Tel Dor

Staff Manual

2008

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CHAPTER 1

OBJECTIVES AND DEFINITIONS

Contents:

I. OBJECTIVES

Three objectives govern the design of the *Tel Dor Staff Manual*.

A. LOCUS SYSTEM. The *Staff Manual* introduces and explains the principles of the locus system—the excavation and registration system used at Dor (Chapters 2-3), the forms and records involved (chapter 7) and the software needed to fill them (appendices). As a practical guide to *staff* it is taken for granted that readers possess some firsthand experience of archaeological excavation methods; but it assumes they lack familiarity with the approach employed at Dor.

B. STAFF RESPONSIBILITIES. The *Staff Manual* advises staff personnel on their duties (Chapters 4-6). The bulk of the *Staff Manual* consists of a handbook for unit supervisors and recorders on how to record the excavation, shorter sections are devoted to other functionaries (architect/draftspersons, photographer, area supervisors, pottery readers etc.).

C. ANALYSIS AND REPORTING. The *Staff Manual* provides a general background to post-excavation analysis as practiced at Dor (Chapter 8) and the types of preliminary, interim and final reports produced (Chapter 9). These are not meant to be exhaustive (or even introductory) guides on how to analyze stratigraphy, pottery, or anything else – but to provide field-staff members some idea of the kind of information such analysis requires them to produce, and to provide the readers of such reports some introduction as to how they were produced, what they might expect to find in them, and where.

II. SOME HISTORY

Dor is an old excavation – it is one of the longest continuously-run research projects in the Near East. When Ephraim Stern started excavating a coastal site in 1980, with a staff of ten, he had some fairly specific research goals and a ten-year project in mind. The site soon proved itself to be multi-faceted, rich in finds and full of surprises, but recalcitrant in producing 'simple answers to simple questions'. When the ten-year mark was passed, we realized we had just gotten to the point of knowing which questions might profitably be asked of it. Through the excavation seasons the staff grew, new expertise was sought (and sometimes found), new methodologies experimented-with, new research goals were added. Several books and dissertations and scores of articles (see bibliography) solved some questions and posed many new ones. Accumulated experience produced local lore of how-to-do-what which had to be taught to neophytes, together with a lot of completely useless old-time-stories and trivia. Throughout it all the holes in the ground got bigger and deeper, and the sacred relics and traditions of the Dor tribe had to be continuously referred-to, cared-for and replenished – rows of containers with old potsherds, various finds and samples scattered in a dozen storage spaces, museums and laboratories across the globe, and kilos of paper – soon to be appended by gigas of bytes. Moreover, there is no end in sight! The Dor project is evolving

(or, at least attempting to evolve) into a permanent institution – devoted to applying divergent (and continuously changing) intellectual perceptions of the past to its vast data-bases; developing and testing new archaeological methods; training students in the excavation of complex sites; and disseminating the rich heritage of the site within the different communities which share it.

The composition of the 'Dor tribe' soon became singular, too. Dor is one of surprisingly few sites in the Levant where both 'early' (i.e. Bronze and Iron Age) and 'late' (Classical to Roman) strata are excavated by the same team. This necessitated at the outset the collaboration of two of the major strands in Near-eastern archaeology, which have different perspectives, pace, and methodologies. It soon became obvious that the main importance of a port and commercial entrêpot was for the study of East-West interactions, and expertise in the archaeology of Cyprus, Greece, and regions further west was needed. The fact that a professional community was thus formed, in which different 'archaeologies' were able to negotiate without one group's research goals, methodology or ideology overwhelming the rest brought in new team members to the fold – ones whose interest is primarily tied to this particular site, but for whom the site and team provide a useful platform. While all of this was taking place, the intellectual backdrop was changing – archaeological fashion had gone through two 'revolutions' – from 'normative' / 'culture history' to 'processual' and hence to 'symbolic' / 'structural' / 'contextual'. Dor has managed to be one of the few projects were disciples of all of these 'archaeologies' had managed to work together in concert, and proudly presents itself as an 'intra-disciplinary' project.

Throughout all of this, recording and documentation systems were evolving. The project began in registrational pre-history. Before internet, before personal computers, before electronic locational-measurement, before photo-copying were available to archaeologists. The excavation method and registration system inherited at the beginning of the project was a fairly straightforward version of the 'Israeli' excavation method of the 1970's (see chapter 8 for history of archaeological technique in the Levant), and the forms were taken from Amihai Mazar's Tel Batash excavation. While the basic principles and units (the grid, the area, the locus, the basket) have stayed the same throughout, formats and procedures have evolved through successive stages in a particularly 'Dorian' direction. The original forms and excavation techniques can only vaguely be glimpsed in the current ones, and one would be hard put to classify the current 'Dor method' in any general 'mode' or 'school'. New forms were introduced as early as 1981, and again in 1989 and 2002/3, new fields and codes were added and new rules as to how to fill existing fields and use the codes. New field procedures introduced. 'Stratigraphy forums' and 'locus genealogies' were first introduced in 1985, but not consistently applied till 1990. The latter were not computerized till 2000. Top plans began to be Xeroxed from the architect's master top-plan rather than laboriously re-sketched every day in the 80's; and downloaded from a digital master as of 2003. Digital photography replaced film in 2000. In 2003 we first experimented with vectorizing the architectural drawings to make them CAD – amenable, and this system was first put to work in 2004. Personal computers first became integral to the registration system in 1989, when Jeff Zorn built the first database using "FilePro" database on a DOS operating system. This was replaced by a Microsoft Access system designed by Sveta Matskevich in 1997, though it wasn't till 2000 that enough computers were available on-camp to make it mandatory for all locus cards to be input during the season. In 2003 the system was augmented by the introduction of a data base for graphics (digital photos, CAD drawings, digital top-plans and sketches, genealogies). Currently we are in the process of migrating the entire system to a multi-user web-based platform.

Although this manual presents the registration system at its current state of evolution, staff members will have to, on occasion, work with older records. It has not been possible, at least thus far, to backtrack and update all the records. Thus staff need to be aware of the history of the recording system and occasionally consult hand-written records or ones coded according to old standards.

III. THE DOR PROJECT: STRUCTURE AND ORGANIZATION

The infrastructure needed to exploit the different opportunities offered by an extensive excavation of a major tell is rather complex, and Dor is probably one of the most complex of the lot. Success depends on a rather diverse group of professionals efficiently working together. The challenge is to maintain coherency while not sacrificing the legitimate research concerns of the participants.

The project is set up as a broad consortium of nearly-peer researchers and students, encompassing an **executive** formation which sets up the strategic agenda for the project and provide the wherewithal for its existence, an **operational** formation (largely active during the excavation season) to make tactical decisions on the way to these strategic goals, and lateral **professional forums** to address specific research interests. Each member of the field staff is part of the operational structure, and some are in the executive structure as well. Each staff member also participates in one or [usually] more [but never all!!] of the professional forums.

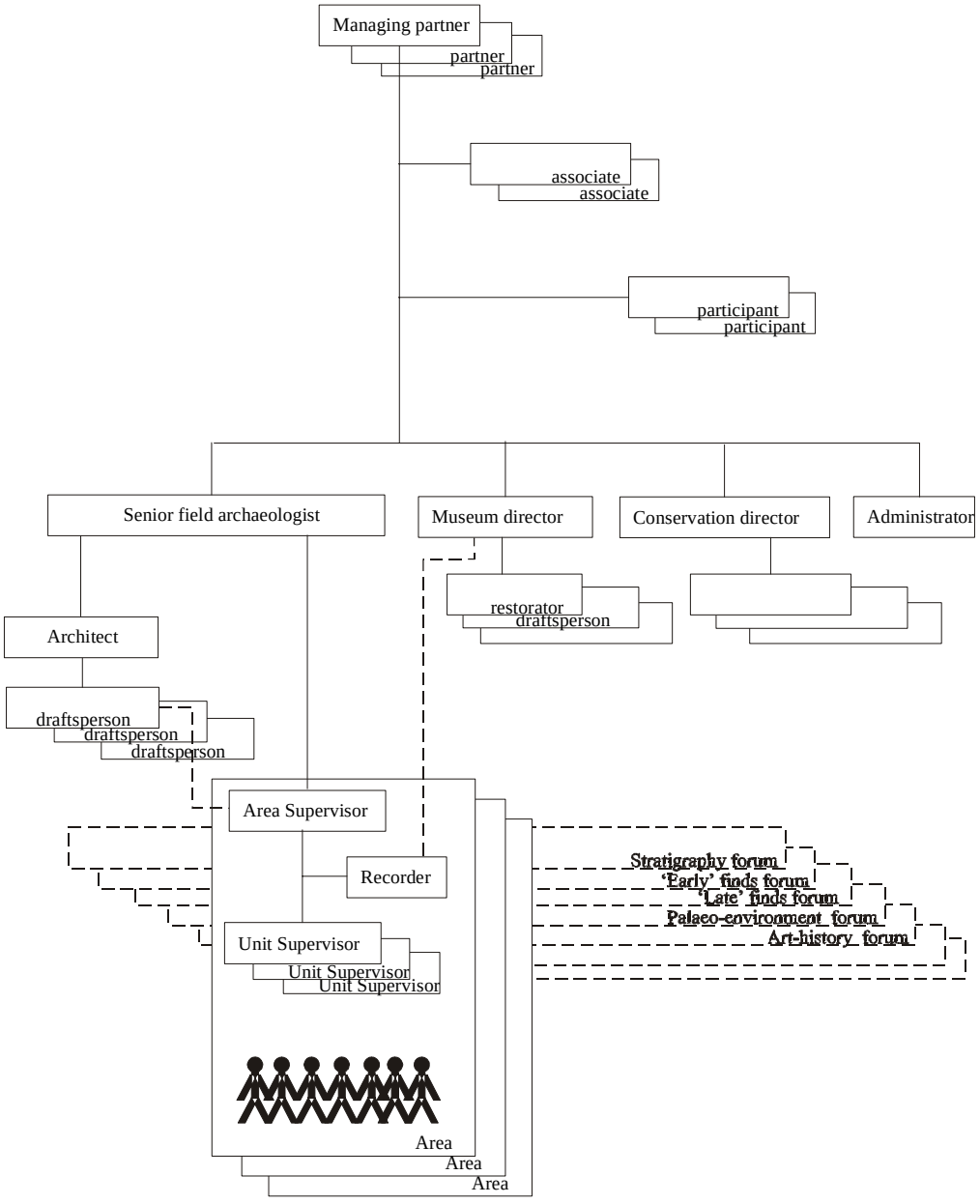


FIGURE 1:1
ORGANIZATIONAL CHART OF THE DOR CONSORTIUM

A. **THE EXECUTIVE STRUCTURE** consists at Dor of 'partners' and 'associates' – referred-to collectively in this manual as 'directors' or 'group directors'. The difference between the two sub-groups are that partners (and their institutions) are named on the excavation permit and are thus formally responsible for the safe and legal management of the operation. One of the partners serves as the **field director** of the excavation and is responsible towards the authorities and the rest of the directors for running the operative structure (see below) and the consortium's finances. The directors decide together on the goals of the season, on finances, and on allocation of manpower. Each one of the group directors is the representative of an institution and is responsible for his or her institution's students. **Affiliates** are persons entrusted with running certain parts of the operation on a temporary basis. Typically they are students of partners or associates, who are given responsibilities during the season (e.g. to supervise an area) or are assigned a topic for publication (e.g. as a thesis or a dissertation). They may also be professionals brought from outside the consortium for a specific purpose or area of expertise.

