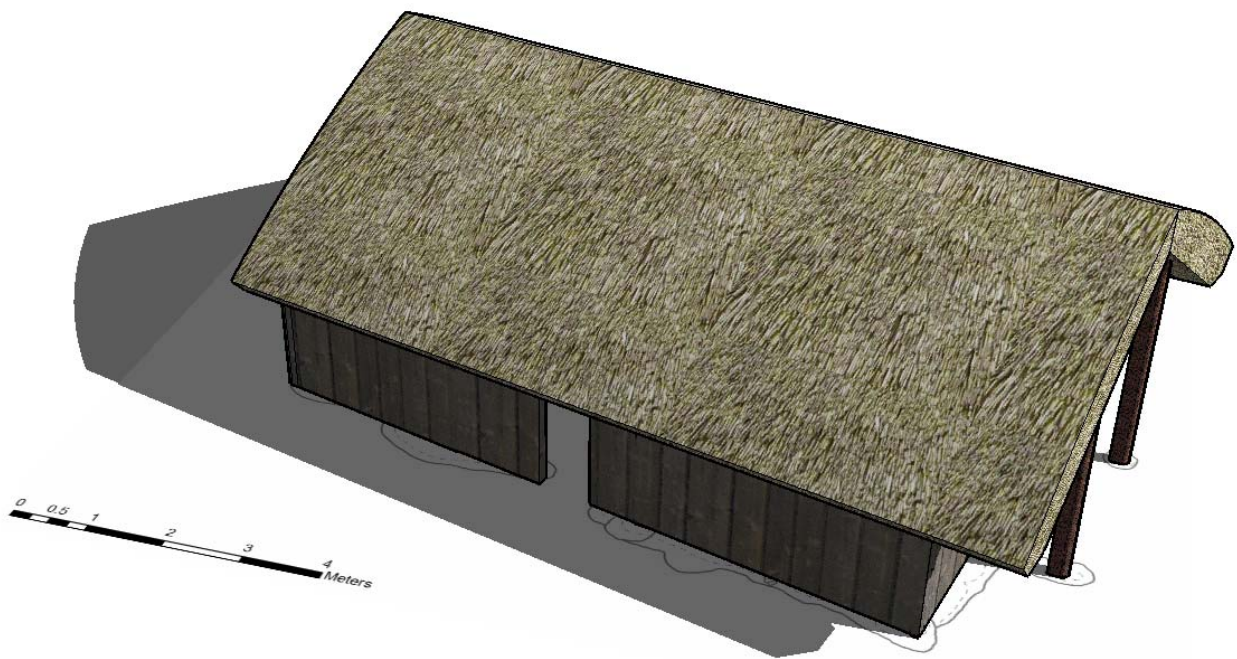


Archaeological Illustration: Portfolio 2

Reconstruction Drawing Project



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Reconstruction Drawing Project

Reconstructions in archaeology

The focus of this project was to produce reconstruction models, based on final site plans, of two types of Irish prehistoric houses. Before placing these illustrations into their proper context, it is first worth looking at the importance of reconstruction techniques to the sphere of archaeology. Reconstruction can take many forms, ranging from graphical reconstructions of broken artefacts to experimental replication of excavated buildings. The value of creating such reconstructions is also wide-ranging but is often seen purely as a means of visualising an archaeological aspect to other academics or the public at large who may find written descriptions difficult to conceptualise. In reality the process of producing graphical or experimental reconstructions often poses questions to the illustrator or archaeologist which may otherwise have gone unnoticed and allows them to put forward concepts based on excavation results which can then be critically assessed by others.

In the scope of this project reconstructions of two types of Irish prehistoric house have been overlaid onto their respective site plan. At a basic level this shows others, archaeologists or the public in general, the interpretation of the excavated features by the archaeologist in charge. However it instantly allows those not connected with the excavation to visualise how they may have altered aspects of the reconstruction based on the underlying plans. As Forte (1997, p110 taken from Barceló et al 2000) points out

"above and beyond its strong popular impact, computer reconstruction allows the presentation of complex information in a visual way that enables it to be used to test and refine the image or model that has been created"

It has been generally assumed that whilst reconstructions have the ability to engage the public, they also run the risk of presenting a scenario which the public see as fact and a definite interpretation of the archaeological excavation. This is undoubtedly true in some instances, but I believe if the reconstruction is accompanied with excavation plans or photos, with an emphasis on keywords such as 'potential', 'possible' or 'interpretation' then some of these fears can be in part allayed. Another option is to provide several reconstructions based upon interpretations of the archaeological results. In this way it becomes apparent immediately that there is no definitive interpretation of the material.

