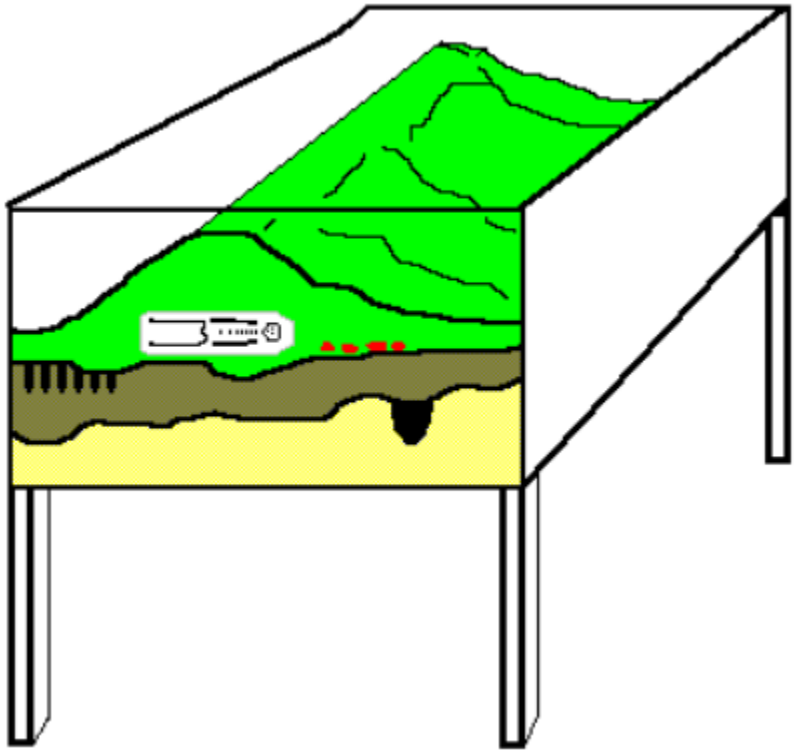
TABLETOP ARCHAEOLOGY:

A Teacher's Guide



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INTRODUCTION by Joe Baker

When I was in graduate school at the University of Montana in the early 1980's, I had the good fortune to take the first year grad student's intro class to archaeological method and theory from Dr. Dee Taylor. Dee was a student of Jesse Jennings, the legendary professor of archaeology at the University of Utah, and had been thoroughly indoctrinated in Jennings' ferociously rigorous approach to field methods. I and my fellow students expected to continue in the Jennings tradition of painstaking and regimented field archaeology, but there was just one problem. The class was offered in the winter, and we were in Northwestern Montana. The eight foot snow drift outside the Social Sciences Building door did not bode well for our attempts to learn how to supervise and conduct an archaeological field excavation.

Dr. Taylor had been teaching in Missoula for a long time, and had devised ways of passing along Jennings' ideas without the benefit of summer weather. He introduced us to a simulation approach to field excavation that he called tabletop archaeology. To be truthful, we were all skeptical, and more than a little disappointed. Before us stood an artificial, stratified archaeological site in an eight foot by six foot wooden box. Each of us was handed a course packet with reading and instructional materials. Clearly, this was, at best, a pale imitation of the real thing, and lacked the romance and challenge of "real archaeology". It might be alright for high school kids, or even undergrads in a pinch, but we were much too sophisticated and brilliant for this tinkertoy stuff.

Within the first two class meetings, it was obvious that we were going to have to work harder than we had ever worked before if we were going to survive this class! We had to conduct background research on our site. We had to generate research questions and a work plan that would produce enough artifacts and data to answer them. We had to excavate the site systematically, faithfully following our workplan. We had to conduct rigorous, post-excavation analysis of what we had unearthed in Dr. Taylor's devilishly complex site. We had to use the resulting data to address our research questions and produce a report. We had to do all of these things within the constraints of a project budget (employed for specialized analyses like radiocarbon, faunal analysis, etc.) and a strict timetable (one semester). By the end of the class we had the rudiments of a careful and systematic approach to archaeology thoroughly ingested.