B. At the head of the **OPERATIVE STRUCTURE** is field director, who is entrusted by the partners and associates to carry out the strategies decided-on by the consortium. Under the managing partner are the **Senior Field Archaeologist** who is responsible for the conduct of operations on the *tell*. **Area supervisors** and their staff answer to the senior field archaeologist for the professional maintenance of their areas. The **Lab / Museum director / Registrar** is responsible with his/her staff for the basic processing of the finds once they have left the *tell*. The area **Recorders** hold an intermediate position - on the one hand they are subordinate to the area supervisor for recording his / her finds, and on the other they are the deputies of the registrar on the *tell*. In addition to these two hierarchies I propose a new function: The **Director of Conservation** is responsible for formulating and implementing a plan for the preservation, conservation, and exposition of the cultural heritage of the site the **Site Architect** and his staff who are responsible for drawing and maintaining the site's plans. The **Site Photographer** is responsible for taking photographs in the field and museum. Other operative arms under the managing partner will be the administrator and camp-master (if the two functions are not performed by the same person).

C. **Professional Forums**: In a large and multi-faceted research project, concentrated in a short intensive season, a centralized structure, in which one person (the director) or more is involved with every detail, gets to be inefficient. To be able to achieve several tasks simultaneously, the staff at Dor organized into workgroups, henceforward called **forums**. Any group of staff members which holds regular meetings or consultations concerned with specific aspects of the excavation or analysis is a forum.

Some forums are permanent fixtures (e.g. The pottery forums), others are formed *ad hoc* to address a specific research problem (e.g. the absolute chronology of the Iron Age strata). Some are active only during the excavation season (e.g. the field-school) and others throughout the year (e.g. publication forums). Forums will tend to cross-cut the hierarchal operative structure (e.g. once a decision on a sampling protocol is reached, the zooarchaeologist and his / her assistants will oversee its implementation in every area). During the season forums will usually meet in the afternoon, but sometimes in the field, for the purpose of mutual feedback (e.g. persons responsible for the 'early' or 'late' pottery readings will make regular visits to each relevant excavation area, and confer with the area supervisors about each context which has been [or is about to be] 'read'). These forum meetings will, as far as is practicable, be open to interested staff, students and volunteers..

The most important forums have already come into existence in the previous bouts of excavation:

Pottery forums - are responsible during the season for twice-weekly 'reading' the pottery of each area. In these 'readings' a preliminary assessment of the period and the cleanliness of the assemblage, and a decision as to further processing are made. The

forum chairs ('pottery experts') will be responsible for that further processing after the season, and eventual publication of the pottery (personally or by appointment of students / outside experts). We currently have two separate forums for 'early' (Bronze and Iron Age) and 'late' (Persian, Hellenistic, Roman) pottery.
The **stratigraphy forum** holds one session per week for each area, in which the staff meet with the stratigrapher and the architect, review the excavation and registration of each feature in the field, and do some preliminary phasing. The same forum will be responsible, during the inter-season, to continue the phasing and publication of the stratigraphy and architecture.

The **archaeological science** or '**eco-fact**' forum consists of zoo-archaeologists, micro-morphologist, and other archaeological science experts. This forum deals with the 'materials for analysis' category: work out sampling strategies, sort out the samples and obtain the necessary information about them from the field-staff, do preliminary on-site analysis, and decide what type of further analysis will be done (and by whom). The Dor project adheres to the 'hands-on' school of archaeological science. Scientists do not sit in the lab and wait for samples collected by archaeologists to come in. They are participants in the excavation and maintain a presence in the field throughout most of the excavation season – taking their samples themselves and/or instructing field staff as to how they should be taken.

Other forums include the **field school** forum, which will plan, schedule, and deliver the lecture program[s], the **computer forum** which will include the data base administrator, the homepage administrator, and all persons involved in the registration of data.

To make things even more complicated – many on the Tel Dor staff have more than one hat. Most group directors also have a place in the organizational structure during the season – they may be area supervisors (in this manual we often refer to the 'area supervisor or director' since they may, or may not, be the same person); or they may chair a professional forum, or be active in some other way. We have had other cases of cross-cutting responsibilities – for instance a zoo-archaeologist who is also some area's recorder, an architectural draftsman doubling as data base administrator, or a pottery expert who also supervises a unit.

III. DEFINITIONS

A. TELL. Both natural and cultural processes and events contribute to the character, stratification, and integrity of all archaeological sites, from a simple campsite to large, complex sites like tells. Tells are created and formed primarily by cultural events (discard, human digging, filling, trampling, and construction). Natural processes or events (erosion, earthquakes, and animal disturbances) can and do displace cultural material and alter site integrity.

Tells are among the most highly complex archaeological sites. They are earth mounds that contain the material debris left behind after centuries of urban life. They are built up through successive cycles of construction, occupation, and destruction. But these events usually do not occur uniformly across the site; they vary from area to area or even from room to room in a single house. The result is the accumulation of an often perplexing complex of multilinear sequences of stratification. Each of these events produces the deposition of at least one stratigraphic component (a debris layer or a feature), but usually many more. A construction-to-destruction cycle can intrude on and disturb earlier deposits, confusing the stratification of the tell even more.

B. AREA. The excavation strategy employed at Dor is the exposure of large areas of the ancient city. By definition, an area comprises any number of adjacent 5-x-5-m units that are excavated under an area supervisor and recorded by a single recorder (Stern et al. 1995a). Areas at Dor are identified by a capital letter (as in Area A, Area B, and Area C), which simply indicates the chronological order in which they were opened (Fig. 1). Areas are opened to investigate specific aspects of ancient Dor: Area D was opened to explore Dor's southern harbor; Areas F and H were opened to ascertain how the northern and

southern temple complexes, respectively, related to the ancient harbor town. Historically, large areas have been subdivided. When subareas are created they are designated with the addition of an Arabic numeral (like Area D1 or Area D2). The subareas have usually been organized around a single architectural unit or *insula*. For example, Area D1 refers to excavation in and around a large public building or storehouse called "the Persian palace." Depending on the size of the subarea, each subarea might have its own area supervisor and recorder.

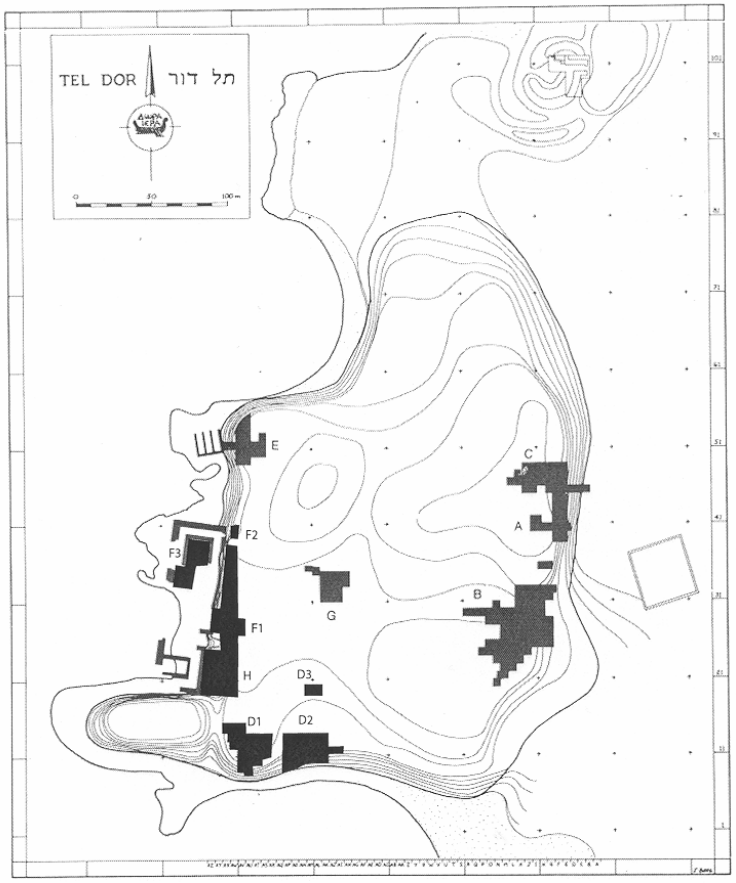


FIGURE 1:2
PLAN VIEW OF TEL DOR SHOWING THE EXCAVATED AREAS AS OF 2000

C. EXCAVATION UNIT (OR SQUARE). The excavation unit usually consists of a single 5-x-5-m grid unit in an area. This is especially the practice at Dor at the beginning of a new excavation season, when new units are opened from ground surface. At the beginning, the entire 5-x-5-m area is not excavated. Each unit has a 20-cm border on all sides, which creates a 40-cm-wide balk (a wall of unexcavated material) between two adjacent units. The actual area excavated is 4.6 m^2. As excavation progresses, balks are removed and the area is opened up. Then, the exposed architectural features (a room in a house or an industrial work area, for example) usually determine the limits of an excavation unit.

Excavation units are designated by their location on the site grid. The current grid at Dor (Stern et al. 1995a) is constructed of two sets of parallel lines that are separated by 5 m intervals. One set of parallel lines is laid out east to west and the other north to south. The result is a grid of 5-x-5-m squares. The east-west intervals are designated with letters (0-5 m is A, 5-10 m is B, and so on). When the letter Z is reached, double letters (as in AA or AB) are used for the continuation of the intervals. The north-south intervals are designated with numbers (0-5 m is 1, 5-10 m is 2, and so on). In this way, each 5-x-5-m grid square is given a unique designation consisting of a letter or double letter and a

CHAPTER 2

THE LOCUS SYSTEM

Contents:

I. INTRODUCTION

Like most tells, Tel Dor comprises a highly complex sequence of structural and occupational debris, which was deposited during nearly two millennia of continuous occupation. Structures were built of mud brick, stone, and cement which along with organic refuse contribute the greater part of the tell's makeup (Rosen 1986). During its formation, the tell was subject to cultural and natural modifications (Schiffer 1987). Post-depositional alterations include the loss of the western and southern edges of the tell due to erosion from fluctuations in the level of the Mediterranean Sea, agricultural cultivation, the continuous looting of the site for worked stone, and even previous excavations (Stern et al. 1995a).

Fundamental to an understanding of the formation processes, cultural activities and historical events represented in the archaeological record at Dor is the establishment of a stratigraphic sequence. In an effort to reconstruct the depositional history of the site, the excavator attempts to.assess and record the temporal relations of each deposit being excavated to all of the deposits around it. In any sequence of deposits or features, a chronologically later one will "cover" or "cut" a chronologically earlier one (see further discussion in section IV). Careful observation, excavation, and recording of each deposit provide the excavator the best opportunity for offering a reasonable explanation for how the site was formed. Once the stratigraphic sequence has been elucidated, one can draw a picture of what the site may have looked like at any single point in time, from which higher-level processes (e.g. trajectories in the material culture over space and/or time) may be imputed.

For this reason, each deposit or feature is given equal consideration with reference to the stratigraphic sequence. No distinction is made at Dor between architectural elements (walls, etc.), features (installations, pits, etc.), or debris layers. Each deposit or feature is excavated separately and characterized by its physical and spatial attributes, stratigraphic relations, and artifact assemblages.

The locus system was devised as a way to control the removal of each archaeological deposit or feature and accurately record it. It provides a method for separating individual deposits and features into loci and recording their attributes, relations, and artifacts. Loci then become the basic units used to build up stratigraphical schemes that describe the tell's formation. This chapter provides an introduction to the basic elements of the locus system. In Chapter 4, which discusses the responsibilities of the unit supervisor, more attention will be devoted to recording the locus.

To understand what a 'locus' is you need to keep in mind three different views, or *models* of the tell – two of which have already been hinted-at above:

a) The *depositional* model. This view consists of looking at the tell as a pile of debris, consisting of *depositional events* (e.g. the building of a wall, the digging of a pit, the accumulation of dung in an animal-pen, the collapse of a roof onto the floor). Each such event leaves its mark on the tell. In this manual we will call such a unit 'a deposit'.
b) The *occupational* or *behavioral* or *functional* or *historical* view sees the archaeological record as a sequence of human or natural actions or activities and (natural or cultural) events. Occupational units may consist e.g. of 'a house', 'an animal pen' events might be 'a fire' or 'the building of a palace'. An occupational or behavioral or functional unit will be referred-to as *a feature*.