Background to the project material

Final excavation plans were obtained for two prehistoric structures from Eachtra Archaeological Projects, a commercial company who are based in Cork, Ireland. During 2006-2007 they undertook two major contracts relating to the testing and subsequent excavation of archaeological sites within the limits of two proposed motorways. The first was the N6 motorway stretching from Galway, on the West coast of Ireland, to the town of Ballinisloe to the East. The second was the N8 motorway between Fermoy, in County Cork, and Mitchelstown to the North.

Many sites of differing periods were discovered and excavated but of interest to this project are the remains of two prehistoric buildings found at Mackney (N6) and Ballinglanna (N8). A roundhouse structure found at Mackney is probably Bronze Age/Iron Age in date, whilst a rectangular structure discovered at Ballinglanna is probably Neolithic in date. Final publication plans (minus context numbers) can be seen in Figure 1.

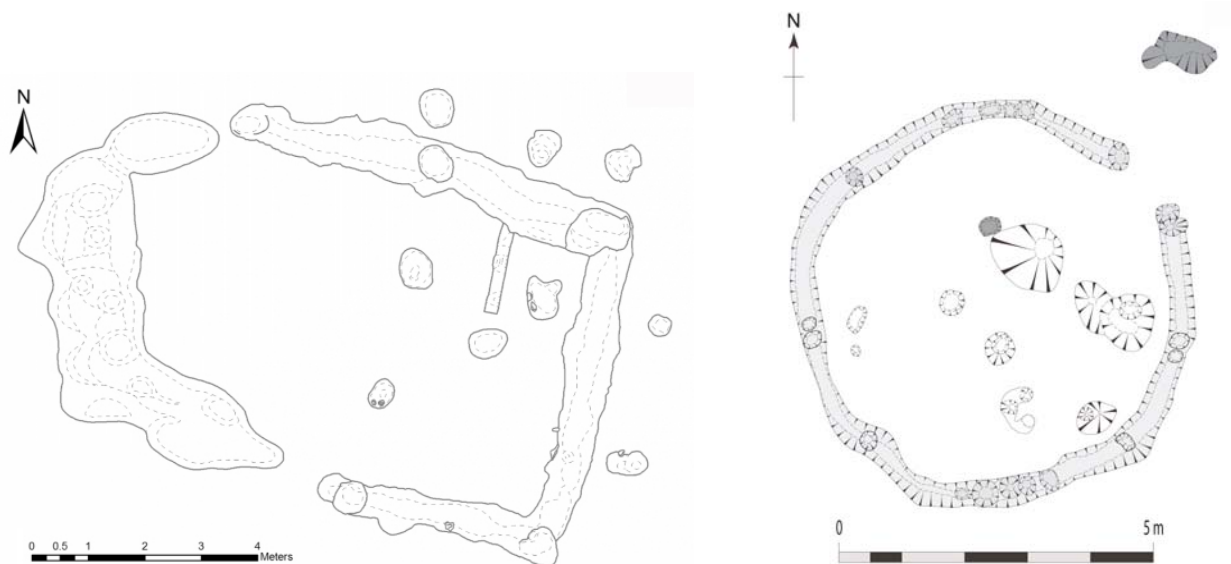


Figure 1. On the left is the plan of the rectangular structure from Ballinglanna (produced using ArcGIS), whilst the roundhouse plan from Mackney (produced using Adobe Illustrator), can be seen on the right.

Methodology

For this project it was decided to use Google SketchUp to produce 3D reconstruction models of these structures based upon the obtained plans. After discussions with the site directors, prior to the publication of either final report, a reasonable interpretation of their perceived ideas relating to possible reconstructions was obtained.

SketchUp was first released in 2001 and is seen as an addition to the CAD market, utilised by engineers and architects as well as those in the computer gaming industry. It is freely available (there is also a professional version with a few additional capabilities) and compatible with Google Earth, into which 3D models can be imported into their correct geographic position. In SketchUp users experience a 3D viewport with simple toolbars and commands in an attempt to engage the novice user although highly technical output can also be achieved.

The stages of construction for the models will now be discussed. Because of the restrictions of space and in an attempt to prevent repetition the rectangular Neolithic house from Ballinglanna will be focused upon.