We had also been introduced to virtually all of the challenges, tough decisions, nightmares, and mistakes that can and do happen in the course of real archaeological investigations. Indeed one of the strengths of Dr. Taylor's approach was that our cost overruns, poor excavation techniques, lost field notes, sloppy thinking, and petty disagreements had been visited on an artificial site. Real archaeological sites constitute a non-renewable resource, they are the product of a unique set of circumstances and human activities. Archaeology is a consumptive science. Excavation destroys that which it seeks to learn from, and all that remains of an excavated site are empty holes and the data that was removed. A real site is no place for errors.

Everyone who took that class left with a profound impression of the utility of Dee Taylor's wonderful teaching method. I think we also left that class as more careful researchers and better archaeologists, which was, after all, the point.

My next encounter with tabletop archaeology didn't occur until 1993, when Sallie Miller called me at my office. Sallie teaches gifted sixth graders in South Middleton Township, Cumberland County, and was trying to introduce archaeology into the curriculum. She was contacting the Pennsylvania Historical and Museum Commission, to see if there was an archaeologist at the Commission who could assist her, and a secretary had transferred her to my number. As it turned out, I live a half block from the Iron Forge Educational Center, where she teaches, and my supervisors in the Bureau for Historic Preservation had identified the integration of an archaeology curriculum into primary and secondary schools as one of our highest priorities. Our conversations hadn't gone very far before the subject of tabletop archaeology had come up. To make a long story short, Sallie, Valerie Cardennis who teaches sixth grade language arts at Iron Forge, and I determined to simplify Dr. Taylor's method, build our own site, and give it a try with 150 sixth graders in academic year 1994/1995. The experiment continues at Iron Forge in 1995/1996 and is, by all accounts, an unqualified success. I can't hide my astonishment and amusement as I watch the same progression from skepticism to wild enthusiasm for tabletop archaeology among these sixth graders that Dr. Taylor saw in many years worth of first year grad students. Dr. Taylor passed away in 1992, but I imagine him hovering over these Pennsylvania kids, his crooked smile beaming beneath his thick glasses, and sharing their enthusiasm with me.

At one level, initiating a tabletop archaeology program in your school district is simple. It requires almost no budget; it's simply a home-made site in a home-made box, with lesson plans that accompany it. Nonetheless, there are several key elements that are absolutely necessary for its' success. The presence of at least one teacher with a real enthusiasm for the past and the energy and guile to try something new is critical. In my opinion, so is the presence of an archaeologist with the time and interest to help out. While I think a teacher could get a tabletop program off the ground armed only with the information in this guide, the help and advice of my professional colleagues, at least in the first year, can't be overestimated. Tabletop archaeology is an opportunity for the professional archaeological community to work cooperatively with teachers in spreading the message of the importance and fragility of the past to a young and receptive audience. If we ignore such opportunities, I think our discipline may meet the same fate as some of the long-dead cultures we work so hard to reconstruct. Finally, a school district administration willing to support such an approach to learning about the past, and to commit teaching time and district resources to the effort, is of prime importance.

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What follows is an introduction for both teachers and archaeologists to integrating tabletop archaeology into a primary and secondary school curriculum. Appended to this guide are suggested lesson plans and instructional materials we've employed in South Middleton Township, a construction drawing of our tabletop box, a list of archaeologists and other sources of professional assistance for teachers, and a copy of the 1994/1995 report on our first tabletop site, Tabletop Furnace. I hope you find this document useful.

I won't mislead you, Sallie, Valerie and I have found the implementation of a tabletop program to be quite a bit of work at times, particularly in the first year. Nonetheless, I think you, and the kids you work with, will find it worth all the effort, for a lot of reasons.

Archaeology demands at least a working familiarity with geology, meteorology, biological and physical sciences, chemistry, mathematics, art and illustration, and technical and creative writing. As such, it is in some ways the ideal subject for integrated multi-disciplinary education. Students with a very wide range of interests and skills can make real contributions to a project like a tabletop excavation, and can be inspired to master subjects they need help with.

Archaeology is complicated, and safe simple answers are few and far between. Consequently, it presents a constant problem solving challenge to students (and professionals). The unique qualities of each archaeological site, imposes unique research and methodological challenges that, in turn, demand unique solutions. Put another way, it can teach you how to think.