What is important to realize is that we cannot observe either deposits or features directly. Faced with a *'layer of soft gray dirt with many small stones and sherds, gradually becoming redder and mudbricky towards the west*' one has no way of *knowing* whether one is looking at [the result of] a single depositional event or several different ones – much less [the result of] a specific historical event. We can only offer guesses (good, or bad as the case may be) as to what historical and depositional events may have caused the phenomena we observe. Thus we are reduced to:

c) The recorder's model of the tell (or the 'Lego-block' view) in which the [excavated portion of] the site is divided into a set of *registration units*. The basic unit – a single 'lego block' at Dor is called 'a locus' (pl. loci). This division needs to be *complete* and *discrete* i.e. every [excavated] volume belongs to a locus and to one locus only. A locus must also be *contiguous* (i.e. can be described as a simple [polyhedral] shape).

Registration units come in two kinds: *Arbitrary units* (e.g. a 50 cm X 50 cm X 5 cm spit of dirt) or *Stratigraphic units* which represent [the excavator's best guess as to] depositional or occupational units.

The locus at Dor is a unit of the second kind. It usually represents [what the excavator thinks is] 'a deposit' (with several provisos, to be detailed below). Other types of registration units at Dor – the Area and the grid unit which contain the locus – are arbitrary. The 'basket' (see below) is usually an arbitrary sub-division of the locus.

As you work the locus system you continually juggle the other two views in mind. When considering any spatial unit you need to continually ask yourself:

a) 'How did this material get deposited?'
b) 'What did people do here? What was the function of this space?'
c) 'What is the depositional / temporal / functional relationship between this unit and the ones around it?
d) How do I describe a) b) and c) using a single set of units – loci.

The basic logic for doing that is:

a) If two volumes (of dirt or stones) are distinctly different and you [or the supervisory hierarchy above you] think they represent two different depositional actions – they need two different locus IDs.
b) If two spaces were – in the best judgment of yourself or the supervisory hierarchy above you – used differently (e.g. they are two different rooms, one is a floor and the other a hearth etc.) – they need distinct ID's.
c) If two volumes / spaces are non-contiguous – even if they represent a single depositional / occupational event (e.g. two parts of a fill but by a later foundation) they need separate locus IDs.
d) If a volume of dirt has an unwieldy, hard-to-describe shape (e.g. a violin-shaped-diagonally-cut pit) you might consider splitting it into two or more loci, to simplify its description.

There is no single 'correct' solution as to how a volume of deposits should be split into loci (there are manifestly incorrect ones, though…). Within what you, with the naked eye, might consider a 'homogenous layer' the micro-morphologist will discern many sub-layers. There are whole hierarchies of 'features': a house is a feature with several rooms (each of which is a feature), divided by walls (ditto), in which might be various installations (tabuns, silos, hearths, activity-areas) which are also features. Naturally considerations such as c) above are to an extent a matter of individual decision.

Remember that the locus is basically a *heuristic descriptive device* meant to simplify the complex stratification of the tell to comprehensive and comprehensible units. The locus system was designed with three purposes in mind:

a) To provide a language by which deposits and features can be described and referred-to.
b) To enable the construction of a *stratigraphic scheme* (see discussion of *relations* between loci in section IV and chapter 7).
c) To enable the segregation of *contexts* and the 'clean' isolation of *assemblages* of artifacts and ecofacts therein (see section III.B).

In the rest of this chapter you will see practical examples of how loci should be defined and how to avoid some of the pitfalls of mis-defining them.

II. THE LOCUS

A. **DEFINITION**. A locus usually consists of a distinct homogeneous deposit or feature that occupies a continuous volume in an excavation unit. So a wall, a pit, or a construction fill are all equally considered loci. In the field, loci are distinguished normally on the basis of observable differences in their physical properties. Many different types of loci can be encountered during excavation. Some of the more common include

1. **Layers** of sediment and debris, including construction fills and floor deposits;

2. **Walls** of various types of construction.

3. **Negative features** of various types, such as wall foundation trenches, pits, and robber trenches.

4. The makeup of **floors** and pavements.

5. **Installations**, such as drains, sumps, and *tabuns*.

6. **Burials**.

7. Other discrete **deposits**, such as piles of murex shells or layers of storage jar sherds.

B. EXCEPTIONS TO THE RULE

1. A locus may comprise more than one deposit in cases where the individual deposits clearly form parts of a single feature. The walls, floor, capstones, and contents of a small drain are ordinarily not divided into separate loci. If any artifacts are found that are not part of the contents of the drain (e.g. in the wall-makeup, in a crack between the capstone, embedded in the floor) they should be characterized by different *basket IDs* (see section V. C. below). The makeup of a thin floor that contains few or no artifacts is may be combined with the underlying

fill into a single locus. However, a substantial floor makeup that contains artifacts will get a separate locus number.

2. Individual deposits are sometimes divided into more than one locus for technical reasons. A large Roman construction fill that is encountered in several excavation units will have a different locus number in each unit to maintain a unit's distinct sequence of loci (see the discussion on modularity in chapter 6). A fill that was deposited on top of a wall and spills over both sides of the wall will be separated into different loci for stratigraphic and descriptive purposes. As will be discussed later, the sequences of deposits on either side of a wall are kept distinct from each other. To maintain this separation, separate loci are opened on either side of the wall, even if it is clear that they belong to the same depositional act. Whenever you divide a single deposit for technical reasons, make sure to note in all relevant records that the two (or more) loci are in fact the same deposit / feature.

3. Unlike sediment and debris layers encountered in more than one excavation unit, multiple locus numbers are not assigned to single architectural elements or features. When a wall or other feature initially appears in an excavation unit, it is assigned a locus number. If the same wall or feature is subsequently uncovered in another unit, the wall or feature retains its original number. Architectural features, especially walls, are used to correlate the sequences of loci in adjacent excavation units to form a common stratigraphic scheme for an area.

C. RELATIONS. Since a locus represents a cultural deposit, which is understood as an intentional human act in time, or a natural event in time, it has temporal relations to other loci. The construction of a later wall might cut through an earlier wall, a pit might be dug through a floor, or a debris layer might be dumped on top of another layer. Within any sequence of loci, the physical relations are indicators of the chronological order in which the loci were deposited. Section IV will deal with relations in detail.

D. LOCUS IDS. To maintain the integrity of the stratigraphical sequence, each locus occupies an exclusive place within the sequence of loci. This is guaranteed by assigning every locus a unique identifier. In the assignment of locus numbers, a distinction is made for wall numbers, which are introduced by the letter W; the letter L precedes all other locus numbers.

Each locus number consists of two part separated by a dash. The first part is a prefix which indicates the season (two last digits: "05" for 2005) and area (capital letter and optionally number: "G", "D1"). The second part is a sequential three-digit number taken from a reserve of unused numbers called a "bank". At the beginning of the season each area gets a bank (usually from 001 to 999, but if the excavated area is divided between several area (unit) supervisors, the bank can be arbitrary subdivided). The combination of a season, an area and sequential number gives a unique locus ID (for example, "L05D1-071").

Old locus numbers (in 1980 – 2000) were purely numeric-sequential (with each area getting its own 'bank' of numbers every season). When the overall number of loci at the excavation approached a million, this became unwieldy. To know what area and season a locus belongs to, one would have to consult a table. If you are working in an area which still has features (e.g. walls) excavated in the 20th century, or you are processing old data, you might run into such numbers. They are still deemed 'legal tender' by the current registration system.

To ensure that each locus ID is used just once, it is the responsibility of a single person in the area—either the area supervisor or the recorder—to assign locus numbers.

III. Excavating the Locus

For the locus system to be effective, careful attention must be given to defining and maintaining the cleanliness of each locus during the excavation. Only by careful identification of the limits of each locus can an accurate assessment be made of its relations to the surrounding loci. Proper excavation techniques are used to define each locus, so that materials do not intermix and loci do not lose their stratigraphical value.

A. OPENING AND CLOSING LOCI. A locus is opened whenever a new deposit or feature is encountered during excavation. Whenever a new locus is opened, all of the loci that lie immediately above it are closed. Although explicit, objective criteria do not exist to cover every situation encountered in the field, there are observable indicators of the presence of a new deposit or feature.

1. Sediment **color**. One of the most noticeable attributes of deposits is color. Differences in the original materials that were deposited, as well as different physical and chemical conditions at the site of deposition.will cause different deposits to appear in different colors. Colors can be tricky, though, as they will change with the drying of the sediment and the position of the sun. For this reason, colors should be compared only when both surfaces are freshly excavated and scraped clean and [if possible] in indirect light. Where tracing slight color differences is of utmost importance (e.g. to note the '*fooga*' lines – the interfaces between bricks) it is sometimes useful to trace them in the early morning or come up the tell on late afternoon – and mark the lines with small nails and/or string for reference – because they will 'wash out' once the sun is up and the sediment dries and cracks. Another trick which often helps to 'bring out' hidden colors in sediment is to gently wet them (with a spritzer bottle or by flicking water drops with a brush).

2. Sediment **texture**. Texture refers to the size, shape, sorting, and orientation of particles. Texture also refers to the type and concentration of artifact accumulations. A rubble pile and a pit filled with storage jar sherds can be easily differentiated by texture.

3. Sediment **compaction**. Burial causes compaction. The presence or absence of underlying structures causes differential compaction. For example, a deposit overlying the top of a wall will compact differently directly above the wall than beside it. Cutting features (e.g., pits and foundation trenches) remove compacted deposits, which are then replaced with less compacted material when the feature is filled. The interfaces between different deposits are often less compacted than the deposits themselves – enabling the precise removal of the overlying deposit by 'popping it off' with a trowel or by 'tapping it' with the blunt side of the patish. Like color, the compaction of materials will change once the weight of overlying materials is removed and/or they are exposed to heat and humidity. Mudbricks, which are often uniformly dense and hard-packed when first exposed, often crack along the *fooga* lines after a few days – thus revealing their structure.

4. **Walls**: "three stones (or bricks) in a row make a wall (unless later proven not to do so)" Linear or circular formations of stone or brick are usually easy to identify and trace. Things can get tricky, though, when a rubble or mud-brick wall gets buried in its own collapse – initially appearing as an irregular strip of rubble or mud-brick material. For this reason you should not remove rubble / fallen bricks as you excavate – even if you think they are random. Excavate around the rubble pile and (if possible) fully expose it before opening a new locus for removal of rubble. (Assuming that the pile collapsed before the sediment above and around

it was deposited, this is merely an application of the LIFO principle). When removing the rubble / fallen brick pile do so *from the side* and not the top. The *face* of the wall is easier to detect.

5. Some **floors**, like pavements or thick plaster floors, are well constructed and easily identified. Others are indicated only by a change in compaction (from trampling) by a thin surface of distinct color (derived from organics and plasters). Such floors can be identified by the ability to "pop off" with a trowel the material lying on the floor.

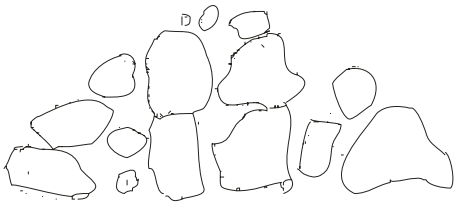


Figure 2:1 Wall hidden by its own collapse

In practice, it is not always obvious that a new locus is needed. For example, you might encounter a tip line within a construction fill and not know if it is a tip line (in which case you may want to keep the fill a single locus and not split it up into several loci) or a pit line (in which case a new locus is required). Before the decision to open a new locus is made, it might be advisable to excavate a little deeper (~ 2-3 cm) and clean the area again. You might want to open new baskets for finds in such a case (or simply keep the materials from this last pick-pass separate till a decision is made). If it turns out you should have opened the new locus 2-3 cm ago, you can simply transfer these artifacts
Usually, it is better to open a new locus when faced with an unclear situation. It is always preferable to combine artifacts from two loci that turn out to be a single deposit, than it is to try and separate a single locus into two or more deposits.