Stage 1

Initially for each of the buildings I imported the relevant 2D plan into SketchUp onto the 'ground surface' (see Figure 2).

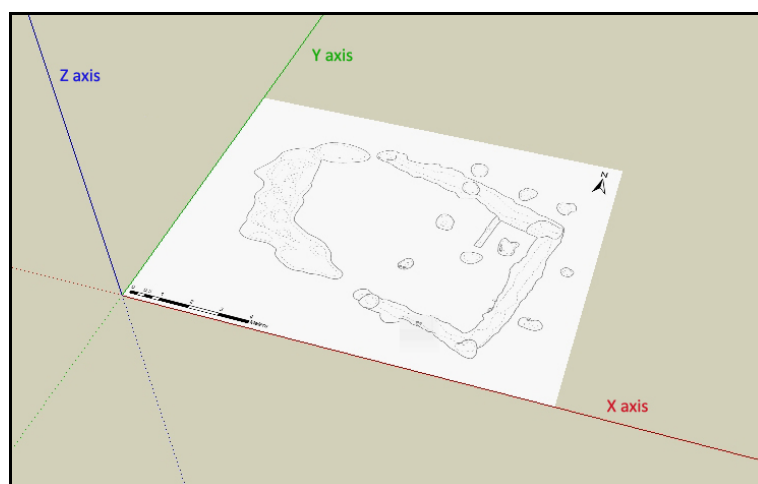


Figure 2. 2D plan imported into 2D plane of SketchUp.

Stage 2

The background of SketchUp was turned white to match the plan. Whilst viewing the plan from the 'Top' view circles were created for the base of each posthole (see Figure 3). This was made to be approximately the size of the bottom break of slope, and not the whole size of the posthole as in most cases stones were located within the postholes which it has been assumed were used to pack the post in place.

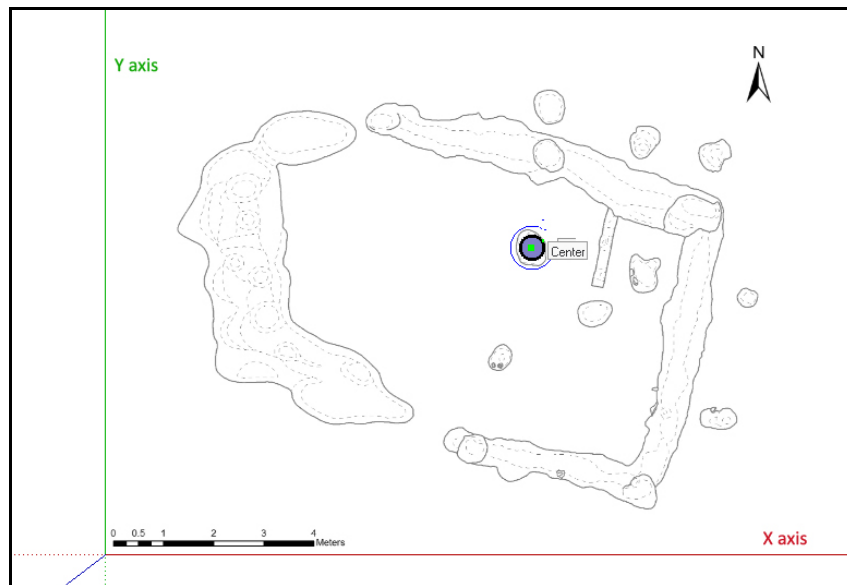


Figure 3. Circular post base created for each posthole.

Stage 3

The extrude command was used to create each post in turn (see Figure 4). The height of the posts was determined by the depth of the posthole and the assumption that the two major inner and two major outer posts were used to support a pitched roof.

