), but historical sources show a series of recurring and temporally closely spaced famines and epidemics. The most extensive phases of mass graves in the middle of the 13th century came at a time of famine, which was probably due to climate change caused by a volcanic eruption in the tropics. The osteological analyzes showed that the individuals buried in mass graves underwent stress for an extended period of time, probably repeated periods of famine. Also at St. Peter's churchyard in Berlin multiple burials were found. Almost 10% of all graves were multiple burials, containing 2 to 12 individuals. The reasons for those graves are still unknown and the osteological work on the Berlin series only began in 2013. The aim of the project is first of all to identify the first population that was buried at St. Peter's square and secondly to precisely date the time of their arrival in Berlin/Cölln and the places they came from by applying Sr-isotope analysis¹⁷. In the third step we will try to shed more light into the changing spatial organization of St. Peter's churchyard over time and to reconstruct the development of the population in St. Peter's parish, because the Berlin skeletal series represents in opposition to the Spitalfields series a fracture of the common population of the town Cölln. We

¹⁷ <http://killgrove.org/research/projects/>

don't know how many people lived in the beginning in Cölln and how the population developed over time. The first numbers that are reliable are part of a great scientific innovation. Johann Peter Süßmilch (1707-1767) is famous as initiator of German vital statistics. He was a priest at St. Peter's church and the first German who started to describe the development of a population by recording the birthrates and the death amongst males and females in his parish. He was a member of the Prussian Academy of Science and published in 1741 the famous book , *Die Göttliche Ordnung in den Veränderungen des menschlichen Geschlechts, aus der Geburt, dem Tode und der Fortpflanzung*'(Berlin 1741)¹⁸. In his book Süßmilch provided birth- and death-rates for the people from Berlin and Cölln starting in the year 1550. The demographical data of the skeletal series from St. Peter's and St. Nicholas church¹⁹ can therefore be compared and contrasted with the statistical information provided by Johann Peter Süßmilch's information.

One of the most important targets of the project is the comparison between the London and the Berlin series of skeletons. We are able to do so because our research is based on analogical data since the osteological work is also carried out by following the same principles as applied to the Spitalfields series (fig. 3 and 4). By comparing the two assemblages, the project aims to provide new insights into the lives of medieval Europeans, and their social and environmental contexts. There is great potential in a study that compares and contrasts the medieval populations of Berlin and London. Such a study can provide a truly intra-European perspective on comparative matters such as diet, lifestyle, health care, longevity and disease. Within the Berlin site, there is also an opportunity to examine the arrangement and use of the cemetery over time. How an individual's status, health, age etc. may be reflected in the location or manner of their burial. This again could be usefully compared with the same analyses already completed on major London cemetery sites, particularly that of St. Mary's Spitalfields. This potential has been unlocked by the use of the single context recording and planning methodology on the St. Peter's site. This enables the detailed comparison of individual traits within a true spatial and stratigraphic context. It allows these dimensions to return to the center of the analytical matrix, and will enable the investigation of intra-cemetery organization. The work in 2013 and 2014 concentrated on carrying out an assessment level osteological survey of 250 individuals, and processing the attribute and spatial data into a relational database and GIS environment respectively, another key aspect of the project.

¹⁸ Süßmilch 1752.

¹⁹ Müller 1963, Hesse 1987.



Fig. 3 – Berlin: Project work in 2014, from left to right: Dr. J. Rothe, geneticist/Charité Berlin; H. Hoevenberg, criminologist/Berlin, N. Powers, osteologist/Allen Archaeology, United Kingdom.

