7 Excavation
7.1 Teaching goals
By late August, everyone involved in the excavation should have learned the basic field skills:

a) surface cleaning (what we experts call weeding)
b) tool use (picks, shovels, wheelbarrows, small picks, trowels, brushes, sieves)
c) record keeping (context sheets, notebooks, profiles, plans, taking elevations, manual triangulation, Harris matrix, working with Total Stations, preparation for photography)
d) interpretation (stratigraphy, defining deposits, identifying activities)

Some people will be working in the lab, cataloguing and analyzing artifacts, or in more specialized activities (digital recording, study of animal bones, seeds, etc.). Some of these require at least 2-3 weeks of field training before you begin to master them; others require a lot of classroom preparation; and others still call for reading knowledge of Italian and familiarity with previously published archaeological sites in Sicily. The result is a division of labor. Not everyone will be involved every technique and method used on the site, but if you express an interest, we’ll do what we can to provide some experience in:

a) Total Station (on-site digital recording, data entry, computer troubleshooting, support services)
b) lab work (sorting pottery, identifying fabrics, joining vessels, restoration, data entry, drawing, photography)
c) faunal analysis (identifying and interpreting animal bones)
d) flotation (recovery of macrofossils by wet-sieving)
e) supervision (overseeing trench excavation)

In section 7, we describe our excavation methods. This section compliments readings from Mortimer Wheeler’s *Archaeology From the Earth* and Ian Hodder’s *The Archaeological Process*. You should read the parts of these books listed on the syllabus for “Archaeological Fieldwork in the Mediterranean” and this section before you start digging.

People interested in the past have been digging up artifacts and ruins for at least 4,000 years, but modern excavation methods date back only about 150 years. Methods have progressed significantly in that time. The main tendency has been toward standardized methods of digging and recording that allow us to compare results between sites and even between different parts of the world. On the other hand, what works well on a waterlogged site in Denmark may not work well on an arid site in Arizona; a Palaeolithic cave shelter calls for different methods from a medieval cathedral. Every site is different. So even if you’ve dug many times before, read all of section 7.

7.2 Digging
7.2.1 Site formation processes
Sites get formed through natural and cultural processes. If Mt Etna erupts and dumps a layer of lava over the towns on its slopes, that’s a natural process; if people then come back and build new houses on top of the lava, that’s a cultural process. Sites are normally formed through a combination of both natural and cultural processes. Excavators identify the layers of soil that
accumulate or are removed by these processes, and in so doing, can reconstruct the details history of activity.

As an example, we’ll talk about Monte Polizzo acropolis building B1, on the west-facing slope of the hill (see figs. 3.6, 7.1-7.3). Around 575 BC, people developed this part of

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**Fig. 7.1** Plan of building B1. Black walls date to the 6th century BC; white walls to the 11th and 12th centuries AD