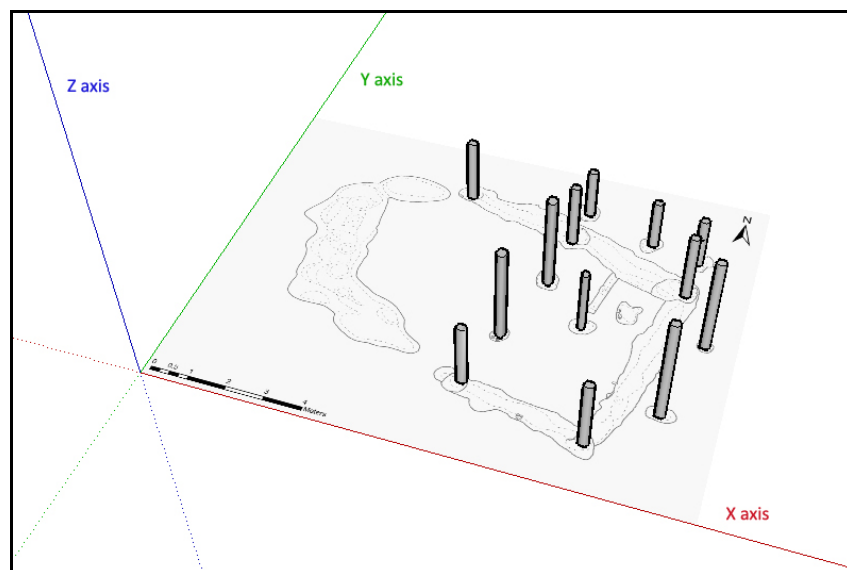


Figure 4. Circular post base extruded upwards to create posts.

Stage 4

Two rectangular polygons were constructed for the long sides whilst the gable ends were also added (see Figure 5). A gap was made for the doorway, whose height was assumed to be something similar to a standard door found today. For the roundhouse the assumption was made that the walls were constructed using wattle and daub.

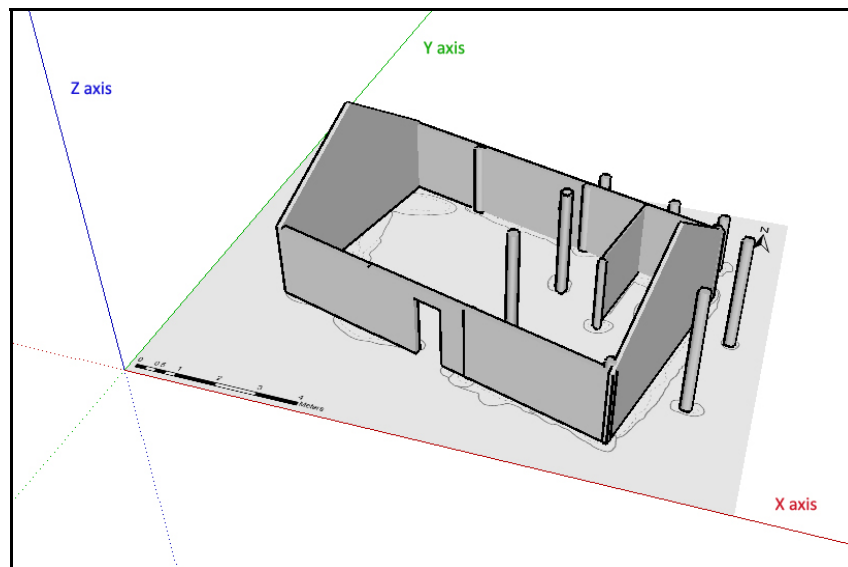


Figure 5. Walls of the rectangular structure created.

Stage 5

To complete the structure a thick overhanging roof was added to represent what was potentially a roof of thatch (see Figure 6). The overhang of the roof was extended on the Northern side as it seemed probable that the three exterior postholes to the North were there to support such an overhang. The roof was also extended to the East so as to rest on the two exterior postholes found there. The Mackney roundhouse was also believed to have had a thatched roof.

