Heavy residue

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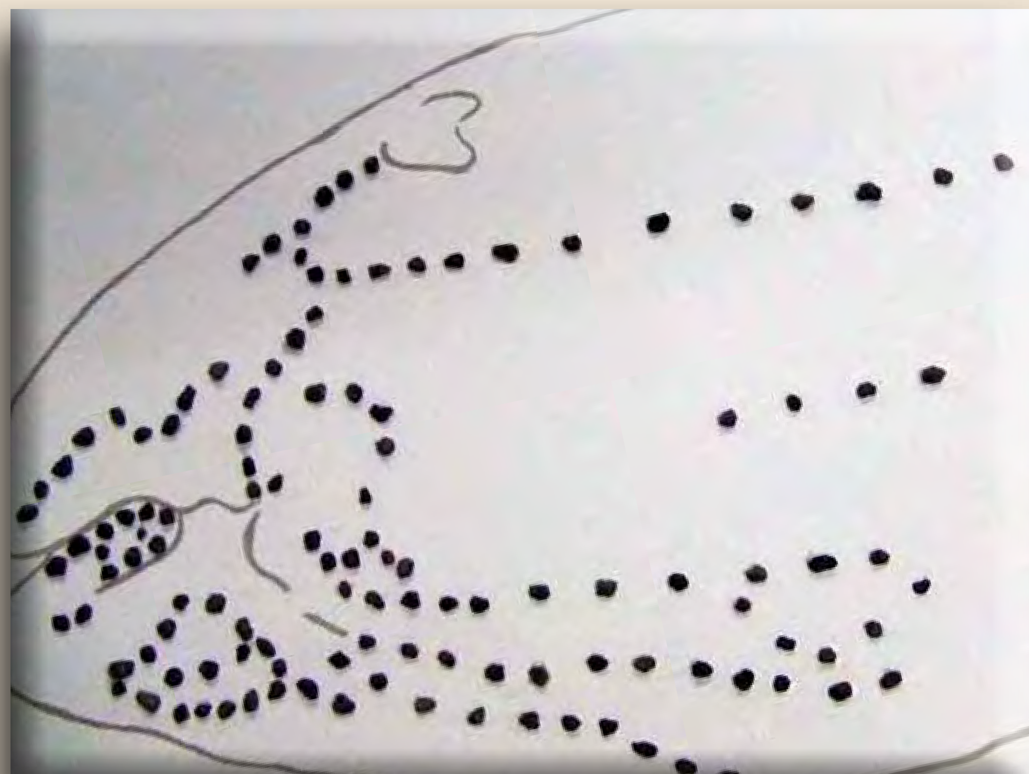
By Angela Walker



Whilst sorting the heavy residue, a particularly exciting process that sorts the wheat from the chaff (or the men from the boys), a number of cereal grains were recovered including a relatively well preserved einkorn grain. The little charred and damaged grain, which looked as if it had seen better days, suddenly took on a whole new visage. It is often all too easy to forget how valuable and precious preserved botanical material is, particularly at the end of a gruelling flotation season or when sitting in a lab detached from the archaeological site. What are often ignored are the processes by which material enters the archaeological record and the seemingly endless transformations it endures.

In order for an einkorn grain, and indeed other botanical material, to enter the archaeological record, a series of events must occur in a particular way at what appears to be exactly the right time. First the botanical material must become charred. This occurs through the process of accidental burning. For example, material could fall from a cooking vessel into the cooking fire or the material could have spilled onto the floor during the food preparation process and been swept up with other fallen debris and been cast into the fire for disposal. Or the botanical material could have been charred due to the accidental burning of an entire storage granary.

Once botanical material has become charred, there are a number of ways in which it can come to be deposited at a specific location or ***context***. If the charred material remains contained within the ash from the cooking fire and the ash deposit remains undisturbed within the confines of the hearth, the material is considered to be *in situ* in a ***primary deposit***. Alternatively, the ash deposit may easily be swept from the hearth environment and be placed in a rubbish pit or may simply be strewn onto the floor adjacent to the hearth and trodden into the surface. When material is extracted from its primary deposit and is deposited at a new location, it becomes known as a *secondary deposit*. To be able to reconstruct and interpret past human activities and processes, it is necessary to be able to distinguish and understand the difference between primary and secondary deposition.