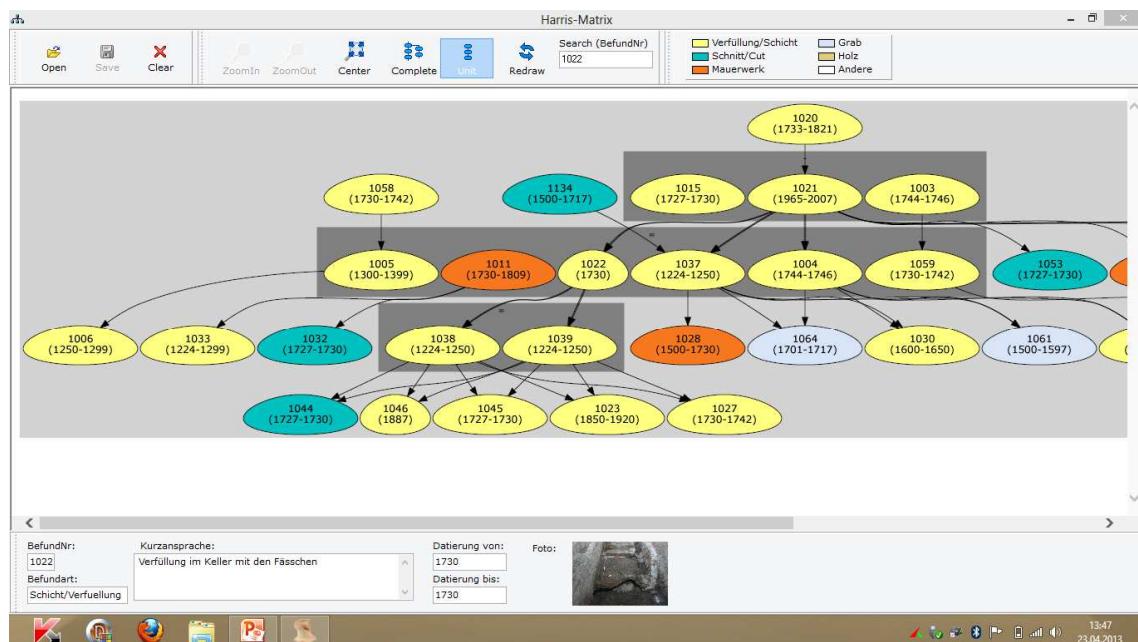


Fig. 4 – Cölln: Screenshot of the interactive Harris-Matrix module in the project-database ©A. Teper 2009

The graphic display of the 3,126 graves from St. Peter's Square is a serious enough challenge to comprehend in itself. However of more concern in a tightly packed cemetery, with a dearth of dating evidence, is that the depiction and understanding of the complex three dimensional problems that is the site's stratigraphy exceeds the capability of the simple two dimensional representation of it provided by the Harris matrix. A means was needed to *work* the stratigraphic data into the site analyses in a usable manner, and to move beyond the data strain of presenting a 3D phenomenon in a 2D environment, a strain which is manifest in the line cross overs and jumps of the Harris diagram.

The CAD or GIS -display of all of the graves at once results in an impenetrable cloud of lines, but by introducing the concept of stratigraphic adjacency – i.e. what is stratigraphically adjacent too as opposed to spatial incident upon – we are able to extrude a pseudo third dimension – stratigraphic depth.

Each grave can be connected by a 3D line to the other features which are its *immediate* stratigraphic neighbors. With each grave being at an 'elevation' in the matrix determined by the longest string of stratigraphic links that lie between it and the top of the sequence. This allows some of the confusion in the 3D model to be removed, and ensures that the identification of grave groups, correctly *constrained* by the stratigraphy, can be aided. The limited amount of dating evidence can also be aided by having the stratigraphy within the database/GIS rather than an external piece of software. The simple rule of