**Fig. 7.2** Simplified profile through B1, along line $\alpha-\alpha$ in fig 7.1
the hill by building wall h and a path that curved up the slope of the hill through a door in h (fig. 7.3.a). They built h from limestone blocks, probably quarried from an outcropping 400 meters away. The wall stood on exposed sandstone, the natural matrix of the acropolis. Over the next few years layers of clay-like soil and a small hearth accumulated downslope (i.e., west) of wall h as the area was used. After a while (maybe around 550 BC) they decided to use this space differently. People blocking the door in h and dumped a thick fill of dirt behind it (i.e., east of it), creating a new flat surface. On this surface they installed a drain, which emptied out over wall h, suggesting that they’d now stopped using the area west of the wall for any significant activities (fig. 7.3.b). A few more years went by; and somewhere between 550 and 525 the area changed functions again, and dumped a great heap of ash, storage pottery, and bone (especially deer antler) on top of the drain (fig. 7.3.c). There are good reasons to think this material was dumped from sacrificial fires in zone A. The, around 525 BC, they built the small rectangular one-roomed structure B1/2 on top of this ashy dump (fig. 7.3.d). The whole area was abandoned between 525 and 500 BC, and B1/2 gradually fell down, creating a thick layer of fallen limestone blocks. Dirt blew in around the blocks, and rainwater eroded some of the material downhill, while simultaneously bringing other dirt, stones, and pottery down into our area from the crest of the ridge (fig. 7.3.e). Things stabilized like this for long centuries; shepherds probably brought their flocks up here throughout Roman times, but erosion and deposition found an equilibrium and the site stabilized. Then, around AD 1000—a millennium and a half after B1/2 was left empty—new settlers came here. They must have been able to see some of B1/2’s ruins on the surface (just as, when we came here in AD 2000, we could see a little bit of the medieval ruins on the surface). Rather than quarry new limestone blocks a quarter of a mile away and carry them here, they did the obvious thing, and recycled the Iron Age debris. They dug pits to pull up usable stones, rebuilt the walls of B1/2, and added on B1/1, a brand-new room (fig. 7.3.f). When we dug here in 2001-2002 we found no direct evidence for the stage shown in fig. 7.1.e, because the medieval builders reused all the Iron Age rubble. In the 11th century house B1 fell down, producing a thick layer of broken rooftiles. People rebuilt it, but dug a deep pit down to bedrock outside it (fig. 7.3.g). In the last episode in the area’s medieval history, two new walls were installed over the pit (fig. 7.3.h). During the 12th century building B1 burned down, preserving large amounts of wheat in room B1/1, which was presumably a storeroom. B1 then collapsed again, creating new rubble layers (fig. 7.3.i). Over the next 800 years erosion moved this debris and the topsoil around, just as had happened between 500 BC and AD 1000, until about AD 1950, when the Italian Forestry Service plowed a series of furrows around the entire hill, and planted saplings in them. Fig. 7.3.j shows the area as it was in AD 1999, immediately before we began digging.

Since 2000, we’ve disentangled this sequence of natural and cultural processes. An archaeological site is a palimpsest: everything that happens on it adds to the deposits in some places, and takes away from them in others. Not all these traces can be detected by archaeologists, but it’s sometimes surprising just how much we can piece together. The 6th-century builders took limestone from one place and put it in another. Then they swept up ash and sacrificial debris from one part of the acropolis and threw it here, then built a room on top of it. 1,500 years later someone cleaned up all the mess from the house’s collapse and reused it. Then they did the same thing again when their own house fell down. Under other circumstances, someone might have taken away this mass of useless garbage and dumped it
Fig. 7.3  
Formation processes of the archaeological record: Monte Polizzo B1

Diagram:
- a) c. 575-550 BC
- b) c. 550 BC
- c) c. 525 BC
- d) c. 500 BC
- e) c. 500 BC
- f) c. 400 BC

Diagram elements:
- Park
- Rocks
- Ash dump
- Building
- Drain
- Pavement
98) c. AD 1100

99) c. AD 1150

99) c. AD 1999
somewhere else, changing the archaeological record again. But as it was, no one did; the house was abandoned in the 12th century. And on the process went, century after century.

Our job is to identify every process that has left a trace in the soil, and when these processes have removed evidence of other processes, to infer the existence of what we call “negative deposits.” We pick places to dig because we think they’re going to help us answer the questions we described in section 4 above, then we try to understand what happened there. It takes a long time. Excavation is a cross between an art and a science. It calls for common sense, experience, close attention to detail, tidiness, rigor, stamina, record-keeping, and consistency; but it also calls for imagination, lateral thinking, and risk-taking. There’s nothing in the world quite like it. The principles are extremely simple, and can be picked up in a few minutes, but the practice is difficult, and takes years to learn.

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Fig. 7.4 Early stages of the excavation of zone A, 2001. In the foreground is altar A2. To the right, students are excavating a very large deposit of antler and storage pottery; at the center, they are exposing hut-shrine A1
7.2.2 Stratigraphy

Stratigraphy—a modern compound of ancient Greek words, meaning literally “layer-writing”—is the key to everything in archaeology. Geologists formalized the principles in the 1850s: in a nutshell, when layers of rock are laid down in the earth’s crust, new layers lie on top of old ones. What matters is not necessarily how deep under the contemporary surface a vein of rock lies, but its position relative to other veins. By the 1870s archaeologists were routinely applying this principle in fieldwork.

The word “layer” can be misleading, since most archaeological layers aren’t smooth or flat. You can think of a layer is the result of an event in the history of the site. The event might be something that happened quite quickly—a wall someone built, a hole they dug—or it might be a drawn-out process, like the infilling of a pit through natural processes, or the accumulation of dirt on the floor of an abandoned house. Some layers, like floor surfaces, do tend to be flat and quite even; but pits can be small and deep. Layers can be any shape or size. Each layer gets its own layer number (explained below) and is recorded on its own context sheet(s) (see section 7.3 below).