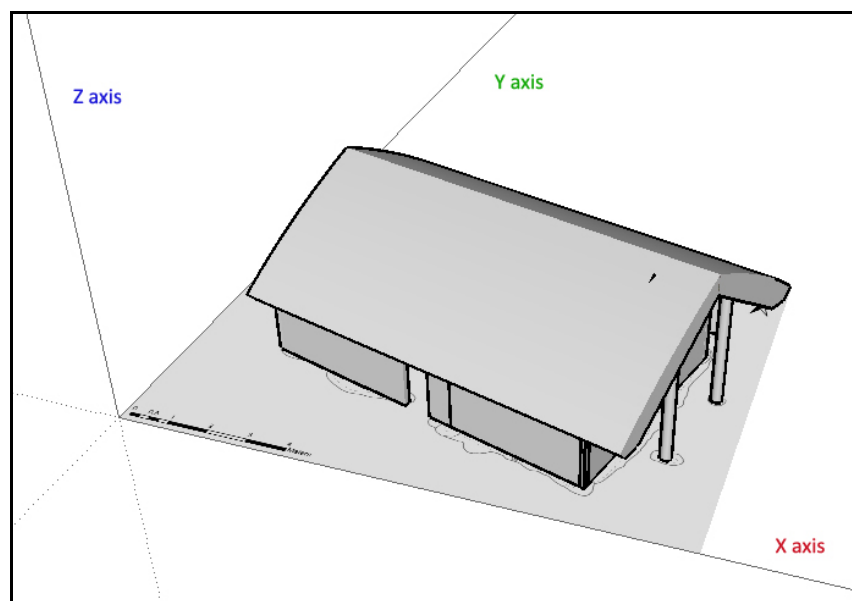


Figure 6. Roof applied to the building.

Stage 6

The final stage was to apply shadows to the model and then render the various components. The roof was rendered with a preset 'material' type available within SketchUp to look like thatch and a wood 'material' was applied to the posts. A repeated plank rendering option was selected to represent what is believed to be walls made up of a series of upright planks laid side by side.

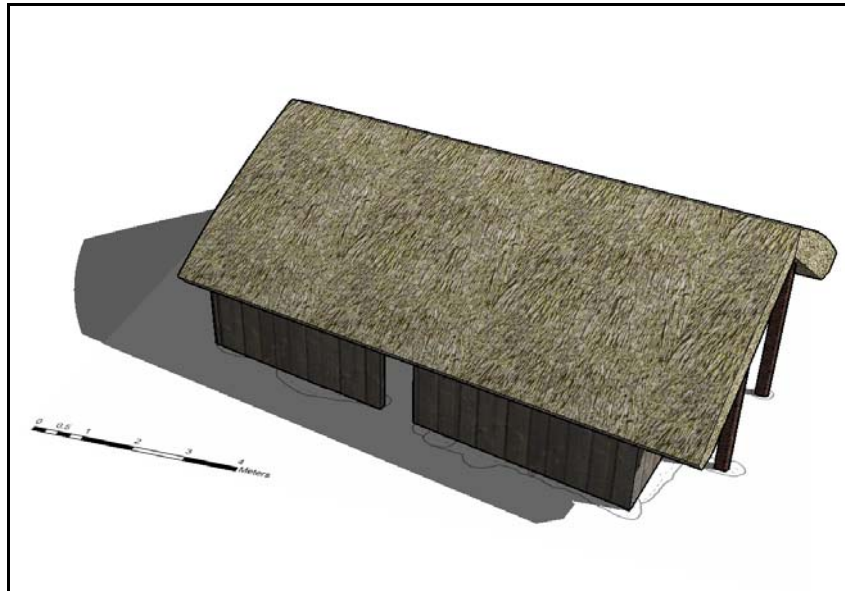


Figure 7. Surfaces are appropriately rendered and shadows applied.

There are several major benefits to using computer programs over traditional techniques when producing reconstructions. In a program like SketchUp the models produced can be easily and quickly manipulated, so a snapshot of the model from any angle, with any shadow can be achieved with little effort. The model can be rendered in a different way at the click of a button. But most importantly the models can be altered to produce many different alternatives based upon the same archaeological evidence. For example the roundhouse excavated at Mackney may have had internal posts to support the roof element whilst some have suggested these may not be necessary on such structures. These additional posts can be easily added to the reconstruction model so differing outputs can be displayed and contrasted.

