4_6_1_The_Assembly_Houses_and_Houses

The Assembly Houses

A new category of building has been identified at Nebelivka, distinguished by both its large size and its location relative to standard dwelling houses and to other large buildings. Three such buildings were detected in the initial survey at Nebelivka in 2009 (Hale *et al*., 2010) and now 23 of these buildings have been identified (ADS LINK TO 4_6_3_SPREADSHEETS/4_6_3_1_Assembly_Houses). These large structures are located at varying intervals around the house circuits, often standing between the house circuits or outside the outer circuit. Some of these buildings have been identified in apparent pairs, with one structure located between the circuits and the other located outside the outer circuit. Indeed, five such pairs are located at regular intervals around the south-western side of the mega-site. There are also several instances of single large structures. The buildings are most commonly, but not always, aligned parallel to the house circuits and perpendicular to the dwelling houses. These large structures are presumed to have served as public places, with integrative functions perhaps including meetings and rituals, and have been termed 'Assembly Houses' (Chapman & Gaydarska 2016).

A common characteristic of the Assembly Houses, but relatively rare among the dwelling houses, is the presence of a strong, typically rectilinear, magnetic anomaly (which reflects the bases of the walls) but a noticeable absence of almost any other strong magnetic anomalies of the kind indicating the presence of burnt wall, floor or roof remains in dwelling houses. The absence of these anomalies suggests that these Assembly Houses were not burned down in the manner of most dwelling houses. The almost 'empty' rectilinear anomalies which were often detected in this survey may instead reflect fired clay slots or troughs used as foundations to support upright timbers or planks directly, or perhaps to hold sleeper beams for upright timbers, as found in the excavation of the mega-structure.

The Houses

Two broad types of rectilinear geophysical anomaly have been interpreted as buildings: intense anomalies (typically in the range -30 to +80 nT), considered to be burnt houses, and weak anomalies (typically +1 to +6 nT), considered to be unburnt houses. The anomalies of the burnt houses reflect rectilinear or rectangular deposits of burnt daub and other fired clay structures such as platforms, benches, ovens or hearths, bins and thresholds. Another category

of anomaly comprises those which are considered likely to reflect houses, since they reflect discrete magnetic variation at specific locations where houses might be expected, often on ‘streets’ where the other houses are better defined. All three types of house anomaly can be identified on some of the radial streets, whereas almost all of the houses in the circuits appear to be burnt. A greater proportion of houses within the circuits are burnt than in the radial streets. For example, 94 % of houses in the inner circuit and 83 % of houses in the outer circuit are burnt, compared with 63 % of houses inside the inner circuit.

The analysis of house sizes based on the interpreted geophysics plan was initiated by Mr. D. Hale. In the second analysis, we measured all the burnt houses, which limited the sample size to 1,048 out of a possible 1,435 houses. Since the measurements of the burnt houses at Nebelivka constitute one of the largest samples of house dimensions, the analysis has some comparative value. It is our view, however, that house size analyses at the Neighbourhood or Quarter level is more meaningful (ADS LINK TO 4_6_3_SPREADSHEETS/4_6_3_2_house_sizes_by_Quarter).

The analyses were conducted in two ways: (a) a length by width bivariate plot; and (b) histograms of house area using ranges of $10m^2$ for the total sample (e.g., 15 - $25m^2$; 26 - $35m^2$; 36 - $45m^2$, etc.). The bivariate plot of the sizes of all the burnt houses produced a clear central cluster with outliers in all directions (ADS LINK TO 4_6_2_IMAGES/ 4_6_2_1_bivariate_plot_all_houses). The trendline of this distribution showed a typical length of 7.5m for a width of 4m (a ratio of L : 2W), with 15m lengths for 5m-wide houses (a ratio of L : 3W) and lengths of 23m for 6m-wide houses (a ratio of L : 4W). This shows that Nebelivka houses tended to add 'modules' of 7.5m of length for each metre of increased width. However, it is important to note that these are only general trends. The total variation in length for 4m-wide houses is 7m - 18m, with 7m - 19m for 5m-wide houses and 10m - 24m for 6-m-wide houses. The reasons underlying individual house sizes are complex, requiring much further discussion.

The plot of the sizes of all burnt houses approximates to a Gaussian distribution with a maximum of 56 - $65m^2$ house area (ADS LINK TO 4_6_2_IMAGES/4_6_2_2_histograms_of_house_sizes). This continuous distribution shows the difficulty of dividing houses into different categories of house sizes (viz., 'large', 'medium' and 'small'), with the exception of structures with an area smaller than $20m^2$, which we have interpreted as 'huts' - probably not for residential use in the general sense of 'houses'. At 63

m^2 for the measured houses at Nebelivka, the average house size is very similar to that estimated for the mega-site at Dobrovody (64 m^2) and slightly smaller than the estimates for Maidanetske (67 m^2) and Taljanky (71 m^2) (Rassmann *et al*., 2016).

In terms of house density, the area within the perimeter ditch (238 ha) minus the central open space (65 ha) gives an 'occupied' area of 173 ha; this provides a density of 8.3 houses per hectare. This is also very similar to the house densities reported at other mega-sites: Maidanetske with 8 houses/hectare and Taljanky with 7 houses/hectare (Chapman *et al*., 2014; Diachenko 2016). Inclusion of the central open space means that the house density per hectare drops to 6.1.