Fig. 7.5 is a classic example, from Mortimer Wheeler’s *Archaeology From the Earth* (p. 71, fig. 11). In the top picture, a coin from 100 years ago,

**Fig. 7.5** Stratigraphy and elevation: Wheeler’s example from Pakistan (*Archaeology From the Earth* p. 71, fig. 11)
another from 1,800 years ago, and a seal stone from 5,000 years ago are all found at the same
elevation. If we just sliced off layers of dirt, we’d have no way to tell what the relationship was
between them, or how to date the two walls. The bottom picture shows the superimposed layers
that Wheeler identified as he dug, so that he could tell right away that the coins of the 20th and
2nd centuries AD were so far under the surface of the earth because people had dug deep pits
in those periods, one for a tree and one for a wall foundation; while the 3rd-millennium-BC
seal stone was found in association with a wall of the same date.

When we dig, we identify the layers in the archaeological record. We number them,
following a system called Continuous Trench Numbering. Within each trench, you start with
layer ← (ALWAYS put a circle around layer numbers in your notes, so they’re easy to spot). When
you identify a new layer you give it the next number in sequence.

Three important points to remember about Continuous Trench Numbering:

i) Each trench has its own single continuous sequence of layer numbers. DO NOT start a new
sequence for each trial trench within the larger trench (see section 11 for definitions of terms);
start with ←, usually a tree trench or the topsoil, and give a new number to every new deposit
that you identify.

ii) As a trench expands in area, it often happens that a newly exposed layer in fact comes later
in the stratigraphic sequence than a layer that’s already been exposed and been given a number
in another part of the trench (e.g., the newly identified layer → is in fact later than layer ↑).
DON’T WORRY about this. Just keep going ahead with the numbering, making sure that the
fact that → is later than ↑ is clearly marked on the records.

iii) If you’re digging in a trench that was begun in earlier seasons, start numbering the layers at
the point that the last team stopped; i.e., if they reached layer ×, you start with ∞.

As you excavate the layers, you fill out context sheets and a notebook, draw plans and
stratigraphic profiles, and produce Harris matrices (all explained in section 7.3 below). You’ll
keep separate everything we found within each layer separate from everything found in other
layers, carefully labeling the bags containing the finds from each layer. We then use the finds
from each layer to date the deposits. We have to be able to place every single find within its
unique stratigraphic context, and use the Harris matrix to lock every artifact into position
relative to every other artifact from the site. Reading the stratigraphic sequence is the most
important thing you do, and they key to archaeology. If there’s a problem with the stratigraphy,
everything else—pottery analysis, digital recording, faunal analysis—is undermined.

Nothing could be easier in principle than stratigraphy, but in practice it’s tricky.
Stratigraphic excavation (as distinguished from simply digging a big hole and keeping the
things we find in it) was developed first in the wet soils of northern Europe and the east coast
of North America. In these conditions, layers often have strikingly distinct colors. If someone
digs a hole for a post in white chalk, the wooden post decays leaving a black stain, which any
fool can spot. Further, soft wet soils can be removed with small tools like trowels and brushes,
making it easy to keep track of what’s going on. In the semi-arid Mediterranean climate, things
are different. The soil is baked hard and dry, and colors are bleached. Once in a while, we have
clearly colored deposits (especially when we have ash and burning); and generalizing broadly,
the medieval and modern deposits tend to produce dark gray-brown soils at Monte Polizzo
with a lot of silt, while the Iron Age levels tend to be yellowish, with a lot of clay. But most of the time you’ll be trying to see a difference between one deposit that’s brown, hard, dry, and full of rocks and another deposit that’s brown, hard, dry, and full of rocks. And because the soil’s so hard and rocky, north European excavation techniques relying on trowels generally don’t work well. To make things worse, we never know what shape a layer is until we excavate it. It could be thick or thin, flat or sloping, filling a whole trench or just part of it. At Monte Polizzo, the ground slopes steeply in unexpected ways, and even layers that were originally flat often slope because of the differential erosion of the soft conglomerate rocks.