Be that as it may, the minimum number of loci should be used to describe any given situation. Too many loci can unnecessarily complicate an already complicated situation. For this reason, separate locus numbers normally are not assigned to the various components of a single feature like a drain. Likewise, it is not necessary to try and delineate each bucket dumped into a large construction fill or assign separate locus numbers to every mud brick in a wall.

B. LOCI SEPARATIONS. The clean segregation of artifactual and eco-factual assemblages from uncontaminated loci is essential for both dating and reconstruction of systemic context. The locus system provides both a comprehensive and comprehensible method for isolating all artifacts and ecofacts into separate deposits, provided that the excavator has clearly identified the limits of each locus during excavation. In most situations, the careful cleaning and tracing of the boundaries of each locus should be relatively straightforward. In some cases, however, it may be difficult to keep material from one locus from mixing with material in another. Typical boundaries between loci include:

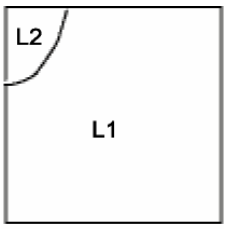
1. **Abrupt** boundaries between deposits. These are characteristic of interfaces between *standing* deposits (i.e. walls) and soft *bedded* deposits (dirt loci); and sometimes also of cutting features like pits or foundation trenches, where the color and compaction of sediments abruptly changes because of the truncation of earlier deposits. Usually, cleaning and defining a wall or pit or robber trench is a reasonably clear-cut procedure..

2. **Gradational** contacts. In many adjacent dirt deposits, the boundary between the two can be indistinct, even though the two deposits can be distinguished from each other by color, texture, or compaction.

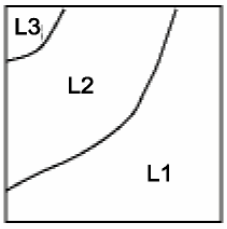
3. **Undulating** or sloping boundaries. Severely sloping deposits create unexpected problems for separating loci, because their surfaces are not horizontal. Each sloping debris layer should have its own locus number and be removed as a single deposit. But if excavators do not recognize the slanting surfaces of these deposits, they can produce what is referred to as “walking loci.”

FIGURE 2:2 WALKING LOCUS

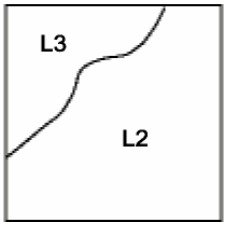
1. When a sloping deposit is first encountered it will appear as a thin line of material in one part of the square. As the excavation proceeds, this material grows in size as the old overlying material shrinks.



2. When a second sloping deposit is encountered, it will begin to appear in the same area of the unit as the first sloping deposit appeared. The original sloping deposit will now appear between the old deposit and the new deposit.



3. Once the unit is taken down to a level where the original deposit is finally removed, the first sloping deposit will occur only on the opposite side of the unit from where it was first encountered, and it will appear on the daily top plans to have walked across the unit.



According to the principles of stratigraphic excavation, each successive deposit should be removed in order. Whenever a locus begins to walk across a unit, the excavator should suspect sloping deposits and proceed accordingly. L1 should be removed entirely before L2 is dug. Then L2 can be defined and excavated before L3.

If the sloping nature of the deposit was not realized in time, or if it is impractical to completely remove the overlying deposit before excavating the underlying one, use technical separations to avoid to avoid a situation where the spatial limits of L2 are confusing or where L2 is both above L3 and adjacent to it.

Pits also have sloping boundaries – most often the pit contracts as you excavate it, but bell- or bottle-shaped pits are also common. In addition to the sloping – boundary problem pits often penetrate through several deposits, and the contents of the pit, too may change. Thus as the color, texture or compactness of the sides of the pit, and the contents of the pit change, it becomes difficult to judge if the pit has changed in size, if the deposit in the pit has changed, or if it bottomed out. In such cases it is prudent to stop excavating the pit, bring the deposits around it to the same level as the inside of the pit, and then scrape everything clean and try to delineate the pit again.

4. **Broken** boundaries. Unclear boundaries can indicate postdepositional or postburial deformations like erosion, insect activity, and animal burrowing.

There are several tricks which can help in providing clean segregation of materials between deposits:

1. Avoid excavating two adjacent dirt deposits simultaneously. This can result in obliterating the boundary between the two even if it was initially clear. Also, it may cause excavated dirt piles from one deposit contaminating the other or in artifacts being mis-placed in the wrong basket. When judging which deposit to dig first the LIFO (or FILO) principle may sometimes be abandoned in favor of keeping the more contaminated deposit a step lower than the 'cleaner' one (so that material from 'clean' deposits fall into the contaminated one rather than vice-versa), or in excavating the less compact deposit first (to avoid 'pedestalling' loose dirt).

2. Whenever the borders between deposits are unclear keep a small balk between them, and remove it as a 'twilight zone' (see discussion in section H).

3. Whenever there is even the suspicion that the deposits have been mixed (e.g., because of gradational or broken boundaries between loci), it has to be noted on all locus cards and basket registration lists, with the details of the suspected disturbance stated. If necessary, go back to already-closed loci which may have been affected by the disturbance (including and especially ones from previous seasons) and make note of the possible contamination – changing the 'cleanliness' designation of loci (see chapter 4:IX) and baskets (chapter 5:III) to 'disturbed' or 'possibly disturbed' as needed.

C. PRIMARY DEPOSITS are ones in which all the finds originate (i.e. were used in) the same period as the deposition.

When walking around the tell today, you will see many potsherds on the surface. All of them are thousands of years old – and are of mixed periods – you are as likely to step on an Iron Age or Hellenistic sherds as on Roman ones (dating to the last occupation period of Dor). Trying to define activity-areas on the tell today by typing the surface-potsherds according to their original function would be nonsensical. There is no reason to suppose, moreover, that someone walking in the street of Roman Dor would not have encountered Hellenistic or Iron Age sherds on the then-exposed surface.

A **constructional fill** brought in when leveling the surface for new construction, may be brought in from anywhere, and include within it sherds, bones, or olive pits from any period (prior to the moment of deposition, of course).

These examples go to show that the connection between the vast majority of the finds and the context of their final deposition is indirect at best. Finding a primary deposit is a rare and celebrated event.

A distinction is made at Dor between ***in situ*** deposits – in which artifacts are found where last used, and other primary deposits (e.g. trash pits or artifacts scattered on a floor). Whereas the distribution of artifacts in the first kind can teach us about the activity areas or functional patterns, the second only reflects the **discard** pattern.

The clearest indication for a primary deposit is **restorable pottery**. If the majority of the artifacts in the deposit are where last used or discarded then it stands to reason that broken potsherds would be restorable to whole (or at least partial) pots.

Conversely – if restoration of pots is impossible it stands to reason that the potsherds (and hence other components of the deposit) were mixed and scattered considerably prior to deposition. If, in addition to being restoreable, the pots are also found **in articulation** they may well be *in situ*.

D. SEALED LOCI. Some separations between loci are constituted by intact physical barriers (floors, walls, installations, etc.). In such circumstances, the upper locus is said to *seal* the lower locus. Other deposits may also said to be sealing. For instance, a rubble fall may seal the material buried under it – providing that the gaps between the stones are not such that intrusive material could have filtered through them. There should be no question that the material in a sealed locus is earlier than the material from the locus above it; that is, the later material does not intrude into the earlier. Excavating sealed loci properly is extremely important, and care should be taken to ensure that materials from the loci above and adjacent to a sealed locus do not contaminate it. Sealed loci are crucial for contextual analysis and the relative dating of artifacts and stratigraphic phases. A sealed locus is by definition earlier than the locus that seals it. This kind of certainty does not exist when dealing with unsealed loci, because of possible later intrusions.

Note that material inside a wall (i.e. wall makeup) is by definition sealed. A coin found embedded inside a wall when it is being dismantled will necessarily predate the construction of that wall, and as such be extremely valuable. That would not be the case if the coin were in the dirt clinging to the face of the wall, or in the crack between two stones at the top of the wall. For this reason (if for no other) vigorous cleaning of the wall is merited before dismantling it. The same may hold for floor makeup material, though here the effects of trampling need to be taken into consideration.

A pristine sealing locus would be a thick, intact plaster floor reaching all four walls of a room. In practice these are seldom encountered. The excavator is more likely to encounter a partial or fragmented floor. In these situations, always open sealed loci where the physical barrier is intact and unsealed loci where it is not.

When excavating in situations where a sealed locus is adjacent to an unsealed locus, it is always preferable to remove the disturbed or unsealed locus first. When disturbed or unsealed deposits are removed, some material (about 2-3 cm in width) from the edge of the intact or sealed deposits should be removed at the same time and included in the disturbed or unsealed locus. This will leave pedestals of intact or sealed material. The sealed deposit can then be excavated with the confidence that the material in them is free of intrusive material (clean). Clean loci have the highest value for both dating deposits and artifact analysis.

A sealing locus seals only the phase immediately below it. Of course, it is possible to say that a thick plaster floor seals all loci below it down to bedrock. Such statements have little value for stratigraphic and artifactual analysis.
The problem of when to abandon the separation between ‘sealed’ and ‘unsealed’ and collapse the two together can be a thorny one.
If floor F1 of phase 1 seals L2 of phase 2 and the separation between L2 and L3 is technical (i.e. they are the same deposit) then of course L3 is still sealed.
Even if L3 is a different deposit than L2, but both are still in the same phase (e.g. L2 is fill and L3 is deposit on the floor of phase 2) the differentiation between the sealed and unsealed part of said deposit should still be maintained.
But what if L3 is already the deposit above a floor of phase 3 (i.e. no phase 2 floor was encountered)? The fact that L3 is sealed by a floor of phase 1 may be important in some cases (e.g. if phases 1-3 form a very tight chronological sequence the development of criteria to differentiate between phase 1 and phase 3 may be important). In other cases this will be completely trivial (e.g. if phase 1 is Roman,

phase 2 Hellenistic and phase 3 Persian). Note also that while excavating the locus you often do not even know whether it's in the same phase as the locus above or not. Thus the decision as to when it is safe to collapse sealed and unsealed loci should be done on a case-by-case basis, with consultation with the relevant experts if need be.

E. LOWER CATEGORIES OF CONTEXTUAL CLEANLINESS. In primary deposits, as defined above, all the finds belong to a single period – the one immediately preceding deposition. Sealed loci may contain, in addition **redeposited** materials. i.e. ones originating from earlier periods. Other types of deposits may also contain **intrusive finds**. Such deposits – which may contain material later than the period of deposition as well as earlier materials are of very low value for meaningful artifactual analysis. However, quite often important finds may be found in poor contexts, and it is necessary to be as precise as possible about those too.

1. **Unsealed** loci at Dor are spatial units for which no intact surface exists at the previous stratigraphic phase, but which are not otherwise manifestly contaminated.

2. **Disturbed** loci are ones which we **know** contain intrusions. Note that though pits and trenches are intrusive features they are not automatically disturbed. So long as a pit is undetected, potentially late materials from within it contaminate the surrounding deposits. Once we detected the pit, defined its limits, and segregated the finds from it, the material in the fill of the pit – though belonging to a later stratigraphic phase than the surrounding deposits – no longer disturbs it. Its contextual cleanliness should be judged on its own merits. Some pits (e.g. trash pits) may have a very high contextual value (primary). On the other hand, the discovery of a pit may force us to re-evaluate the cleanliness of already-excavated deposits. When locating a pit (or other disturbance) we need to consider where it was dug from. Such a consideration would quite possibly lead us to go back and redefine as 'disturbed' loci contaminated by that pit before it was delineated and segregated.