Once the material has been deposited, whether in a primary or secondary context, it is often assumed that this is where the buried material remained until recovered by archaeologists; alas this is not always the case. The charred material is still susceptible to further disturbance. The area may be disturbed by *anthropogenic* or human activity such as redevelopment either at a time contemporary to when the cooking hearth ceased to be used, or in a later succession of periods. The charred remains may have also been subjected to *bioturbation*, that is, disturbances by other living things such as growing tree roots or burrowing animals; activities that could potentially move the remains from their burial contexts.

The area of Teleor 003 under excavation revealed no evidence of in situ burning, and was comprised primarily of pit features. The combination of the lack of in situ burning and the presence of pit features, suggested that if charred botanical material was present, it would be housed within a secondary deposition context. The charred material from the Teleor 003 excavations was initially recovered as bulk soil samples following a systematic sampling strategy. Soil samples were extracted from each prehistoric excavation unit ranging in size from 0.25 litres to 80 litres (the average measuring 24 litres) (Walker and Bogaard 2010).

In order to analyse charred botanical material it is necessary to separate the material from the soil in which it is housed. This separation is achieved through the process of flotation. Overall 158 samples were processed by flotation; the samples derived from 28 pits, and represented over 3700 litres of soil (Walker and Bogaard 2010).

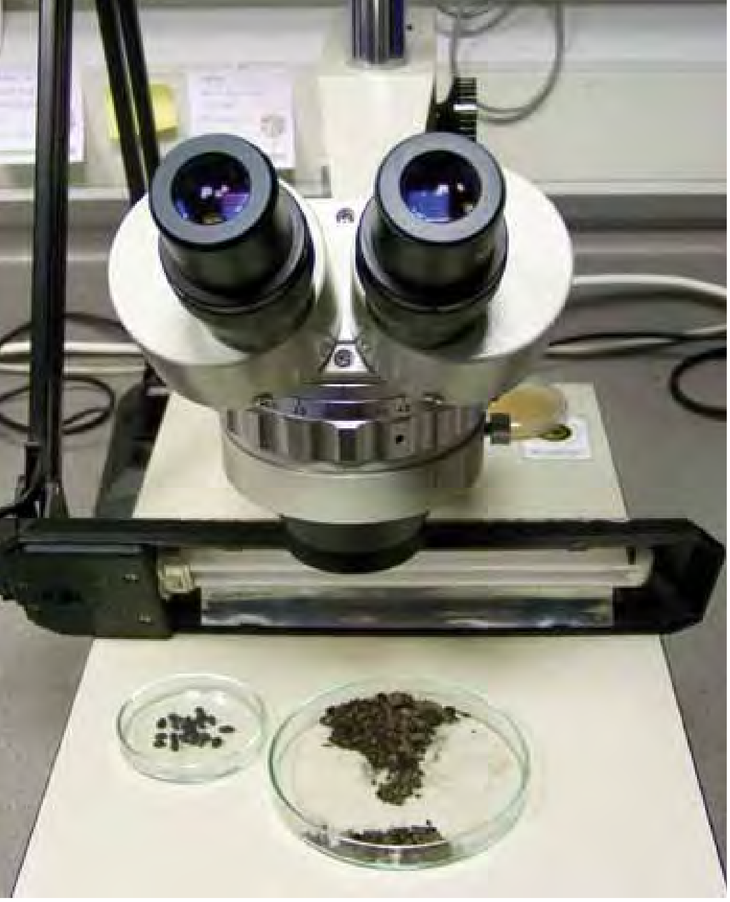
The object of flotation is to retrieve microscopic material by simple and efficient methods which are practical and economical and most importantly are as free as much as possible from human bias (French 1971, 59). Flotation is often carried out by a mechanical process using a 'water-separation' machine more commonly referred to as a 'flotation tank'. Versions of the flotation tank that are employed in the field are often constructed from a 40-50 gallon barrel. Water is pumped into the tank through a set of perforated curved or angled pipes (situated halfway up the tank interior) and is projected upward towards the top of the tank; this action essentially creates a Jacuzzi effect within the tank. As soil samples are poured into the tank, the movement of the water agitates the soil allowing lighter material such as charred botanical remains to float to the surface.