Because of these difficulties, some archaeologists will say that there’s no such thing as stratigraphy in the Mediterranean world. This is nonsense: if there were no stratigraphy, it’d be impossible to explain how the sites got formed. What they mean is that they’ve never excavated carefully enough to distinguish the stratigraphic sequence on their sites. People who feel this way often excavate by arbitrarily removing 5- or 10-centimeter thick slices of dirt, which they call “spits.” Doing this means giving up on distinguishing the kind of sequence shown in fig. 7.5 above. It’s quick, but it loses too much information. We don’t work this way. If we did, we wouldn’t have made sense of the complex sequences we’ve uncovered.

Instead, we rely on every little clue—soil color, texture, granularity, different kinds of inclusions, the direction the inclusions slope—to tell the layers apart. This is where the real skill comes in. No amount of theory can prepare you for actually confronting the hard dirt and jumbled rocks that make up an archaeological site.
7.2.3 Organization

The entire acropolis has been divided into a 5 x 5 meter grid, denoted by numbers running from north to south, and letters from west to east (see fig. 3.7). Every 5 x 5 meter grid square has a unique letter/number code (e.g., M99, L108, etc.). The corners of the grid squares are marked on site by large orange stakes. The stake at the SW corner of each square has a label with that square’s code. These stakes are very important; if you dislodge one of them, TELL THE DIRECTOR IMMEDIATELY.

We begin digging by treating each grid square as an independent unit. Following the method advocated by Wheeler, we excavate a 4 x 4 meter trench within each 5 x 5 meter grid square, leaving 1-meter wide balks so we can draw profiles. The 4 x 4 meter trench is always placed in the southwest corner of the 5 x 5 meter grid square, so the balks are always along the north and east faces. Label the corners of the trench as marked in fig. 7.6: the NW corner of the 5 x 5 m. grid square is A, the NE corner B, the SW corner C, and the SE corner D. In the actual 4 x 4 m trench, the NW corner will be E, the NE corner F, and the SE corner G. NEVER VARY THIS UNDER ANY CIRCUMSTANCES. Before digging you’ll fill out a “starting sheet,” on which you draw a measured, scale plan of the shape of your trench, label all reference points, and write their elevation above sea level. As you lay out smaller trial trenches, carry on through the alphabet. If you end up with more than 26 points, start again with AA, BB, CC, etc. Before digging, get elevations for all named points (see section 7.3.6 on taking elevations). If you’re in any doubt about what elevations to get, consult the assistant director or director.

A team of excavators is assigned to each trench. Normally there’s an experienced supervisor with 2 or 3 students who’ve either not dug before, or only dug once or twice. The supervisor is responsible for a lot of the hands-on decisions, for filling in the context sheets, keeping the notebook, and deciding when to get extra advice. By the end of the season all students should have learned the basic skills, and be able to run the trench themselves for at least one day.

The grid system makes it easy to know where we are in the larger plan and to control the digging process. But people in the past rarely laid out their settlements on a convenient north-south plan. So, depending on just what we find, we often move off the grid as the excavation progresses. We might subdivide a trench into smaller trial trenches, so that we have profiles in different places from the balks between the grid squares, in order to solve particular
problems. Other times, we combine parts of several grid squares to make a single trench. For example, room B1/2 runs northeast-southwest, cutting across grid squares L107, L108, M107, and M108 (see fig. 7.1). It would be very confusing to excavate this single room in four separate trenches, and it would also leave us with balks at peculiar angles to the walls. So we treat B1/2 as a single unit.

In 2004, we’ll be using both on- and off-grid trenches. Some of the rooms in A5 will form individual excavation units, while north and south of A5, where we haven’t dug and don’t know yet what’s under the surface, we’ll start with 5 x 5-meter trenches. We’ll treat A1 as a unit, but use squares in the paved area north and east of it. People digging in zones E and F will use rectangular trenches, because we’re not excavating rooms, but will be off-grid—in zone F because the trenches are placed to give us dates for particular walls, and in zone E because there’s only one angle we can use to squeeze our trench between the trees.

7.2.4 Tools

There’s a lot of theory and gadgets in excavation, but moving dirt is still job #1. We have highly formalized ways of moving it, but if you do this basic job badly, then no amount of micromorphology, flotation, and quantification can make it right again. So knowing which tool to use for which task and how to use it best are among your main challenges. The basic rule is the same for all these tools, though: we removing one layer at a time, reversing the sequence in which they were deposited—starting with the most recent activity on this spot, and working back to the very earliest thing of which any traces survive. You start removing the layer that’s exposed; as soon as you encounter anything that looks different from that layer, you stop.