3. At the very bottom of the scale are **unstratified** finds or deposits. These include surface finds, our own dumps, finds encountered when trimming balks (except if a precise provenience for the find can be established – in which case the find should be attributed to the active locus at that spot and elevation), winter wash between seasons, etc.

F. LOCI INTERFACES AND RELATIONS. All deposits have surfaces onto which or up against which new deposits can be laid. New surfaces can be created by burying old surfaces below new deposits or by digging through earlier deposits (as with pits or trenches). The shared surface between two deposits is an interface For example, when a pit is dug, a new interface is created between the earlier deposits and the contents that will subsequently fill the pit. The temporal relation between the deposits can be inferred from this interface: the pit "cuts" the surrounding deposits, where the "cut" is the interface between the pit contents and the surrounding material.

Some theorists (e.g. Harris 1989), following geological stratigraphy, claim that the entire stratigraphic sequence can and should be reconstructed on the basis of interfaces alone. Others argue that the fact that anthropogenic deposition is (at least in part) intentionally constructed means that one needs more than the law of gravity (loose deposits will roll till they hit a solid interface) to meaningfully explain it.

In practice most archaeologists consider a wider set of relations than those which might be inferred from interfaces alone.

For instance – if a floor reaches a wall (see definition below) we claim the two are contemporary (in the sense that they were in use together). Theoretically, it is

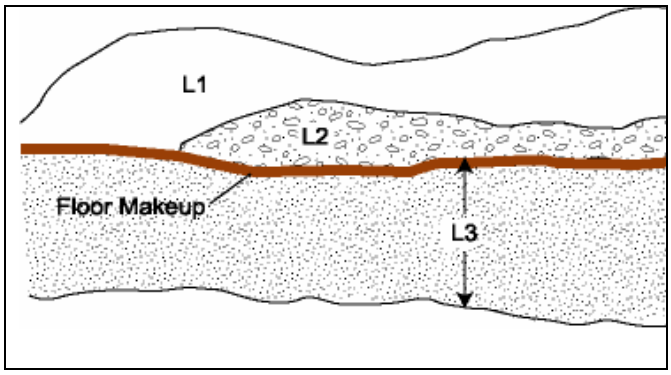
possible that the wall [or rather the consolidated stone conglomerate] was deposited first and the fact that a thin deposit of trampled heat-altered calcite-and-clay mixture (i.e. plaster…) was bedded right next to it has nothing to do with that. What leads us to associate the two is our assumption that humans build walls in order to enclose or subdivide activity spaces and that the horizontal interfaces below these spaces (whether intentionally constructed as in the example above or not) constitute the floors upon which these activities are carried out.
In some cases, relations may be surmised even between elements which do not directly interface. For instance, if two walls run at a slight angle to each other, are 15 – 40 cm apart with an elevational difference we might surmise that they belong to two different occupation horizons. This is based not on the principles of geology or physics but, again, on human behavior and common sense – people tend not to live in very long, narrow, asymmetrical spaces with sloping floors (though exceptions to any one of the above will occur).
Be that as it may, the accurate reconstruction of the stratigraphic sequence involves identifying the interfaces and relations between deposits and offering a viable interpretation of them.

It is sometimes necessary to refer to the interface itself as a distinct entity. Such is the case with floors, which are understood as surfaces in use. Understanding how the floor interface works is one of the most important aspects of stratigraphic analysis at Dor. The plane of the floor, which is where people lived and moved, is the interface between the deposits above a floor from those below it. As such, the floor must be distinguished from the makeup of the floor, which is the material from which the floor is constructed (plaster, cobbles, flagstones, mosaic…) and lies immediately below the floor surface.
Since in the locus system as used at Dor the 'locus' models a deposit and is usually seen as a volume in space there is a question as to how to call the surface between two such volumes. Because an interface dates to a time after the deposition of the earlier deposit, it is considered part of the later deposit at Dor.
So the floor surface is always given the name of the locus directly above it, and the floor makeup, when excavated, is given a new locus number. This distinction has to be made because the material of the floor makeup dates to before the use of the floor (to its construction or earlier). The material on the floor comes from the time the floor went out of use or later. So the floor, the surface that was in actual use, represents a clear chronological gap in the stratigraphic sequence. When an object is said to come from phase 1, it means that it comes from above the phase 1 floor. Objects that come from the makeup of the phase 1 floor belong to the earlier phase 2.

Because floors belong to a later time than the floor makeup they take the number of the locus immediately above them (except for phantom floors, see below). When a locus comes down onto a floor, the locus is closed—these loci are usually characterized as "fills down to floor." The floor is then drawn and photographed with the extant locus ID. A new locus number is opened only when you start excavating below the floor. If the floor makeup is fairly substantial and contains a large quantity of artifacts, which might assist in dating the floor construction, then the floor makeup should be assigned its own locus number and is described as "Lyyy is the makeup of floor xxx" with xxx being the locus which originally came down on the floor.
Sometimes, as you excavate downwards from the floor surface, you see that it has no makeup to speak of (e.g. it consists of a thin surface of organic remains and contains no significant finds. In such a case the floor makeup is combined with the fill immediately below it, and, the new locus will be described as "floor makeup and fill below." Unless the floor makeup is highly fragmented, the floor is said to seal the floor makeup locus. This means that the material above the floor has not intruded into the material below the floor surface.

Floors will sometimes have distinct accumulations of material on them, such as destruction debris or *in situ* artifacts. This material should be assigned its own locus number and described as "deposit on floor" The floor will then receive the locus number of the floor deposit (Fig. 2:2).

FIGURE 2:3 FLOOR
L1 is fill down to floor; L2 is a deposit on the fllor; and L3 is floor makeup and fill below. Floor 2 is the surface on which the floor deposit rests. The floor makeup here consists of 0.5-cm-thick plaster without any artifacts, so can be combined with the fill below. (Note: L1 also comes down on Floor 2.) L1 and L2 belong to phase 1; L3 is phase 2.



Sometimes the floor is composed several 'mini surfaces'. When floors are not regularly cleaned there is a gradual accumulation of non-organic and organic materials on them (dust, soot, excrement etc.) which loose volume as they decay into very thin layers of varying color or texture. Each of these layers might be considered 'floor makeup' of the surface above it of 'deposit on floor' vis-à-vis the surface below. We call these 'floor accumulation' or 'floor resurfacing' – depending on whether or not this involves intentional re-pavement (i.e. the bringing in of additional materials – plaster, etc.) in addition to inadvertent trampling effect. The difference between the two may not be easy to judge without micro-morphological study.

Whether or not to treat a floor accumulation as a set of distinct floors – each of which gets a locus number – or as one 'block' feature depends on whether the individual surfaces can be reliably traced and segregated, how much material is 'trapped' between each two layers, as well as manpower and time constraints. In the latter case there should be – at a minimum – three loci defined: material above the highest surface in the accumulation, the accumulation itself, and fill below the lowest surface. The floor would be named after the initial surface of the floor i.e. has the same ID as the locus representing the floor accumulation.

G. LOCI SEPARATIONS AND WALL INTERFACES.

1. Separating loci along the **horizontal surfaces** at the top and bottom of a wall work like any other locus. Whenever the top of a wall is encountered, the locus being excavated is closed and new loci are opened. At least three new loci are needed: one for the wall and one each for the fills on either side of the wall. Deposits that interface with the top of a wall date to a time after the wall went out of use or was destroyed. Deposits on either side of a wall need to be distinguished, because different stratigraphic sequences occur on each side of the wall. (Note: the top of the wall should be fully exposed before closing the old locus number. This may require digging down on either side of the wall 3-4 cm before changing loci.) In practice, the deposit covering the wall also 'spills over' on either side, thus this first separation may well be a technical one.

2. In addition to the horizontal surfaces of a wall—the top and bottom of a wall—walls have **vertical surfaces** or faces (Harris 1989). Because most of a wall's stratigraphic relations occur along its face, walls introduce special conditions for

the separation of loci, and wall relations along a face need to be carefully differentiated.

4. The first critical separation of loci along the face of a wall is the separation of **deposits above a floor from those below a floor** reaching the wall. If more than one floor relates to the wall face, then the deposits below the lowest floor date to a time prior to the construction of the wall (i.e., the lowest possible floor goes with the construction of the wall.) Deposits above the highest floor date to after the floor (and therefore the room) went out of use. Deposits on intervening floors belong to different stages in construction or room use.

5. Another important interface is the one between wall and foundation. Even if the floor is not visible, or it is not clear whether the last floor that was encountered is indeed the one dating to the construction of the wall, the presence of a foundation indicates that the deposits on either side are definitely earlier than the construction of the wall. The fact that we are digging next to foundation may be indicated by a change in construction (see below). Note, however, that many walls (especially brick walls with stone foundations) have socles. i.e. the [original] floor reaches them below the point of transition from brick to stone construction. The presence of a foundation trench is another indication that the excavation has reached below floor level. It is prudent to change loci when excavating the deposits on either side of the wall when you have reached the point of change (or suspected change) of superstructure to foundation – even if there is no visible change in the sediment at this point (whether or not there is a change in the sediment coinciding with the change of construction / first delineation of a foundation trench needs to be noted, of course. In the latter case the locus change is a 'technical' one (see definition above).

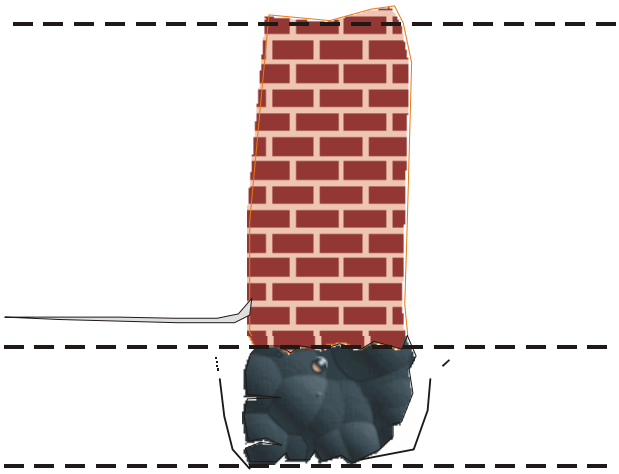
6. Where **different stages of wall construction** are detected, it is advisable to change loci in the adjacent deposits at each stage. Each stage may mark a new period of reuse, which needs to be reflected in the final sequence of loci, or it may mark the superstructure / foundation interface. As you are excavating next to the wall you usually do not know which.

7. The last important interface is the bottom of the wall – also referred-to as the point at which the wall 'floats'. New loci should be opened on either side once it is reached. If excavation in the unit has gone slightly below the point where a locus change needs to occur, because it is unclear that the situation calls for a change, this is be explained in the locus cards.

8. Walls seal the underlying locus, which should be excavated separately from the loci on either side of the wall until it is clear that it is the same deposit as the adjacent loci. See above for consideration as to when to collapse sealed and unsealed loci.

FIGURE 2:4 THE FOUR PRINCIPAL WALL INTERFACES

1. Top of the wall
2. Floor level
3. Wall / foundation interface
4. Bottom of the wall



H. FEATURES. Features are discrete constructions usually intended for specific uses: a *tabun* is for cooking bread, a cistern for storing rain water, and a drain for moving excess water across the site. A feature always implies some intentionality on the part of its creator. This intentionality can be inferred by the construction of built-up walls to the feature. Some features are created by the removal of preexisting deposits, i.e., cutting features like pits and foundation trenches. Sometimes features are not marked up by construction at all but are merely distinguished by habitual use or function (e.g. a [non-built] hearth, marked by a hardening or discoloration of the floor).