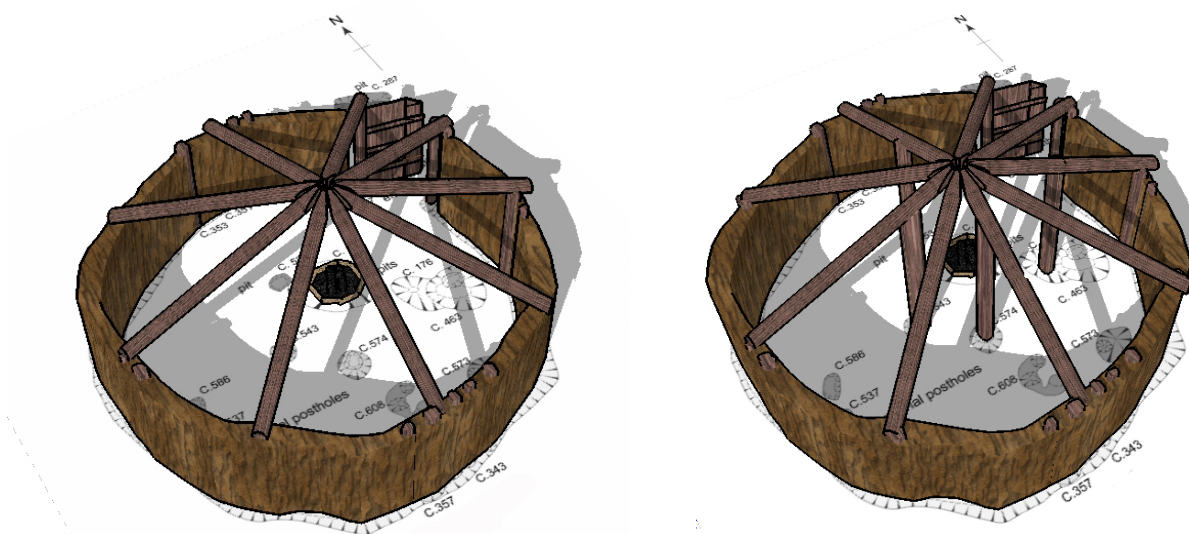


Figure 8. Example of the ability to easily add elements to a reconstruction model in SketchUp. Two differing interpretations are displayed; on the left no internal posts are present, while on the right internal posts are added.

Techniques such as transparency can also be effectively applied in a similar way how 'cutouts' have been used in traditional archaeological reconstruction drawings (see Figure 9). Elements of the model could also be repositioned within SketchUp to present an 'exploded view'.

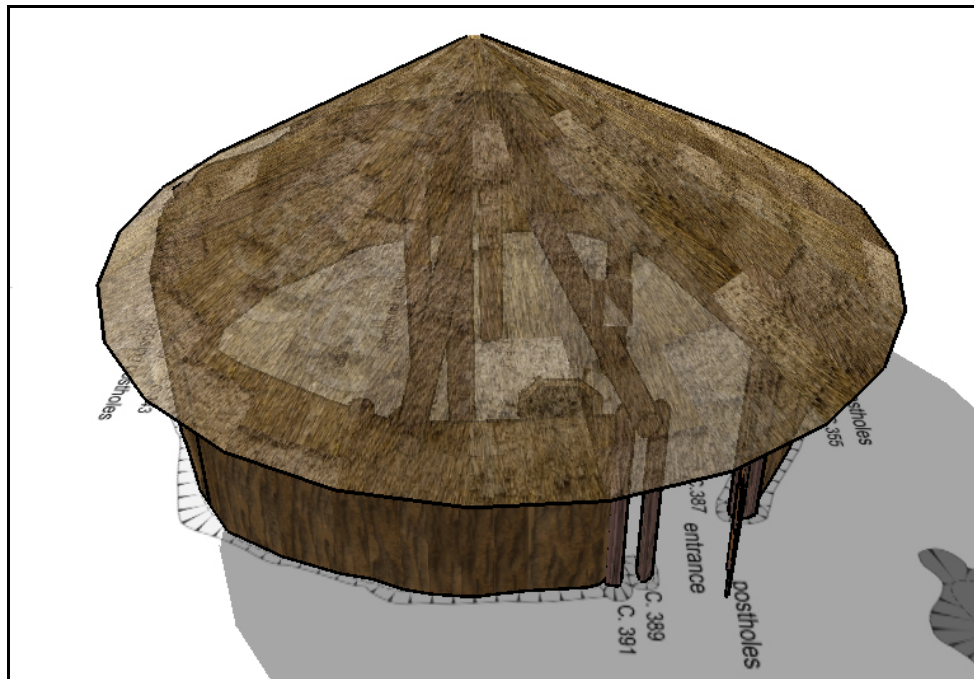


Figure 10. Roundhouse reconstruction with a portion of the roof set to 70% transparent.

Phasing and staging can also be achieved (see Figure 10). The fact SketchUp is based in on CAD system also means issues relating to perspective and projection can be addressed. Video output is possible along with direct output to Google Earth so reconstructions can ultimately be placed into their correct geographic position. These multimedia options allow for a greater interactivity with the public and the young in particular.