Kids that live in South Middleton township, where this experiment was first conducted, live and play surrounded by the past. Our original tabletop site, Tabletop Furnace, was a simulation of the archaeological remains of the iron furnace industry that dominated this area in the 18th and 19th centuries. The students learned in their background research that one result of the operation of charcoal furnaces like the old Carlisle Works at Boiling Springs is wholesale environmental destruction on a scale that's pretty impressive, even by modern standards. The forests were gone, there were huge filthy mine pits and spoil piles, Yellow Breeches Creek was channelized, diverted, dumped in, and otherwise violated. The beautiful valley we live in was once almost completely destroyed by industrial development, and that could easily happen again. If they take that lesson into adult life, it might inform their decisions on, for example, regulating commercial and industrial development in their municipality. Furthermore, they will understand the importance of what the past can teach all of us, and they will support it's preservation.

Perhaps most importantly, archaeology focuses on a subject of endless complexity and variety: us. As such, it seems to have the power to hold people's attention. I have seen some fairly jaded and hardheaded people light up when a stone object of some antiquity is placed in their hands. My guess is that there is some part of all of us that feels a direct connection with our predecessors. Although those people must have lived very different lives than we do, I think we all sense that they grew up, courted, raised families, made a living, got old and grouchy, and passed out of this world just as we do. We are connected to them. They are under our feet. I believe that we all want to know just how it was for them. I think that, at some level, we all feel that they can teach us something important.

JB, Boiling Springs, May 7, 1996

I. PRELIMINARIES; THE BOX AND THE SITE

In a typical scholastic setting, a tabletop site is generally designed around a theme. In 1994/1995, Boiling Springs Pennsylvania was celebrating its' Sesquicentennial, so our site was a recreation of the historic iron works established here in 1763. In 1995/1996 the sixth grade geography unit in our district focused on the Yucatan Peninsula and Guatemalan Highlands, so a Maya site was an obvious choice. Generally the choice of what type of site to construct is made before the school year begins, but there's no reason that you can't wait until school is in session, and allow the students a hand in choosing the theme of their own site.

Once a general theme has been chosen, you or a helpful and handy parent will have to construct a wooden box of some type, or you may be able to buy or borrow a suitable container (a plan and description of the South Middleton Township box is included in Appendix B). While we know our box is a good design, and large enough for our needs, you may have better ideas or different needs, so you shouldn't necessarily be wedded to our design. Nevertheless, there are several design elements that should always be considered. Tabletop boxes can be very heavy (hundreds of pounds) when full, so they must be sturdy to be safe. Ours is mounted on heavy casters, which means it's portable, even when full. The horizontal dimensions and the depth of the box are up to you, but the height of the box above the floor should be at a comfortable height for the age group that will be doing the excavating. The design of our box features a removable plexiglass end panel with a removable wooden cover that gives us the option of allowing the students to take a sneak peak at the basic stratigraphy of the site before excavation much as a geoarchaeologist produces basic stratigraphic data through the examination of backhoe trenches or soil core samples. This is a very nice feature, and since both of these end panels are removable, it makes cleaning out the box at the end of the school year a simple matter. Finally, our box has grid coordinates, letters on one axis and numbers on the other, scribed on the outside railing to facilitate the gridding and mapping of the site, and we've found this to be an indispensable feature.

Within the parameters of your box, you have considerable freedom in site design. An entire prehistoric settlement can be created, with numerous houses, a stockade, a cemetery, storage pits and the like all represented. Conversely, a single prehistoric feature, like a burial or cooking hearth, can be created on a much larger scale. The site can represent a single occupation, or multiple occupations can be stratified atop each other. Virtually any time period can be represented. When you've decided on what type of site you plan to create, it's time to begin assembling the materials you'll need to build it.