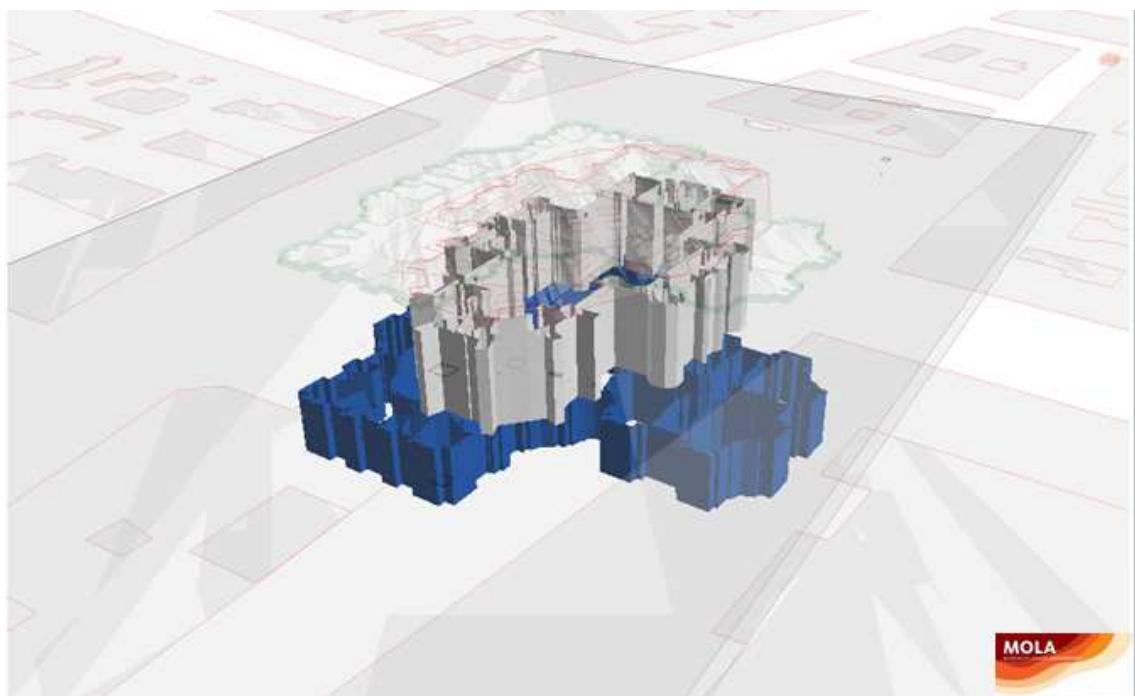


Fig. 5 – Cölln: consecutive St Peter's churches in the city center of former Cölln

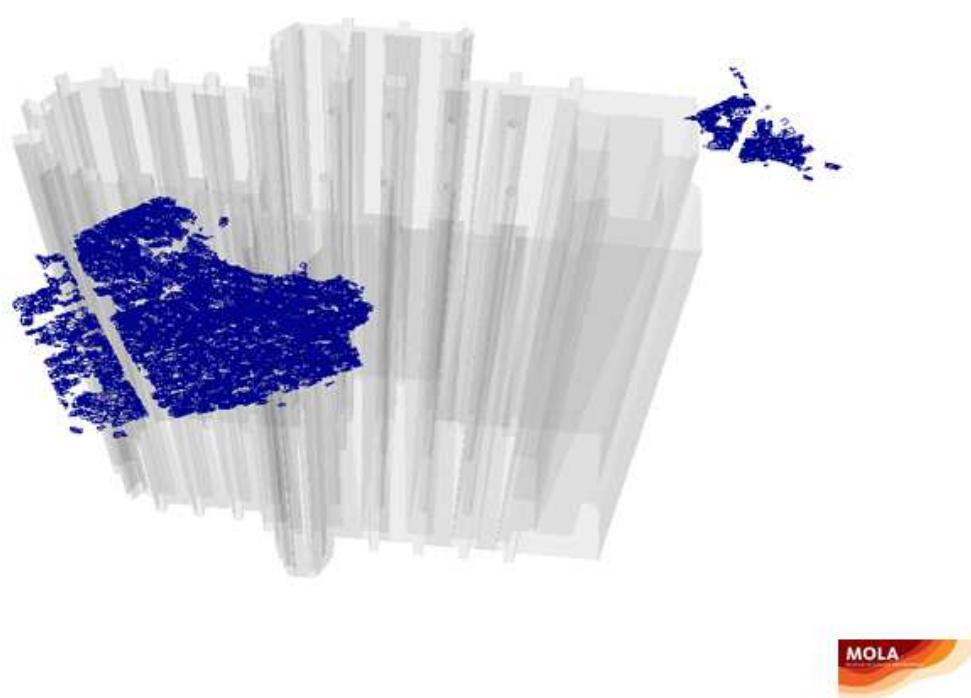


Fig. 6 – Cölln: Extruded 3D-view of medieval St. Peter's church plan combined with the CAD-plan of the graves

