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The Neolithic reaping knives from Egolzwil 3: A Mediterranean technical tradition in the late 5th millennium Swiss Neolithic

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ABSTRACT

The study of the use-wear marks on the Neolithic reaping knives from the site of Egolzwil 3 (Switzerland, late fifth millennium cal BC) shows that these tools were used to reap cereals by cutting the stems near the ground. The stems were gathered together using the pointed distal end, held in the free hand and cut with the flint blade, in what we term a two-stage reaping method. These types of sickles or reaping knives are found at Neolithic sites in the northern Mediterranean (centre and north of the Iberian Peninsula, Provence in France and continental Italy) from the mid-sixth millennium, in the context of the early Neolithic Cardial Culture, and lasted until the early fourth millennium. Within the tradition of two-stage reaping knives, the Egolzwil type would have been adapted to reaping at a low height in very dense cereal fields. These tools show that the Neolithic groups in the Swiss central plain belonged to the circle of northern Mediterranean farming technical traditions, in their northernmost expression, in contact with the groups in south Germany who reaped with curved sickles whose flint elements were inserted obliquely.

1. Introduction

The first farming communities who settled in Europe brought with them not only the seeds of domesticated cereals but also the technical knowledge to grow, harvest, store and consume them. Cereal reaping is a key activity in the farming cycle, as the cereals should be harvested rapidly and efficiently in the moment when the cereal is ripe. Different ways of reaping the cereal exist, of which cutting with sickles was the most common in the Neolithic, as the abundant sickle elements found at archaeological sites show. The use of sickles allowed the cereal to be cut rapidly and transported in sheaves. The shapes of the sickles and the reaping methods vary greatly in traditional societies (Sigaut, 1978). At the same time, as farming techniques are strategic for the survival of the community, they tend to change very little, except in the case of proven alternatives. The variability and durability of harvesting techniques suggests that the study of these techniques is a good proxy to follow population movements and cultural filiations of the first European farming groups, both at the time of their first expansion and in their later evolution.

Consequently, over a decade ago, a group of Spanish, French, German and Portuguese researchers began a research project focusing on the first evidence of agriculture in the Neolithic in the Iberian Peninsula and south-east France, which was later extended to the Italian Peninsula (Ibáñez et al., 2008; Gibaja et al., 2014; Ibáñez et al., in press). This research, together with the work of other scholars on the first European Neolithic sickles has succeeded in drawing a distribution map of the implements brought by the Early Neolithic farming groups who settled in Central-Western Europe. The characterisation of Neolithic sickles is based both on the study of whole examples, made with organic materials in which flint elements were inserted, which are on rare occasions conserved

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at sites, and on the flint elements that were inserted in the sickles. The detailed study of the characteristics and distribution of microscopic reaping traces found on the active edges can reveal how the flint element was inserted in the sickles.

It is now widely accepted that settlers possessing early Neolithic technology used two main routes to western Europe: an overland route following the Danube in central Europe and a sea route along the northern Mediterranean coasts (Guilaine and Manen, 2007; Perlès, 2012). The form of the sickles in the central European groups has long been known, owing to the whole examples preserved as the site of Karanovo (Gurova, 2014); curved sickles with flint elements in oblique insertion, which were used with a similar reaping action to the one used by traditional peasants in southern Europe. The curved shape of the sickle was used to gather the cereal towards the harvester and then cut it. The multiple flint elements were inserted in these sickles on an oblique axis to the shaft, and thus the cereal stems were cut with a composite toothed edge.

In the last decade, details of the tools used in southern Europe in the Early Neolithic have come known, represented by the whole examples found at the lake site of La Marmotta (Lazio, Italy) (Fugazzola et al., 1993). These were similar sickles to those found in Central Europe, but the sickle elements were smaller. They are found in the Italian Peninsula and in the south of the Iberian Peninsula (Ibáñez et al., 2008; Mazzucco et al., 2013; Gibaja et al., 2014; Ibáñez et al., in press). In more northern parts of the western Mediterranean, the centre and north of the Iberian Peninsula, the Mediterranean coast of France and continental Italy, a series of different sickles have been documented, represented exceptionally by the examples found at the lake site of La Draga (Girona, Spain) (Bosch et al., 2000, 2006; Palomo et al., 2011). The wood types used at La Draga are mainly box (*Buxus sempervirens)* and occasionally elder *(Sambucus* sp.) and juniper *(Juniperus* sp.). The main characteristic of these tools is that the actions of gathering the stems and of cutting them were separate, and did not form part of the same movement, as described above for the other sickles. These reaping knives were in an "L"-shape, with a lateral appendix, while the flint element was fitted in the main shaft of the tool. The lateral appendix was used to gather up the stems, which were held in the free hand, while the tool was turned 90° and they were cut with the flint element. In most of the reaping knives from La Draga whose wooden hafts are conserved, the flint element was a single long blade inserted parallel to the shaft, and in one case it was diagonal. At the early Neolithic site of Costamar (Castellón, Spain) a similar reaping knife was found, although it was made from a deer antler, with a groove in the main shaft for holding a blade in an oblique position (Flors, 2010; Flors et al., 2012).

At most Neolithic sites in this northern Mediterranean area, the harvesting traces on the flint blades indicate an insertion parallel to the shaft. However, at certain sites in the centre of the Iberian Peninsula and the south of France, this type of reaping tool was accompanied by others in which the flint blade was inserted obliquely to the shaft. These flint blades would form part of two-stage reaping knives, like those found at La Draga and Costamar (see below).

In this research context, the reaping knives from Egolzwil 3 are clearly of great interest (Fig. 1). These are tools displaying similarities with those at Early Neolithic sites in the northern Mediterranean, as regards both the oblique insertion of the blades and the two-stage reaping action that must have been used. However, they are between 1000 and 1300 years more recent than the examples from La Draga and Costamar. Does this represent the preservation of the reaping technique that was originally Mediterranean? Equally, the geographical position of Egolzwil 3 in the context of the Swiss Neolithic, between the Central European area and the Mediterranean, offers an opportunity to analyse a frontier situation in agricultural technique traditions.

This paper analyses the assemblage of whole reaping knives from Egolzwil 3 and some of the loose blades with hafting residue, from the point of view of the use-wear marks, in order to determine whether they were actually used as sickles to reap cereals and to discover how they were used. Finally, the characteristics of the reaping knives and their use are related with similar tools found at Neolithic sites in western Europe. In this way, conclusions are drawn about the preservation of technical traditions and the geographical relationships of Swiss Neolithic communities with those in the Mediterranean.

Fig. 1. Egolzwil 3: location of the site in the central part of the Swiss Plateau.

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