At South Middleton, we've employed sand, potting soil, and garden soil, all in contrasting colors, to represent natural soil horizons. So far, we have yet to identify the perfect soil media for the box. While we've been able to get by with products purchased at the local nursery, in general these media have all been too friable, making the reproduction of plumb walls and level floors very difficult, particularly for sixth graders. It's a good idea to line your box with plastic sheeting before filling it, both to facilitate cleaning it out after the excavations are complete and to protect it from moisture damage from the soil and sand. It's also helpful to wet the soil layers with a spray bottle, as the moisture helps them hold together. It may also be helpful to tamp the layers with something fairly heavy as you put them in the box. The tamping may help to firm up and consolidate the matrix a bit, and keep it from

crumbling. You should experiment with different types of sands, clays, potting soils, etc. to hopefully find media with a nice firm consistency that will not crumble too badly during excavation. All of the materials we've employed can be bought in 40 to 100 pound bags for a few dollars, or can be excavated from a garden or backyard for free (just be certain you don't import topsoil, and artifacts, from a real archaeological site). When employing different soil layers in your site to represent stratified deposits, make certain that the various media are different enough from each other in color and texture to stand out clearly to the students.

Artifacts and features can be represented by all kinds of objects in all kinds of ways. Toy soldiers, Lincoln Logs, building blocks, Leggos, broken flower pots, coins, glass beads, a miniature tea set, plastic arrowheads, Monopoly game pieces, scraps of leather, and many other small items can all be used to good effect. Just be careful that you don't bury anything with sharp edges in the site. Features, like wells or storage pits or grave shafts, can be represented by embedding a darker soil in a lighter one, or vice versa, in the appropriate size and shape.

In academic year 1995/1996, the gifted sixth grade class divided itself and the tabletop site into two sections, and each section designed a set of circumstances to be represented at the site for the other section of the class to reconstruct. The students made their own artifacts from plaster, paper, and other materials, and helped to design the portion of the site to be excavated by their colleagues in the other section. The aim here is to see if the competing sections can correctly deduce the behaviors represented by the artifacts and features they've left for each other. It's so far been a great success (but it ultimately depends on each student's ability to keep a secret, so the jury's still out)!

As you can see, there is a great deal of flexibility possible in the design of a tabletop site, and a variety of time 14 periods, depositional environments, and past human behavior can be represented. After your site is designed and built, the real fun (and work) of tabletop archaeology begins.

II. WHY ARE WE DOING THIS AND WHAT SHOULD WE EXPECT? BACKGROUND RESEARCH

Both simulated and real archaeology begin with background research, and this is arguably the most important part of any archaeological excavation. This is where your research design evolves, where your work plan (i.e. what holes to open and where) is dictated, and where your research questions are formulated. Since archaeological sites are non-renewable resources the importance of a well researched and well organized game plan for excavation can hardly be overestimated.

Step 1: Developing Context and Research Questions

Before anything else takes place, background information about the site should be developed and summarized. Tabletop archaeology is flexible, all kinds of sites and many levels of complexity are possible, so we'll leave the nuts and bolts of how you'll do this to you, but the kinds of information you'll need, and some suggestions for why you might want it and how to get it, are discussed below. You always begin with the environment, and the environment begins with interactions of rock (geology and soils) and water (climate) that have a profound influence on biology and evolution, including

human biology, human evolution, and human behavior, and on the physical disposition of archaeological sites.

Some of the basic questions you want to have answers for at the very beginning of a tabletop project include: What is the bedrock geology at, and in the vicinity of, the site (particularly, what kinds of landforms such as mountains, plateaus, etc.)?; What is the climate like?; How have the climate and geology interacted to form streams or other bodies of water, soils (are they water deposited alluvium, colluvial material that has washed onto the site from higher elevations, wind blown Loess soils, residuum that has formed in place, or man-made soils like artificial fill or mine tailings), and ecological communities. What effect has the environment had on the behavior and history of human populations in the area, and how have humans affected the environment?

In the real world all of this stuff is available in standard references in any library, and you can direct students to conduct library research if the information they'll need for their site is available there. If it's not, you can ask your students to compose a letter requesting some very specific background information about the environment in the vicinity of their site from a fictitious "expert". The "expert" (a cooperative archaeologist would be a good choice) will respond to their letter with a short report describing the basic environmental parameters at the site, but make the kids ask the right questions! In this way, they can learn something about the relationships between the environment and how humans behave, how archaeological sites form, and what to expect when you excavate them.