7.2.4.1 Heavy tools: big picks, shovels, wheelbarrows

People living on Monte Polizzo built big houses out of stone and mudbrick. When these fell down, they produced thick deposits over large areas. A typical house produces several tons of debris (as a rule of thumb, one cubic meter of dirt weighs about one ton). Sometimes erosion has carried away some of this debris; for those of you working down the slopes, it may have piled still more earth on top of the ruins. We could remove the many tons of topsoil with dental tools; but since an excavation on the scale of ours averages out at a cost of over $4,000 per workday, that would be a bad use of resources. We’d end up knowing an awful lot about the topsoil, but not answering the questions we listed in section IV. The only effective way to remove these deposits (what we call “open” deposits, because they are constantly moving around), and to get to the sealed floor deposits produced by deliberate activity (“closed” deposits), is with heavy tools.

The big pick (Italian, piccone) is a powerful and efficient tool. Its function is to loosen soil that can then be removed with a shovel. You don’t need to put much effort into using the big pick: letting it fall under its own weight breaks up the soil. You should very rarely lift the pick head above shoulder height or put your whole effort into the down swing. A pick blade driven hard into the ground can penetrate 10 cm., and you don’t know what’s lying that far under the surface. Use the pick to go down no more than 3-5 cm. at a time, working evenly and steadily across the whole area being excavated. It’s best to work moving forward, so that you don’t spread the loosened soil across areas that you haven’t yet picked. So long as the pick is sharp, the broad blade is usually more effective than the pointed end.
After a single sweep across the area with the big pick, shovel up the loose dirt (shovel = *pala*; to shovel = *spalare*). Break up the clods to avoid throwing artifacts away. One member of the team look through the dirt as a second one shovels it. The third should be the pick person, who’ll rest while the other two shovel. If you have four people in the trench, use two shoveler and one sorter to one picker. When possible, you can save time by shoveling the loose dirt directly into a wheelbarrow. Often, though, you’ll need to put it into a bucket that someone carries to a wheelbarrow or directly to a spoil tip. Either way, don’t throw the soil through the air from the shovel to the receptacle. Tip it in gently. Throwing soil tips over wheelbarrows, meaning that you have to shovel the dirt up all over again. There’s a fine art to shoveling well. Use your knee to push the shovel whenever you can. When you empty the shovel, use your shoulders rather than your lower back. Turn the shovel over and use it to scrape the loose soil into heaps before shoveling it up. This is hard on the stomach muscles but more efficient than trying to shovel up thinly scattered loose dirt.

Even when you’re working through topsoil or washed out mudbrick, always sweep all the loose soil up into a dustpan after you’ve shoveled up and before you begin picking again. Loose soil makes it impossible to see what’s happening in your trench, and it’s the prime cause of mixing layers—the ultimate archaeological sin. Never, under any circumstances, start a new pass with the pick while there’s any loose soil remaining in the trench. Don’t forget this. Sweeping (brush = *spazzola*; to sweep = *spazzare* or *scopare*) is the most important part of the digging process: the mantra is **keep your dirt clean**.

Don’t overfill wheelbarrows or buckets because you’ll end up losing control and tipping them over. This is especially true if you have to use a ramp to get to the spoil tip. Heap the dirt at the front end of the barrow, over the wheel: it’s easier to push that way. When you start moving a wheelbarrow, life the handles using your shoulders or knees, not your back. Often rocking the barrow backward and forward slightly makes it easier to get it moving. Be sure to rotate barrow and bucket personnel; this is the most tiring activity.
7.2.4.2 Light tools: small picks, trowels, brushes

The big pick and shovel should only be used when you’re confident that you’re working in thick deposits of topsoil, mudbrick, and rubble collapse from walls. Keep brushing up constantly so that you can be sure what’s happening. As soon as you have any doubts, switch to lighter tools that give you more control and sensitivity to nuances in the soil.