The flotation tank is designed to allow water to overflow at a specific point along the rim of the tank. Floating material flows across the overflow point and is collected in two sieves (usually of 1mm and 0.3 mm mesh sizes) positioned on

the outside of the machine; the material collected in the sieves are known as *flots*. Within the tank itself an inner mesh (ranging in size from 0.5mm to 1mm) retains the heavier material housed within the soil sample; this material is known as the *heavy residue*. Material from the flot sieves are parcelled up into labelled fabric bundles and the heavy residue is spread out onto plastic sheeting; both are left to dry before commencing the next stage of processing.

After the heavy residue has dried, the material is sieved using 4mm and 1mm sieves (botanical material is retained in the 1mm sieve). The material from the 1mm sieve is then divided into smaller portions or *fractions*. A single fraction is chosen at random and is checked for the presence of botanical material, which is then removed and sent to the lab for analysis with the flot material. Once all the recoverable items have been removed from the heavy residue it is thrown away. The process of searching and removing botanical material from samples is known as *sorting*.

After the flots have dried, samples are transferred to clear re-sealable plastic bags and are sent to the lab for processing. The flots are sorted in the lab using a low-power stereoscopic microscope. Botanical material extracted from the samples is divided into the categories of: cereal grain; cereal chaff; pulses; collected plants and wild taxa (weeds) ready for full identification.



Full identification of botanical material is carried out with the aid of a reference collection comprised of modern reference material and with textual and pictorial references such as floras and seed atlases.

By understanding the processes by which botanical material enters the archaeological record, can be disturbed or transformed by human or natural processes, is recovered, processed and analysed, it becomes clear just how valuable, important and precious this material is. Also of fascination is the transformation of the way in which the material is perceived. At the time of charring, the material is undoubtedly viewed as a waste product, as something unimportant – a by-product of a common, frequently conducted domestic practice, but to the archaeobotanist it becomes something else. The material provides the opportunity to gain insight into plant use and cultivation practices of prehistoric people, in this case, of the early Neolithic inhabitants of the Teleorman River Valley. We can begin to consider the range of crops and plants cultivated and collected for consumption, plants that were collected for other uses other than food and even to gain insight into cultivation practices such as management strategies. We can begin to reconstruct the climate and landscape in which these people lived and can, when combined with other forms of archaeological evidence, begin to appreciate their efforts and acknowledge challenges encountered and mastered as they lived their daily lives.

Close examination of the einkorn grain that was recovered during the sorting of the heavy residue associated with Flot 3016 (Unit 1724, Complex 35) aided in reminding me why I became fascinated in archaeobotany in the first place and in doing so served as the inspiration for my contribution to the Art-Landscape Transformations project: Măgura Past and Present. Initially the einkorn grain was illustrated following standard botanical illustration conventions.

The purpose of an illustration of this type is to effectively convey the appearance of a plant part as well as acting as a valuable visual reference source to archaeobotanists when identifying ancient plant remains (Goddard and Nesbitt 1997, 13).

The illustration alone however, was not quite enough to convey the understanding of the transformation processes experienced not only by the cereal grain but those encountered by myself as both the archaeobotanical analyst and illustrator/artist. A second piece was required that brought together several concepts. The piece comprised an enlarged version of the dorsal view of the einkorn grain as depicted in the botanical illustration. Rather than inking in key features of the grain, the discarded element of the heavy residue (from which the grain was originally extracted) was used to produce a relief image of the grain. The basic concept of the piece was essentially to transform and reinforce the value of botanical material by creating an image of a product (the einkorn grain) from the by-product (heavy residue) that was discarded as part of an archaeobotanical transformation process.

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