The next step in background research is developing an historical context. Basically, you proceed from the general to the specific. A general history of human occupation in the site vicinity should be developed either from published sources or from consultation with an "expert", then what is known about the age(s) and type(s) of occupations at your specific site should be summarized.

Based on the environmental and historic contexts, the students should develop research questions about their tabletop site, which might reasonably be answered through an archaeological excavation. Be prepared to be surprised here, in our experience the kids may very well ask questions you don't anticipate. The only real guidance we have here is to impress on them that we must be able to answer the questions through excavation at the site! Consequently, when they propose a research question, force them to suggest an excavation strategy and research methods that might reasonably answer that question. In this way, your workplan will evolve hand in hand with your research questions! Keep things simple and well within your time limits.

Step 2: Developing a Workplan

As discussed above, a good workplan is integrated into and grows from the project research questions. Typically, at least in the kinds of public archaeology or cultural resource management projects common in Pennsylvania, overall workplans are divided into three phases. The initial phase is reconnaissance. During this stage, the goal is to define the horizontal and vertical boundaries of the archaeological deposits. You typically do this by scattering a bunch of relatively small excavation units (squares, pits, or whatever you choose to call them) across the site in some kind of regular pattern. You dig these all the

way through the bottom of the archaeological deposits. This essentially tells you how big and how deep the site is.

The second phase assesses the importance of what you initially encountered in reconnaissance testing. Here you select several areas of the site that produced an appreciable amount of artifacts or features during the first phase, and open some larger and/or more excavation units in those areas. What you hope to do here is sample the range of variability in the archaeological deposits, and identify the parts of the site that appear to have the best potential to answer your research questions.

The final stage, or data recovery phase, of the workplan employs the largest excavation units in the parts of the site containing the most or best data. These are the truly large excavations you sometimes see on National Geographic specials.

The two most important things to remember here are: 1) the research questions guide the overall workplan and 2) each stage of work informs and guides the succeeding phase: common sense, really. Thorough background research and a well-conceived workplan based on that background work is not rocket science, and if the kids get that message, you're doing your job. Of course, once the preliminaries are complete, and we have a game plan, there remains the issue of exactly how you do all of this!

III. EXCAVATION: BASIC FIELD METHODS

by Joe Baker

Surveying, Mapping, and Record Keeping

Take it from an expert; all archaeological excavations are controlled chaos! Put another way, they are primarily exercises in organization and record keeping. So much goes on at any excavation, and so many different people are involved, and so much stuff comes out of the ground, and so many questions get asked simultaneously, that confusion is pretty much the normal state of affairs. Further complicating the situation, all of this confusion occurs within the restrictions of a budget, a time schedule, and in whatever weather Mother Nature happens to be dishing out at the moment. Consequently, the nuts and bolts of archaeological excavation primarily involves recording and organizing everything that happens in a systematic way.

Of course, there are almost as many systems as there are archaeologists. I will describe the system I'm most familiar with, which, in my experience, can be adapted to anything from the excavation of a tin can dump to a pyramid. Certain aspects of record keeping are generally assigned to specific people on the project, so as I describe the process, I'll try to describe the roles of the people charged with carrying it out. At South Middleton Township, we have found these assigned roles to be one of the most successful and popular aspects of tabletop archaeology. The students really seem to enjoy the special status that comes with being an "excavator" or "lab director" or "site supervisor" and, as in real archaeology, these roles lend some much needed structure and organization to what can easily become an unstructured and disorganized pursuit.

The first step in the excavation of any site is mapping the site. The ultimate responsibility for this and for most other aspects of site excavation belongs to the Principal Investigator (PI), but much of the work is delegated to the Surveying Crew. The PI will need to decide whether to map and excavate your site in English or metric measurements. At real archaeological sites, most prehistoric deposits are excavated in the metric system. This ensures comparability among site databases worldwide, and is very simple to use, as all dimensions are expressed in tens or multiples of ten. Historic archaeologists often work with English measurements, since the foundations, walls, and other features they excavate were often originally designed and built using the English system. In South Middleton Township, we use English measurements at our tabletop sites primarily because our box, and its' grid units were designed and built in the English system. While a real surveying crew makes extensive use of surveying equipment, field notebooks, and, these days, computers, a tabletop site crew should produce a map of the site as follows.