The small pick (*piccola piccone*) is a primary tool in Mediterranean archaeology. To people used to excavating in wet northern climes, it looks unsubtle, but in the hands of an expert, it’s not. Because it’s very light, it requires more forearm effort than the big pick. If you just let it fall under its own weight, nothing much will happen. So put some effort behind it, but only take off just a centimeter or two at a time. As with the big pick, work systematically, moving forward, so you’re not spreading loose dirt over the area where you’re about to dig.

The big pick and shovel are stand-up tools; the small pick, trowel, and brush are squat-down tools. Much of the distinction is instinctive, but remember that the small pick, trowel, and brush are **squat-down not sit-down tools** (see fig. 7.9). If you sit on your behind to use these tools you can’t get much power to them. Nothing much will happen as you use them, and you’ll get bored. You’ll have no fun, plus you’ll make mistakes. It’s also harder to move from one place to another if you’re sitting, because you have to make the effort to get up; so you’ll tend to dig too long in one spot, messing up the evenness of the dig. Don’t sit down; squat. Squatting can be hard on the knees, so if you have any trouble, use a pad to kneel on, and get up and stretch a lot. But from a squatting position you’ll be able to control what you’re doing a lot better and move around more easily.

![Small tools in use: excavation of trench K100, 2003](image)

There are two rules: **don’t dig holes** and—again—**keep your dirt clean**. The first rule means work evenly and systematically, taking off the layer you’re working in steadily across the entire area that it’s visible. If you sit on the ground and pick between your feet you can’t do
this. If you dig down very far in one place you can’t see what you’re getting into and you’ll probably mix layers. The second rule means sweep up constantly. It’s every bit as important when you’re using the small pick or trowel as when you’re using the big pick. Almost all serious mistakes happen when someone hasn’t swept up and can’t see what’s going on. Never use the small pick for more than one minute without sweeping all the loose dirt into a dustpan. Usually 30 seconds is about right.

The trowel (cazzuola) is the most versatile tool in the excavator’s kit. You can take off very small amounts of dirt very precisely, but you can also focus a surprising amount of power at the trowel’s edge. When you’re actually working in floor deposits or around any concentrations of artifacts you’ll use the trowels or even more precise instruments—dental picks, knives, or even the point of a nail or pin. But usually the trowel will do just fine. Unlike the big and small picks, you use the trowel by scraping the surface toward yourself. This means that you spread the loose soil over areas that you haven’t yet touched; and that means that you have to sweep up even more often. When troweling, keep your work area spotless. The long edge of the trowel is the most effective part of the tool, giving you greatest control. Avoid the temptation to jab the point of the trowel into the ground breaking off the soil in lumps. And as with the picks, work from the known to the unknown: start at the point where you’re sure you know what the deposit is, and keep going until something changes.

Fig. 7.9 Stanford graduate student Lela Urquhart using a dental tool to clean around a jawbone in a late 6th-century-BC sacrificial deposit just west of building A1. Note the other essential tools—trowel, small brush, buckets for different finds from the layer (2002 season)
Finally, the brush. Cleanliness is better than godliness in excavation. As we keep saying, **sweep up constantly**. The most effective way to sweep is with small, rapid, flicking movements from the wrist. If you press the brush against the loose dirt using long strokes, you’ll just mash the dust into the ground, covering everything with a thin layer of loose material, and making it very difficult to see what’s going on. There’s a huge difference between the results when an experienced excavator brushes and what a novice does, so watch how other people use the brush. When you’re using the brush properly it’s quite tiring, especially on the forearm. The best brushes are straw whisk brooms, about 6-8 inches long, held together with stitching and a steel cap. We have to import these from the US. In Sicily we can only get broom heads, which work OK, but not as well.