Stratigraphy depth ranges

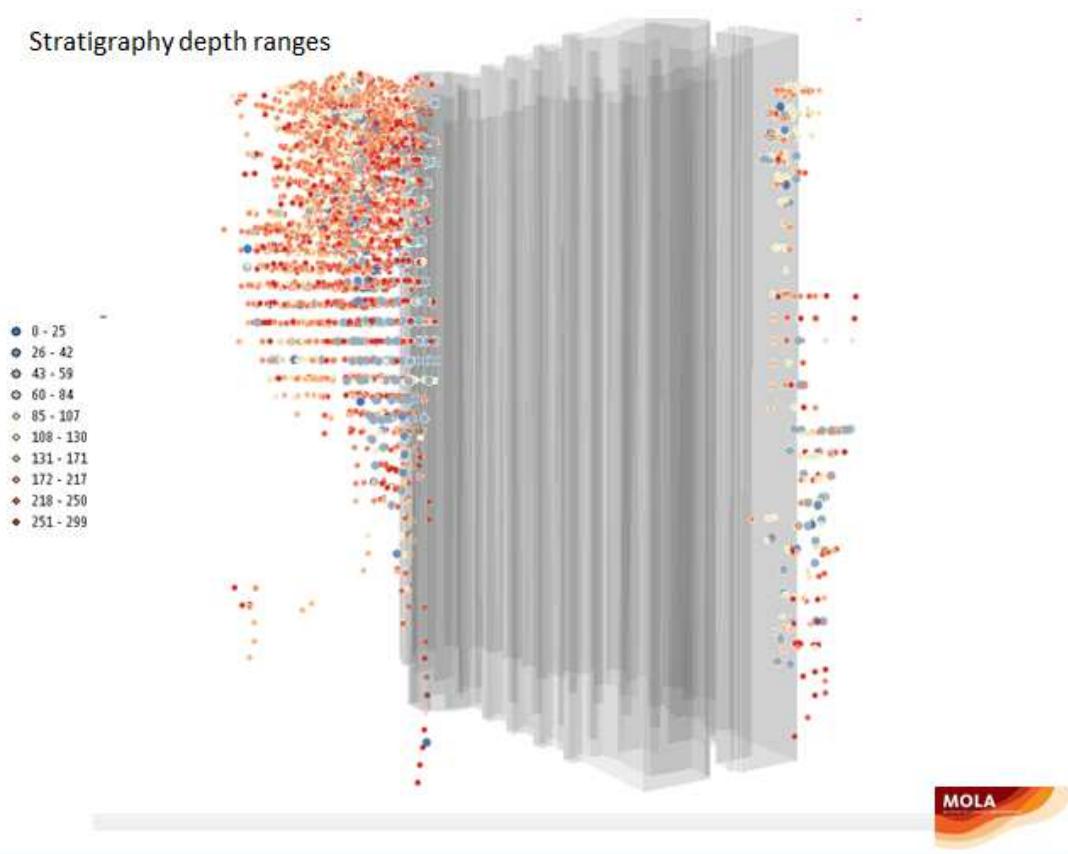


Fig. 7 – Cölln: Plan of the extruded map of St. Peter's church and individual graves with extruded heights

Stratigraphy & respect 3D to 2D



Fig. 8 – London, Spitalfields cemetery: overlay amongst individual graves and their intercutting

stratigraphic succession states that if two contexts are stratigraphically linked, and the lower one has a date and the upper one does not, then the date of the upper one must be the same as or later than the lower one. In a Medieval cemetery which often suffer from a paucity of dates, this is useful as it allows one to take the few dates one has and propagate them up through the matrix. One may model the effect of there being a certain interval between successive burials. For study purposes we added an artificial factor of years (here 5 years) to the real z-component of the graves. This way we receive a vertical grouping of certain graves. The absolute dates of those groups have to be supported by radiocarbon dates, and it will be interesting to compare, and possibly calibrate the stratigraphic propagation of dates, with the radio carbon dates as they

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