First, the grid should be reproduced on a large sheet of graph paper. A title, a north arrow, and an appropriate scale will need to be placed on the map legend. The resulting map should also be neatly labeled with any obvious above ground features ("Stream", "Stone Wall", etc.). The master site map is now ready to go. What you have produced is called a plan map, or site plan, and it depicts all of the grid units and obvious surface features of your tabletop site, to scale. At this point it does not depict elevation or contours, that is the plan map depicts your tabletop site in two dimensions. If you are working with students old enough or skilled enough to grasp the concept, you can produce a contour map of the site, a map that depicts differences in elevation and shows your site in 3 dimensions, quite readily. If you decide to do so, the assistance of an archaeologist or someone with some surveying experience would be very helpful. The method is fairly straightforward.

A series of strings should be stretched across the site to mark the basic grid of the site on the "ground surface". Next, a string with a line level should be stretched across the site from what we'll call the Zero elevation or datum, in our case one of the corners of the box railing. The surveying crew should then record the distance, maybe to the nearest quarter inch, from the strings to the Zero elevation line at each grid corner, and note these elevations on the map. To produce the contours, you simply play connect the dots with the elevation points on the map (this can be mildly complicated, and someone with some contour map experience can be very helpful), look at Figure 1.

While specific instructions are really beyond the scope of this guide, you should know that software (called Computer Aided Drafting or CAD software) is readily and cheaply available to produce a site map on a PC. If your students have access to and an aptitude for computer applications, then CAD mapping may be a good option.

Your site map, either plan or topographic, is used to track the progress of the excavation, depicting which units have been excavated, and the locations of buried features exposed during excavation. Since it is always one of the most heavily used and important resources in any archaeological excavation, the site map should be photocopied regularly as the project proceeds, and no one should be permitted to bring food or drink anywhere near it.

When the site has been mapped, and the research questions and workplan are in place, you are ready (finally) to begin digging. At a real excavation, the progress of the work is tracked and organized through the use of the project field book, unit forms, level forms, and feature forms. I'll discuss each in turn.

The field book is the primary record of each archaeological excavation. The site supervisor, who is immediately subordinate to the principal investigator and essentially runs the excavation on a day to day basis, is responsible for the field book. Each day he or she makes a series of entries into the book describing which excavation units are open, who is working in them, how deep they are, what they are finding, completion of or changes to the workplan, and, in fact, anything the site supervisor believes is important. There are no hard and fast rules for what goes into the field book, and the best rule of thumb is; if in doubt, write it down. The field book is the primary and most general record of the progress of the excavation.

The unit form is the primary and most general record of the excavation of a single excavation unit. It is the responsibility of the most senior crew member assigned to each particular unit. On it, he or she records the date, who is working in the unit, current depth of excavation, the color and depth of soil layers, artifacts and features encountered, and anything the crew member deems important. When the unit excavation has been completed, soil profiles of two of the unit walls (often the north and east wall) are sketched on the graph paper invariably located on the back of the unit form. Also on that graph paper is a sketch of the floor at the bottom of the excavation, noting any features, changes in soil color, etc. If multiple forms are necessary to record everything, it is the crew member's responsibility to be sure they are all properly labeled and stapled together. There is arguably no more common or disastrous boo-boo in archaeology than lost forms. Most units are excavated in levels, either natural (soil 25 levels) or arbitrary (standard thicknesses, for example one inch levels), and each level within a unit gets a level form. They are the responsibility of the crewmembers assigned to a particular level. They are a specific record of the stratigraphy, artifacts, and features encountered within each level. Like unit forms, they usually have graph paper on the back to draw profiles and a floor plan at the completion of each level.