7.2.4.3 The sieve

When you excavate floor deposits, pits, or any other important feature, you’ll pass all the soil that you remove through a 5 mm. mesh screen. This is laborious work, but it means we can control our recovery patterns: in all the deposits that we sieve (*setaccio*; to sieve = *setacciare*), we know that we’ve recovered everything over 5 mm. across. We’ll also recover a lot of things that are smaller than 5 mm., but with these tiny objects we can’t be sure what the recovery rate is. This becomes very important when we want to quantify our data. We could pass the soil through an even smaller mesh, but with the kind of soil we’re dealing with, full of chips of limestone and sandstone, the time it’d take would be out of all proportion to what we’d gain from doing it. Similarly, we could pass all soil from the dig (including the topsoil) through the sieves, but the results wouldn’t justify the time it took. Screening all closed cultural deposits through a 5 mm. mesh is standard practice in many parts of the world, making it easy to compare results without fear of inter-observer errors in data collection.
NEVER throw buckets of dirt into the sieves. They’re not built to withstand that.
7.2.5 Sampling
Some of our main questions depend on analysis of bones, seeds, and pollen. We recover all possible bones (one of the reasons sieving is so important is that it allows us to be precise about which bones we’re definitely finding, and which bones we may be missing), even the tiniest fragments. But some very small bones (especially from fish) and carbonized seeds are too small for the naked eye to detect easily, and we have to rely on other techniques.

Fig. 7.12 Flotation in Salemi, 1999

The most important of these is flotation (also known as wet-sieving). Dr Hans-Peter Stika of Hohenheim University will set up the flotation machine in Salemi, and some of you will get a chance to work with him on the flotation of the samples and sorting the finds. The flotation machine separates soil into a heavy fraction of stone and pottery and a light fraction, containing tiny bones and seeds. Whenever we are excavating a deposit particularly likely to contain these materials, such as a hearth, pit, garbage dump, or the inside of a closed pot, we take samples of the soil back for flotation. Since the 1980s archaeologists have argued passionately over whether it’s better to do bulk samples, taken from a single location within a layer, or scatter samples, made up by taking a series of small “pinches” from several places in a layer. Because of low densities of macrofossils at Monte Polizzo, we’re effectively forced to combine both methods: the typical sample size is 10 liters (roughly 2 large plastic bags), which regularly means bagging all of the soil from the layer. When dealing with large deposits, it’s best to take multiple bulk samples (e.g., 5 samples of 2 liters each).

Our flotation program has already produced important results, including the first botanical evidence for cultivation of wine grapes in Sicily, dating c. 550-525 BC.
We also take much smaller samples for pollen analysis (palynology). Pollen samples have to be collected very carefully, and there’ll be a tutorial on this at the start of the season. Scatter samples normally work best for pollen, because the distribution of pollen is rarely homogenous throughout a layer. If funding allows, Dr. Kari Hjelle of Bergen University in Norway will give lessons in collecting pollen samples at the beginning of the season.

In 2002 we began a program of micromorphology. This technique was developed in the 1950s, but only became practical in the field in the mid-1990s. It involves taking out chunks of earth roughly 10 x 10 x 6 cm., and extracting from these thin sections cutting through the layers of earth. Back in the lab these are made into slides and examined under microscopes. This way we can study stratigraphic features too subtle for the naked eye to see. Micromorphology can often tell us whether a particular layer formed gradually, say by dirt and water dripping into an abandoned room, or abruptly, by a deliberate dump of earth. This has already given us important information. It can show us phosphate particles in the soil, telling us whether animals were stabled in a room. Often it can tell us whether a space was roofed or open to the sky, and whether an earth floor was repeatedly repaired.

7.2.6 Interpretation
As noted in section 7.1 above, one trend in excavation techniques since the 1850s has been toward standardization, increasing objectivity and making comparisons between sites and regions easier. But you may have noticed that a lot of the techniques described in section 5.2, from decisions about which tools to use to decisions about whether to sieve the soil or take pollen samples, depend on prior interpretive decisions. Only those excavators with the skill to
know whether they’re digging a floor deposit will know that they should be changing the methods they’re using; the less skilled the excavators, the less likely they are to use the appropriate methods, and the less likely to realize that they’ve made an error.

As a result, archaeologists sometimes talk about “interpretation at the trowel’s edge”—digging involves a constant process of rethinking what you’re doing. Only experience can really equip you to do this, though there are some things you can do to improve your interpretive skills. Keeping the digging area clean is one of them: if there’s loose soil no one can interpret the layer, and if the trench’s balks are dirty and crooked no one can read the stratigraphic sequence.

Another big thing is to look at abandoned buildings (fig. 7.14). People with backgrounds in construction are often very good archaeologists, because they know what happens to buildings when they collapse or burn down. Salemi is full of abandoned houses of somewhat similar architectural types to the ones we’re digging up. Look at how the rubble and dirt accumulate, and try to relate it to the site.

Fig. 7.14 Abandoned building on the outskirts of Salemi, 2002