As explained in the introduction to this chapter, we use a system by which one set of identifiers (loci) is used to describe deposits, interfaces and features.

1. Simple features are usually assigned a single locus number (sometimes even even when consisting of several parts – see section II.B.1.

2. A large feature will usually consist of several (sometimes many) loci: An insula will have several residential units and each will contain several rooms walls, floors, installations etc.. As a rule a feature is referred to by the ID of the lowest locus that is associated with it. E.g. a room will be referred to by the ID of its floor.

3. Where several different loci descend onto the same other feature one of them is chosen as the feature designator. The chosen locus number should be the one in which most of the feature lies, or the one in which the feature is best preserved, or the least-disturbed locus. E.g.: If two loci hit the same floor – one is sealed and the other is unsealed, use the locus ID of the sealed locus as the name of the feature. If a drain has two sections – one with capstones preserved and one without, use the locus number of the part with capstones. If a floor is mainly preserved in unit XX/nn but extends slightly into unit XX/n+1, the unit supervisor of XX/n+1 should use the floor number of unit XX/nn for her bit of the floor.

4. However, once named (and referred-to by name in various records) the feature ID should not be changed. E.g. if you find the continuation of a feature excavated in previous seasons, use the already established feature ID for it – even if the

section you just uncovered is bigger or better preserved. (If for any reason we decide to change a feature number for an already-named feature you will need to locate every record mentioning that feature and change the feature number…)

5. Large, multi-component features will be named after their main component. E.g. a house will be called with the ID of its main room or central courtyard. Major features often 'acquire' an Alias or a colloquial name ('Benni's house'; 'The Dolphin insula'). It is often easier to remember what they are when they are 'personalized' this way. Once an alias like that has worked its way to be included in the official repertoire you may refer to it by name rather than number.

When describing relations and loci use feature ID's (e.g. "L05D2-127 is fill down-to floor F05D2-050"; "L05D1-178 is part of drain 04D1-234") When photographing or drawing a feature it is the feature ID (rather than the constituent loci) which should appear on the image. If you specifically want to show the location of individual loci use both numbers.

Two categories of features have no deposits directly associated with them, but still need to be accounted for in the stratigraphic analysis. These are termed ghost features and phantom loci.

1. **Phantom loci.** Sometimes a situation arises where a feature will have no locus number associated with it. There are primarily two situations where this occurs. When a locus comes down on two separate floors, both floors cannot receive the number of the overlying locus. One of the floors must be assigned a separate locus number for a locus that did not exist above it. This is a phantom locus. When a feature is observed only in the balk, like a pit or a floor, it is assigned a phantom locus number since no actual locus of that number was identified while the unit was being excavated and it created no artifacts. Phantom loci are entities that have no real volume and contain no artifacts. You might think of them also as loci that are opened and closed simultaneously. They will have relations; and in the case of a phantom pit (observed only in the balk) it must be noted on all locus cards of adjacent loci that they were probably disturbed by that pit.

2. **Ghost features** are features that are presumed to have existed, but whose actual existence could not be observed in the field. Walls are presumed to have existed from the presence of robber trenches. The robbed walls must figure into the stratigraphic phases of an area, and they do so as ghost walls. Ghost walls may be referred to by the locus number of the robber trench (i.e. L05D2-587 would be the robber-trench of ghost wall W05D2-587). If the existence of a floor was inferred although no change of sediment was observed in the field (e.g. by the existence of a doorsill, by the existence of a floor level at that elevation in previously-excavated units) this would be a ghost floor. It might be referred-to by the number of the active locus at this elevation. A presumed (rather than observed) foundation trench may also be a ghost feature. Note that ghost features are not usually phantom loci – i.e. you can usually assign actual loci to them.

I. TECHNICAL SEPARATIONS. Some loci separations are not based on observed changes in the nature of the deposit, but are made for technical reasons. (See also introduction) For example, fill from the top of a wall is always separated from the fill that is beside the wall. This is done even if the fills are clearly a single deposit, since this will facilitate the description of the shape of the locus and its relations. It is easier to describe the three fill loci than it would be to describe an inverted-U-shaped locus which is both above and adjacent to the wall. When you change loci adjacent to critical wall

interfaces (see section E above) without observing clear differences in the adjacent deposits you are making technical separations.

Unlike features, deposits that occur in more than one excavation unit will have separate locus numbers in each unit. This is also a technical separation, allowing each unit supervisor to describe only that portion of the deposit that he or she excavated, and to keep the loci sequences in each unit distinct.

When making a technical separation it is vital to note the fact that it is technical, and to list the loci which are actually part of the same deposit. There is a world of difference between an observed foundation trench for which a new locus ID was assigned then the designation of a separate locus next to a wall merely because you suspect that wall might be at foundation-level and you want to play it safe. When designating that several loci are part of the same deposit it is common at Dor to use the shorthand notation "=" (as in "L04D2-055 = L05D2-132 = L05D2-158 – gray ashy fill above floor F05D2-158").

J. THE USE OF "TWILIGHT ZONES." Rigid separations of loci are sometimes impossible to maintain, especially when digging adjacent fills. This situation is handled by opening special baskets for all the material which comes from the unclear boundary are between the loci. These are referred to as twilight zones, and the baskets containing this material should be marked as such. If a twilight zone is utilized it should be assigned to only one of the loci, usually the one judged to be most disturbed. The use of twilight zones is an act of desperation. Before resorting to them, the excavator should make every effort to define the boundary between two loci.

IV. OBSERVING RELATIONS BETWEEN LOCI

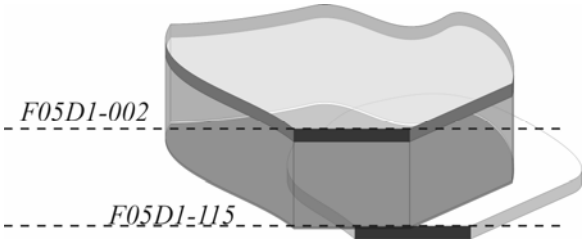
The relations between two features indicate the temporal relations between them (see section II.C). Although the relations between two loci fall within a limited range of possibilities, it is critical for proper excavation and stratigraphic analysis that these relations are honestly observed and accurately described. These observations begin in the field as soon as new loci are encountered. It is important to explain what we mean by 'accurate' and 'honest' (see also chapter 7. II): Archaeological observations almost always involve some degree of ambivalence or uncertainty. Is a 1 cm. strip of slightly-different material between a wall and a floor a foundation trench? Or perhaps the floor reached the mud-plaster on the wall rather than its stone core? –And maybe the floor sloped up to the wall and we cut it in our eagerness to scrape it flat? Some stratigraphic relations, even if correctly observed, may translate to more than one temporal relation. For the construction of a sound stratigraphic scheme it is important that you convey both what the relation is (or the range of possibilities, if there is more than one) and the degree of confidence that this observation is correct. Be clear – use the terminology provided below (and in 4. IX. 23) and try not to invent your own. Do not hide behind non-commitant phrasing but do indicate the degree of certainty in the relation. "W04D2-586 clearly cuts F05D2-123 there is a 5cm. wide foundation trench with soft grey sediment between them"; "F05D2-257 seems to reach W04D2-586 but does not quite. At one point it was clearly traced to about 5cm from the wall, but for the rest of the interface it peters out some distance away". "I think W05D1-212 merely abuts W04D2-586 and is clearly later, but my area supervisor, the architect and the director all say they are dovetailed and contemporary. The problem is that only one course survives, and the degree to which the stones of W05D1-212 extend into W04D2-586 is debatable – see photo ****". Remember: bluntly asserting a wrong relation, or hedging your bets so much that 'anything is possible' is the only conclusion are equally fatal for sound stratigraphy.

A. Perhaps a trivial relation between loci – but one which nevertheless needs to be explicitly stated – is **IDENTITY**: two loci which are but technical divisions of the same layer or feature (see discussion in II.B.2; III.B; III.E; III.G).

B. For two superimposed loci the relations are relatively uncomplicated, since the upper locus is later than the lower locus. The upper locus will either ***cover*** (if it does not seal) or ***seal*** (the fact that it covers is implied) the lower locus. If a locus covers another locus in part (a floor covers only part of the top of a wall), it is said to cover that locus. The covering locus is always later. A sealing locus always covers the entire sealed locus, which lies immediately below the sealing feature. For example, a fill comes down onto a floor only in half of the locus. Two separate loci are required below the old locus: a sealed locus (floor makeup and fill below) and an unsealed locus. The old locus covers the unsealed locus below it; and the floor of that locus seals its underlying locus (the floor makeup and fill below it).

FIGURE 2:5
RELATIONS BETWEEN TWO FLOORS.

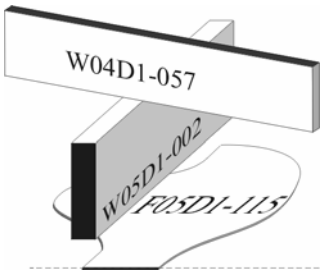
F05D1-002 covers F05D1-115. The shaded section denotes the area sealed by F05D1-002



When a wall or feature lies just above another wall or feature (such as a floor) with a small gap between them. The upper feature is said to ***float above*** the lower wall or feature. The floating wall or feature is always later, usually **strictly later** i.e. was constructed after the underlying feature went out of use – it represents a later stratigraphic phase.

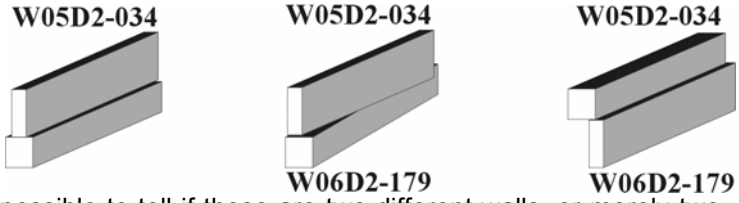
FIGURE 2:6
FLOATING FEATURES

W04D1-057 floats over W05D1-002 and that in turn floats over F05D1-115. (or F05D1-115 **extends below** W W05D1-002



Another special case arises where one wall or installation is ***built on top*** of another (a multi-phased wall, see III.E.6). This relation implies not only that the overlying wall is later then the one under it, but also that the two are temporally contiguous. I.e. the builders of wall A were familiar with the existence of wall B (unless one wants to put forward the scenario that wall B was disused and buried away, and the builders of wall A just happened to find wall B exactly under where they had planned to construct their wall….)

FIGURE 2:7
WALLS BUILT ONE-ON-THE-OTHER

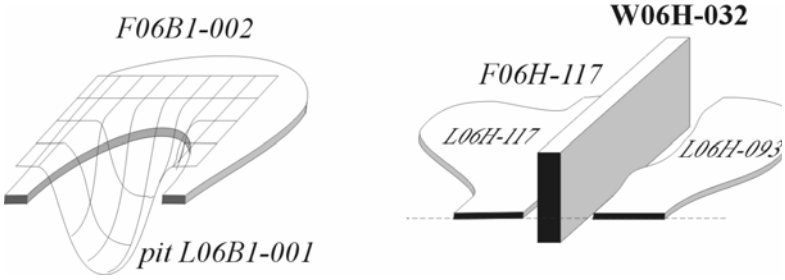


In the case at left, It is impossible to tell if these are two different walls, or merely two different construction-methods in the same wall (e.g. superstructure and foundation). In such a case you should, by default, use the same locus ID. If the walls are **differently oriented** or of one is **offset** from the other these are certain indicators that the upper wall is strictly later than the lower one.

C. Relations between adjacent loci are more complicated. These relations fall into two categories: those indicating one locus is earlier or later than another and those indicating the two loci are contemporaneous. A later deposit will either ***cut*** adjacent deposits or it will ***reach*** (be deposited against) the earlier one. Features that are constructed by digging (pits, robber trenches, and foundation trenches) always cut the dirt loci around them.