If features are encountered, they are documented with feature forms. The feature form records a unique feature number, assigned by the principal investigator or the site supervisor, and the size, shape, and probable function of things like walls, fire pits, trash dumps, wells, human burials, etc. They are unique, because unlike unit and level forms, they can cut across unit and level boundaries. Consequently, while a unit or level form may document some portion of a particular feature that happens to occur within a given unit or level, the feature form describes the entire feature, regardless of where it is. Like the other forms, there is graph paper on the back to sketch the profile and plan of each feature. Completing feature forms is usually the responsibility of the site supervisor or the crew chief. The crew chief is the immediate subordinate of the site supervisor. The crew chief's duties include the assignment of crew responsibilities, maintenance and inventory of equipment, and collecting, checking, and organizing the forms (in consultation with someone called the lab director, discussed below) at the end of each work day. The crew chief usually has excavation duties, as well as supervisory and record keeping duties (and is often the busiest, most valuable, and grouchiest person on the site).

These days lots of on-site information gets recorded with cameras and video equipment, the maps are made on a computer, the unit, level, and feature forms and artifact inventory go directly onto a lap top computer operated on-site, and the whole works can be transmitted via phone lines directly to the principal investigator back at the office. Nonetheless, I can vouch that the older approach described above works like a charm, and that the new computerized approach is sometimes plagued by the same nightmares that plagued the older methods. When we implemented this system in academic year 1994/1995, we found that our sixth grade students had a very hard time with the forms, and many of them did not get filled out correctly or completely, resulting in much confusion at the end of the year. In 1995/1996 we reduced our level of record keeping to very simplified combination level/unit forms that seem to work much better. Depending on the age and aptitude of the students you work with, you should adjust the complexity of your forms. You should keep in mind that you want to accurately record the information, and, while you want to challenge the students, you don't want them to be bored, intimidated, or confused.

Excavation Techniques

All archaeological excavating techniques have the same goal, to carefully recover as much information from the archaeological deposits as possible. But since there are so many kinds of archaeological deposits, there are many different kinds of excavating techniques. Tools literally range from dental picks to diesel powered earthmovers; techniques vary from picking up and mapping arrowheads in a plowed farm field to guiding a ground penetrating radar machine across the back yard of a Colonial Period mansion. From a wide range of existing tools and techniques, and sometimes inventing new ones, the archaeologist chooses what is most appropriate to his or her research questions at his or her site.

Excavation techniques at most tabletop sites should be very simple. Plastic or metal tableware, especially the spoons and butter knives, will work well. They probably will need the following supplementary tools as well; one inch wide paint brushes for sweeping up units, a few small plastic spatulas to act as dustpans to go with the brushes, coffee cans to transport excavated soil, one foot rulers, some strings with weights on the ends and/or a couple of foot long levels to check to see if the walls of the excavation units are plumb, paper bags for artifact bags, and sharpies or crayons to label the bags. You will also need to construct a few very small screens out of 1/4 or 1/8 inch hardware cloth, or even window screen. We were able to line embroidery hoops with window screen, and they worked splendidly. At the end of each excavation session, the crew chief is responsible for collecting and inventorying the tools!

While excavation proceeds, you have to designate a place to screen soil, by unit and level, called the backdirt pile, somewhere off-site. You also need a place to organize, count, and identify the artifacts, called the field lab, and the field lab should always be staffed by at least one person, called the lab director, a sort of crew chief whose sole responsibility is dealing with the artifacts and the forms (lab directors are often strange, solitary, and extremely bright, a real weirdo subspecialty). The lab director, and usually a crew member or two, are responsible for counting and identifying artifacts, and adding that information to the unit, level, and sometimes, feature forms as they come in.

Typically, work proceeds as follows. After consulting with the principal investigator, the site supervisor decides to open a unit, let's say B/2. The crew chief assigns two people to unit B/2, one to dig and one to screen soil, bag artifacts and take them to the field lab, and generally keep things organized. The crewmember who's digging carefully removes a level of soil stopping to map in large artifacts and features, and scooping out soil to the screener, who screens the soil and removes and bags anything the excavator missed. Large artifacts and features are left in place (in-situ) on pedestals of soil, till the bottom of the level is reached and a smooth level floor and smooth plumb walls are produced. When the level is complete, the digger and screener cooperate in the preparation of profiles, floor plans, and forms. Before they remove any in-situ artifacts, or start digging into a feature, they call in the crew chief and maybe the site supervisor to check their work. The crew members follow their supervisor's instructions, either removing and bagging in situ artifacts and/or starting to dig a feature, or not, complete the level form and turn it in to the lab with the artifact bag from that level, and begin the next level. When excavation in a unit has been completed, the crewmembers complete their forms and accompanying profiles and floor plans, and submit them to the crew chief, who checks the forms for accuracy, and puts the form in its proper place. The crewmembers are reassigned, and work on the site proceeds. By the way, at a real site the holes are always backfilled at the end of a project, with modern artifacts dropped in the holes as a sign to future excavators that a particular area was already visited by archaeologists. The surface is replanted, and in a few years, nobody will know you were there.