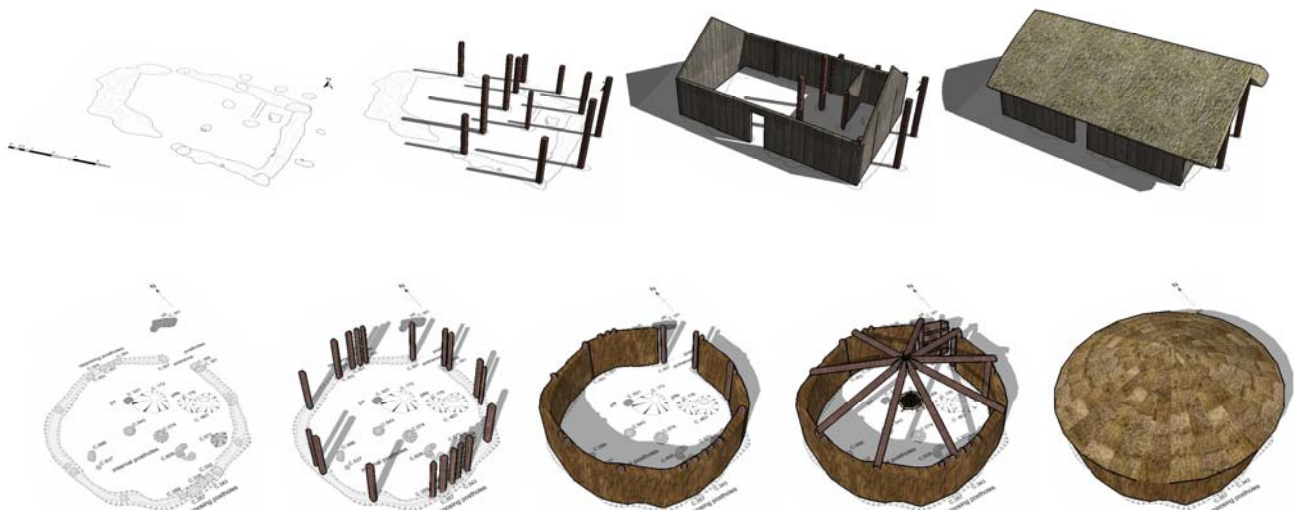


Figure 10. The top illustrations shows the stages of construction for the rectangular house at Ballinglanna. The bottom illustrations shows the stages in construction for the roundhouse at Mackney.

Issues Relating to Reconstructions

It is only whilst constructing these models that it became apparent how much conjecture was necessary in reconstructing the individual elements. There was very little empirical data to support many of the assumptions. Thin slot trenches do appear to support the hypothesis that planks were used to build the walls, but there was no evidence for a roof, let alone for what it was made of. How this potential roof was supported is also problematic because as all the timber has decayed away, any not placed into the ground (resulting in postholes) will leave no trace at all.

It is perhaps therefore surprising that the opinions of the archaeologists consulted differed only slightly, in regards to the construction of the rectangular house. This is mainly due to the discovery of a small number of structures where exceptional preservation has led to the discovery of various building materials.

"The burnt remains of a rectangular timber house were revealed beneath blanket bog at Ballynagilly, Co. Tyrone.....the side walls.....were constructed of oak planks 45cm to 50cm wide vertically set in a narrow trench up to 30cm deep.....Two posts in the middle of the house were probably roof supports." (Waddell 2005, p30).

Another example is the site of Tankardstown, County Limerick, where two rectangular structures were found. A description of one of these can be seen below;

"The walls were made of upright split-oak planks, set edge to edge in a bedding or foundation trench, and were held in position by earth and stones of various sizes. The joints between the planks were probably sealed with a mixture of clay, dung and straw. A line of posts across the central span of the house helped to support the gabled roof, which was erected at an angle of about 45 degrees." (Grogan 2006, p61)

In the Tankardstown case Grogan provides no supporting evidence for why these assumptions are made. All the major texts on Irish prehistory (Cooney 2000, Bradley 2007, Ryan 2006, Waddell 2005) refer to either Tankardstown or the relatively similar structure at Ballyglass when discussing Neolithic houses, in part due to the fact that only a small number of buildings of the period have been discovered. Reconstructions of the structures at Tankardstown (Waddell 2005, p31) and Ballyglass (Waddell 2005, p33, Ryan 2006, p31) are also shown. It seems possible that just as the general public can be potentially misled into thinking that a reconstruction is based upon definitive proof, the academic community when faced with only limited archaeological evidence from a few contemporary sites may choose to believe that their reconstruction should reflect a similar design with similar characteristics. In turn this perpetuates a particular image or impression of the structure, site or artefact, which can potentially be wrongly construed as the likely reconstruction.

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