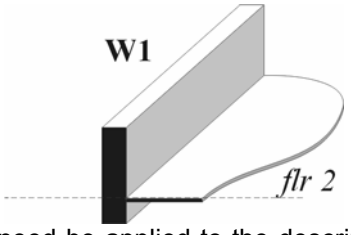
FIGURE 2:8
CUTTING FEATURES

Pit 06B1-001 cuts floor F06B1-001. W06H-032 cuts floor F06H-117. (note that F06H-117 was reached in two different loci – on either side of the wall.



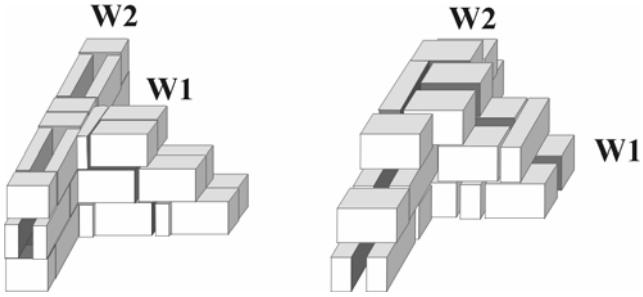
D. Although one locus reaches another locus that has been deposited prior to it, it is sometimes viable to consider them contemporary. For example, if a floor reaches a wall, the construction of the floor is later in time than the construction of the wall, but the floor was in use at the same time as the wall. In this sense, the floor and wall are contemporary (belong to the same phase).

FIGURE 2:9
FLOOR REACHING A WALL



E. Other terminology need be applied to the description of relations between walls and other walls. A later wall can ***abut*** (be built up against) an earlier wall or feature. Abutting walls, although later constructions, may be considered contemporary with the abutted wall – as (in most cases) the two were in use together at least for some time. Walls that are ***bonded*** or ***dovetail*** together (i.e., where the construction of the two walls is interlinked by sharing stones or mud bricks) are strictly contemporary (i.e. they were built together).

FIGURE 2:10 RELATIONS BETWEEN WALLS
1. W1 abutts W2.
2. W1 and W2 are bonded.



Messy excavations always make the assessment of relations very difficult, if not impossible. Great care is required to clean all loci until relations can be discerned. In actual practice, however, some relations may be very difficult to resolve. For example, it might not be clear if a wall cuts a small pit (the wall is later) or if the pit is dug up against a wall (the pit is later). In this instance, the relations of the wall and pit to other loci may clarify the situation, but they may not.

V. SUBDIVIDING OF THE LOCUS – THE BASKET

Any collection of one or more artifacts or ecofacts which are of uniform provenience is collected at Dor as a 'basket'. As such, the basket is not a spatial unit or a depositional one, but an artifactual unit, and will be dealt with in detail in chapters 3 and 5. However, on occasion you may use baskets as arbitrary subdivisions of the locus (see section I for stratigraphic vs. arbitrary divisions).
Examples:

A. SUBGRIDS. On occasion it is judged important to precisely note the provenience of artifacts (see also chapter 3. III, 5. V). One way of doing this is by subdividing the locus to 1 X 1 m. squares (see chapter 1 for notation of such units). Rather then collecting all the artifacts of a given kind from the entire locus as a basket, we now issue separate basket IDs to each collection of artifacts from each square. The same can be done for elevational subdivisions when it is felt that such are required. Rather than close the baskets for the locus and take elevations at the end of the day, one can decide to do this four times a day, or every 5 cm. of excavation.

B. SUSPECTED INTRUSIONS. Suppose a wall bisects your unit, and you have grounds to suppose that it is a foundation - and there is an undetected foundation trench next to it. You now instruct your excavators to carefully peel the strip the deposits next to the wall, to look for that trench. Note that as you hadn't yet **observed** a foundation trench, you would not be justified in issuing this hypothetical feature a locus ID. On the other hand, if you toss the potsherds into the general collection basket for the locus and it turns out that there **is** a foundation trench – you have contaminated your locus. The solution is to issue separate baskets for finds originating next to the wall ('next-to' being an arbitrary distance decided-upon) – see also discussion of 'twilight zones' in section III. H. A similar trick is hunting for an unseen disturbance using the quadrant technique: Suppose that the pottery reading (chapter 3. IX) indicates a disturbance somewhere in your locus – and careful cleaning has not indicated where. You might decide to arbitrarily sub-divide the locus, keeping the artifacts from each subdivision in separate baskets. If the next reading indicates that all the intrusive artifacts originate from one of the quadrants, you are closer to locating the unseen disturbance. Note that in both of the abovementioned case studies as soon as the disturbance is actually observed, a change of loci is needed.

C. COMPOSIT FEATURES. We have noted above (section II. B. 1) that small features (e.g. a tabun, a feeder-drain) may be referred-to as single loci – giving separate locus numbers to the capstones, the fill-inside, the walls and the floor-makeup of a small drain may be unduly cumbersome. In such cases one should separate the artifacts from each sub-feature in separate baskets, noting the different provenience of each artifact.

VI. RECORDING THE LOCUS

A number of different records are kept, which record information pertaining to each locus. Completion of these is primarily the responsibility of the unit supervisor (Chapter 4) and the area recorder (Chapter 5).

A. THE LOCUS CARD. At Dor a locus card is filled out for each locus excavated. These are preset forms that record the locus number, the area and grid unit in which the locus was excavated, the year it was excavated, the excavator, the type of locus, the spatial and physical attributes of the locus including the loci that lie immediately above and below it, its stratigraphic value, and its stratigraphic relations. The locus card also includes a plan of the locus, photographs of the locus, and appropriate section drawings.

A locus card called a "continuation card" is filled out for each new unit into which an already exposed wall or feature continues. This is done to record all new observations or relations of the wall or feature in the new unit. If for some reason the same wall or feature has been assigned multiple numbers, the original number is kept and the new number is canceled. In this case, a "cancellation card" must be written for the new locus number that explains why the locus number was canceled ("W9567 is the same wall as W9458"). Sometimes, walls or features have several construction stages. Each stage must be described separately but under the same locus number. Some walls were rebuilt and reused over centuries and may require several seasons to excavate fully. A new locus card under the same number must be filled out each season, which describes all new observations, relations and interpretations. Typically, these cards are designated as Card 1, Card 2, and so on. Walls and features are closed only when they have been removed.

B. THE BASKET LIST. Each find or group of finds collected from a locus is recorded by the area recorder in a basket list. Each entry records the provenience of the find or specimen, including the locus number, the grid unit, and elevations. The object and its material are listed. In the case of datable finds, such as pottery, possible periods are listed.

C. THE LOCUS GENEALOGY. Each unit supervisor must provide a block diagram showing the sequence all loci excavated in a unit. Locus genealogies are drawn to show in a clear fashion which loci appeared in the unit and in what order they appeared. Otherwise, they are not meant to depict the physical arrangement of the loci in the unit or the physical attributes of loci.

D. DAILY AREA TOP PLANS. The area recorder also keeps a daily top plan of all the loci opened, excavated, and closed in the area. The daily top plan also records the find spots of special small finds, keeps track of opening and closing elevations, end of day elevations, and small find elevations.

E. SITE ARCHITECT'S PLANS. All features and architectural components are drawn by the site architect. These plans are eventually used to create phase separations (showing all components of a single phase on a single plan) and for publications. Most fill loci are not drawn by the site architect.

F. PHOTOGRAPHS. The site photographer photographs all features and architectural components. These official photographs are recorded in the database and their IDs are indicated in the appropriate locus cards. They are also used in end-of-season reports and publications.

CHAPTER 3

EXCAVATION, REGISTRATION AND ANALYSIS OF ARTIFACTS

Contents:

I. INTRODUCTION

Artifacts do not figure in the proposal of a stratigraphic sequence in a unit or area, but they are important when it comes to assigning chronological periods to phases and strata. The relative dating of artifacts is imposed by the stratigraphic sequences in which they occur, but the assigning of absolute dates to phases and strata is the result of artifact analysis. Artifacts are also important for characterizing a cultural phase or stratum.

The importance of artifacts for dating depends on the integrity of the context in which they are found and whether or not they are intrinsic to that context. Artifacts can be characterized in three different ways, depending on their relation to the phase to which a deposit belongs. They can be intrinsic (dating to the same phase as the deposit), intrusive (dating to a later phase), or residual (dating to an earlier phase). Artifacts recovered in deposits that have been disturbed by later intrusions are not as significant as those that come from intact deposits. Even if artifacts are intrinsic to the locus, they can still at best provide only a *terminus post quem* for the dating of the locus.

Some theoreticians promote the total recovery, analysis, and publication of artifacts, especially ceramics. Although theoretically valid, it is not usually practical given the time, budget, and personnel constraints on modern excavations. Others see value in only analyzing and publishing the *in situ* finds. The practice at Dor is somewhere between these two extremes. The problem usually does not arise with small finds (lamps, molded pottery, coins, jewelry, etc.), which are always kept for analysis and publication. But the enormous quantity of ceramic finds (especially sherds) requires selection.

The Dor practice is to weigh two primary factors: the quality of the pottery and its provenience. Quality is determined by factors such as its state (intact, restorable or diagnostic piece), its aesthetic or historical value (molded or painted imported wares), its uniqueness (ceramics not found in the area before), or sample size. Two basic aspect s of provenience are considered when deciding on the quality of the artifact or the assemblage: cleanliness (no intrusions) and the certainty of the phase attribution of the assemblage. The importance given to such things as sealed loci and clean separations between loci weigh heavily on the matter of provenience.

II. OBJECTS AND MATERIALS

The variety of objects and materials encountered in any tell site is considerable. By far the most common objects encountered at Dor are pottery sherds. Even most of the complete ceramic vessels that are found are broken and must be sent for restoration. Other ceramic items include intact bowls and jars, oil lamps, and figurines. Architectural elements in plaster (moldings and fresco fragments), ceramic (Roman roof or bath tiles) and stone (mosaic *tessarae*, entablatures, moldings, sculpture, capital fragments, and column drums) are also found *in situ*, discarded, and in reuse. Other small items made of metal (coins, jewelry, fishing weights, nails, tools, and weapons), glass (Roman glass vessels), faience (scarabs and amulets), bone (small utensils and gaming pieces), stone (seals, scarabs, and flake tools) are found.

Nonartifactual objects and material are also collected. This includes fauna (bones, shell, etc.) and flora (olive pits). Charcoal is collected from important loci for radiocarbon dating. Unknown materials (mineral residues) may also be collected for analysis.

III. PROVENIENCE

Provenience is indicated by the locus in which the artifact was found and its elevation within the locus. For small finds ("special" finds) such as coins, jewelry, lamps, etc., are point provenienced (i.e., an elevation is taken on the exact find spot), and find spots are plotted on daily top plans. A beginning and ending elevation is given for each basket of pottery found in each locus excavated on a given day. If the locus was excavated in a single day the opening and closing elevations of the locus are used. If the locus was excavated over several days, then the range of elevation is from the highest ending elevation for that locus from the day before and the lowest ending elevation for that locus from that day. This provides the greatest volume out of which the pottery sherds could have originated. The quality of the provenience is determined by the cleanliness of the locus (sealed vs. unsealed, intact vs. disturbed, or non-stratified).

IV. PRIMARY ASSEMBLAGES AND SEALED DEPOSITS

Loci that are known to be or suspected of being contaminated or those with uncertain stratigraphic attribution are summarily dismissed from artifact analysis. Exceptions to this rule are loci of intrinsic interest. For example, a "cult assemblage" will be extensively analyzed even though its attribution to phase 7, 8 or 9 is never resolved. The typologies of all pieces in a locus will be carefully assessed, even if the locus contains intrusive material (a ribbed sherd from a Roman storage jar in an otherwise clean Persian deposit), if the locus is critical for dating an important feature.