And that's how it works at most real archaeological sites. In fact, the only methodological difference I can think of is the photography that takes place at most sites at the completion of each level and unit. We would suggest that you refine and test these excavation methods during the construction of your tabletop site, and define your own roles (you'll most likely wind up as the principal investigator) and the roles of the students, and firm up a final "game plan" for the excavation phase of this project well before you cut the kids loose. The results of your tabletop excavations will be the same results yielded by all archaeological excavations; a big, relatively organized pile of notes, forms, lists, sketches, and artifacts. This is the stuff that will ultimately answer your research questions.

IV. ANALYSIS: INTERPRETING THE RESULTS

The excavation notes and records and map and sketches all form a basic inventory of what you found. In the real world this stuff all gets entered into a computerized database, and if that is possible and appropriate with your students, you should by all means do so. If that's not possible, the same data can be organized with a series of lists. However it's done, a master inventory or catalogue of the artifacts and information recovered from the site must be created (the lab director should be working on this while the excavation is actually going on, and may, in fact, be entering data into a data base while the excavation is being conducted). When it is, it's time to start answering the research questions.

Simply put, analysis proceeds by restating the research questions, then devising ways to answer those questions using the data at hand. The horizontal and vertical distribution of artifacts and features, their relative density and ages, and their spatial and chronological relationships to each other will provide the answers to your questions.

When you have addressed all of your research questions in this way, you then have a realistic picture of just how successful you were. Don't be surprised if you can't answer all of the questions. That's ok, that's science, negative data is just as important in it's own way as clear solid answers. If questions are not adequately answered, it's very important for the young archaeologists at your tabletop site to understand why and to make realistic suggestions for research and fieldwork at the site that would address such questions. Falling down and getting up with a better idea is a lesson that goes far beyond archaeology!

The final phase of an excavation is the preparation of a report.

V. REPORTING THE RESULTS

If you've done all of the preceding work correctly and documented it carefully, the report is, essentially, already written! The basic organization includes: an introduction describing the project goals and achievements; a summary of the background research; the research questions; the workplan; a description of the fieldwork and it's results; the results of analysis; a conclusion in which the research questions are answered and/or new ones are proposed.

That's basically it, but here are a few things to keep in mind.

- Each section of the report should clearly relate to the research questions. Keep hammering this home, because, after all, the point of all of this, especially for students, is what did you learn!?

- The illustrations in a final report (maps, profiles, artifact illustrations) are an important component of any final report, and contribute a great deal both technically and aesthetically. Spend some time on them.

- Consider assigning "specialists" or groups of "specialists" to certain aspects of the analysis and report. For example, a good art student or students can be assigned to the maps and illustrations. Your best math students can help with the analyses of artifact numbers and densities. Good language arts scholars should concentrate their efforts on the introduction, and on editing.

- Acknowledge everyone's contributions somewhere in the report. This is only fair, and good for the ego!

AFTERWARD

And there you have it! A successful tabletop archaeology program from beginning to end. Of course it's more complicated than we've described it, but we didn't want to be too specific in our suggestions. Ultimately, the success of your attempts at tabletop archaeology in your own school district will depend on how you adapt the approach to your own specific situation.

We've appended a variety of materials to this guide, including examples of forms, lesson plans, our report on the 1994/1995 tabletop excavation in Boiling Springs, and a box design. We've also

included an annotated bibliography of references and sources of information that we've found very helpful. Please feel free to use these items, or to adapt and change them to suit your particular needs.

Acknowledgements by Joe Baker

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