Primary (*in situ*) assemblages (a group of pots found on a floor) are relatively rare, but they supply unique information about single points of time in the site's history, rather than about sequences of pottery types. They are used for functional analysis (of a room, for example). On the other hand, primary assemblages offer only a limited sample of pottery types from any given period.

Most conclusions about relative dating are based on the representative assemblages from sealed loci. The drawback is that usually a lot of the material in a sealed locus is residual – that is, it was not produced or used in the phase or stratum in which it was found. The redeposition of pottery breaks the connection between the vessel and its find spot, so that no conclusions can be made in that regard.

V. INDICATIVES AND RIM-BASED TYPOLOGIES

Theoretically any piece from any artifact holds some information (material, for example), but some pieces are more informative than others. Some functional and stylistic attributes can only be determined on complete vessels (volume or composition of decorative elements). Other attributes are visible only on specific parts of the object (rims, bases, or handles). Pottery from Bronze Age Dor to Roman Dor is a fairly uniform in the range of wares, so that usually little can be learned about a vessel from a single body sherd.

Due to the overwhelming ceramic sample size found at Dor (a characteristic of almost all tell sites), registration, storage, and detailed analysis of every sherd is not possible. Analysis is usually limited to complete (restored) vessels and specific diagnostic portions of vessels (indicatives). Indicatives – mainly rims – make up most of the analyzed pottery. Using indicatives for analysis does not compromise the statistical validity of the sample, as long as the choice of what to discard and what to keep is consistent.

The selection of rim-based typologies is based on several factors: rims display the widest typological variety of all indicatives; all vessels with rims have only one; two rim pieces from a single pot are usually easily identified (body pieces from a single pot, on the other hand, can vary considerably).

VI. ARTIFACT ASSEMBLAGES

The first step in artifact analysis is the grouping of all artifacts that belong to a stratum (to the same set of inter-related walls, floors, and loci). The result of this grouping is the creation of an assemblage of artifacts (mainly pottery, but including all other finds) that represents the material culture of an (architectural) stratum. This is a critical step in artifact analysis, because the possibility for a critic or reviewer to recreate this step is restricted by lack of access to the primary evidence. The creation of cultural assemblages provides the internal evidence (unbiased by comparisons with other sites or previous knowledge) for establishing chronological and other conclusions about the site.

The next step is the examination of specific classes of finds (coins, worked bones, etc.) by specialists who look for external (comparative) evidence about the date, nature, or significance of the various small finds.

Grouping assemblages by stratigraphical periods (phases or strata) should theoretically be a straightforward process. The examination of all loci that the stratigrapher has assigned to a particular stratum should produce all types of artifacts that an analyst is interested in. Many loci contain chronologically mixed material.

Unmixed deposits are those that contain material that was used and discarded at any period within the chronological span of the phase in which it belongs. Mixed deposits also contain artifacts that are residual (early artifacts found redeposited in a later phase), and intrusive artifacts (from a later phase).

The appearance of residual artifacts in late deposits is very common. Most fills in built-up sites are created by digging into earlier occupation levels, which results in the redeposition of earlier material onto the contemporary surface. Intrusive materials are more problematic, since theoretically contexts are dated by the latest find in them. Intrusions are caused by postdepositional processes which have caused disturbances (from rodent burrows to larger features) that go unnoticed by the excavator.

Many deposits were mixed in antiquity and are unavoidable. Inaccurate excavation and registration create some mixtures. Some mixtures will not affect the stratigraphic

analysis, but do affect artifact analysis. Two superimposed rooms that are separated by a thick floor will not create difficulties for the stratigraphy, even if contents from the later room are mixed with those from the earlier room. However, this situation will create false information about the contents of the rooms, which may create difficulties for the analysis of the artifacts. Artifact analysts need an honest and accurate description of the actual source for each artifact.

To avoid mixtures of artifacts during excavation, it is important to maintain proper separations between loci. Careful management of the excavation of intact and sealed loci by the methods described in chapter 2 will ensure that this is done. It is important to carefully segregate all material (artifacts, fauna, etc.) by the locus from which they originate. Pottery from a locus should only go into a pottery basket assigned for that locus, etc.

VII. RESTORATION POTTERY

A. SENDING POTTERY FOR REGISTRATION. Broken vessels found during excavation that can be restored, either as complete or partial vessels, are singled out from the other pottery sherds that are collected and sent to "Restoration." Restorable vessels are usually easily identified in the field. The pieces will be found close together, often maintaining the original shape of the vessel. Pieces of restorable pottery are assigned their own basket number. In some cases, when all of the pieces cannot be found, all of the sherds from an entire locus may be sent to restoration. Joins should be marked for restorers. The basket tag should be clearly marked with a circled **R**.

If a locus contains pieces from several restorable vessels, the entire locus should be sent for restoration. This will mean the collection of every sherd. The different vessels should be separated, if possible, into different baskets. In this situation, each basket tag should indicate that a different vessel is contained in the basket (vessel 1, vessel 2, etc.). If the sherds from a restorable vessel requires more than one basket (a large storage jar, for example), the basket tags should be labeled accordingly (vessel 1, basket 1 of 3; vessel 1, basket 2 of 3, etc.). If an entire locus is sent for restoration, this should be noted in the comments on the recorder's basket registration list. Also, baskets containing restorable material should be properly noted on the recorder's basket registration list. The comments section of the basket registration list should also indicate why the pottery from a locus was sent for restoration and what the restorers should look for (cooking pot, storage jar, etc.).

Sometimes pottery will be sent to restoration, even when it is not certain that it contains restorable vessels. The basket tags and the basket list entries should reflect this uncertainty by marking the **R** with a **?**. All questionable restoration pottery will be dealt with during the weekly pottery forums (readings). Whatever is decided about the contents of these baskets should be noted on the recorder's basket registration list.

In some cases, restorable pieces from a single vessel might be found in two adjacent loci. The basket tags and the recorder's basket registration list should list all of the loci and basket numbers that need to be restored together. In such cases, restorable pottery can establish stratigraphical relations between loci. For example, pieces from a single vessel found in fill on either side of a wall will show that the wall is later than the fill; or pieces of a pot that are found a half meter below other pieces of the same pot will indicate that all the intervening loci belong to the same fill.

A. FILLING OUT A POTTERY RESTORATION FORM. The unit supervisor must fill out a Restoration Form for each set of related loci which during the

season were sent for restoration. The pottery menders use the forms to ensure that they have all of the restorable pieces.

1. Each locus sent for restoration requires a restoration form.

2. If restorable pottery was recovered from more than one locus, a form is filled out for each locus. For brevity's sake, all of the pertinent information can go on one form, and the other forms can simply reference this form (for example, add a note saying "see the Restoration Form for L-----").

3. When vessels can be point provenienced (i.e., the exact location of the vessel is known), mark the location in the context drawing. This can be done either by inserting the basket numbers at the spot indicated or (if the locus is large) by assigning sequential numbers to the vessels and inserting those numbers in the appropriate location on the drawing. If numbers are assigned to vessels, these should be marked on all of the appropriate tags and on the basket list.

4. The forms should always make clear why the loci were sent for restoration, which loci belong together and which don't, and what specifically they should be looking for.

VIII. SMALL OR "SPECIAL" FINDS

Special finds consist of all finds that might be of interest to a specialist. Special finds include all artifacts other than undecorated pottery sherds: coins, lamps, painted or molded pottery, seals, tools, weapons, jewelry, architectural fragments, sculpture, fresco fragments, glass vessels, etc. A separate elevation is taken on the spot where the special find was discovered. Each special find is placed in its own basket (bag or box) and given a separate basket number; fragile finds should be padded. The temptation to clean special finds on-site for admiration or amateur photography should be resisted.

IX. POTTERY FORUMS (READINGS)

Pottery forums or readings are held at least twice a week to sort through all of the pottery collected from an area during previous days. During the pottery forums decisions are made about which pottery is to be kept for analysis and which pottery is to be discarded. All of the pottery is dated by period (early or later Roman, Hellenistic, Iron II, etc.). This information is recorded on the recorder's basket registration list and on the basket tags of pottery that is kept for analysis. Pottery forums are conducted by a ceramics specialist (the reader) in collaboration with the director, area supervisor, unit supervisors, and recorders. During pottery readings, unit supervisors provide the reader with stratigraphic information for each locus. They cross check the correlation of all basket numbers and loci. The recorders' role is to complete each basket list entry for periods, restoration, and comments.

During the pottery forum, all of the recovered ceramics (including special finds like painted or molded pottery, lamps, etc.) are characterized by general type and assigned to a preliminary chronological period.

A. TYPES. The reader will identify types of ware and forms within each basket, which help determine the period to which they belong. Special fabrics may also be designated: Attic or East Greek, Roman *terra sigillata*, Cypriot, Phoenician bichrome, etc. Codes have been developed for all of the major fabrics and are listed on the recorder's basket list.

B. PERIODS. The reader will assign periods to the pottery in a given basket. The period which is mostly represented in the sample is listed first, then the next common, and so on.

A. DECISIONS. Once the types and dates of the pottery are ascertained, the reader decides whether or not pottery is to be kept for analysis and, if so, which pieces will be kept.

1. The reader might decide to keep all of the pottery from a basket. If so, the basket is given the code "3." If it is possible that the pottery might produce a complete vessel, an "R" is added to the comments and the basket tag, and the entire basket of pottery is sent back for restoration. Usually, if one basket of pottery from a locus is given a "3," then all baskets coming from that locus will also get a "3."

2. If all diagnostic pieces (indicatives) are kept, the basket is given the code "2." Here, the body sherds are discarded and all indicatives (rims, bases, handles, and decorated pieces) are kept for analysis. Usually, if one basket of pottery from a locus is given a "2," then all baskets coming from that locus will also get a "2." Keeping all of the indicatives from a locus will allow a more accurate assessment of the date of the assemblage from the locus.

3. In some cases, only a few indicatives are kept, and the basket is given a code "1." If the locus is stratigraphically insignificant (topsoil, disturbed fill, etc.) but contains interesting or important pottery, then these few pieces will be kept.

4. A code "0" is given when all of the pottery in a basket is discarded. Either the locus is stratigraphically insignificant or only a few nonindicative pieces are present.

CHAPTER 4

THE UNIT SUPERVISOR

Contents:

I. INTRODUCTION

Unit supervisors, along with area recorders, shoulder the bulk of the record keeping for the season of fieldwork. They perform most of the observation, description, and initial interpretation of the day-to-day details of the excavation. Demands on their time and energy occur both on and off the tell, and the credibility of the results produced by the fieldwork depends to a great extent on their hard work.

Unit supervisors are responsible for all aspects of excavation in their units. They are both managers and teachers, as their duties include training, directing, motivating, and ensuring the safety of a small crew of volunteer excavators.

Safety should be a major concern for all excavation staff. Unit supervisors can do their part by instituting, instructing their volunteers on, and maintaining **pit decorum**. By this term we mean the entire set of practices and routines meant to ensure the safety and well-being of the crew and the smooth workflow of the operation. This involves the proper use of tools; their proper placement when not in use; keeping the balks clear of any rocks tools or dirt-buckets that might fall into the unit or hinder traffic above; clearly marking (and – if need be – fencing off) any precipitous drop from the unit into adjacent pits; sandbagging potential dirt-slide spots; making sure the volunteers are sensibly clothed; drink enough water; rest periodically; and do not engage in any activity or horseplay which is potentially hazardous or annoying to the neighbors. It also includes such procedures as the proper placement of finds (on the balk above the excavator is not a good spot…); instituting trails for dirt removal and travel through the unit such that no delicate features or active work-plots get trodden over or spilled-on; the placement of temporary dirt-piles so as not to shovel them from one locus to another; and the periodic maintenance of the main dump to keep the dirt moving outwards rather than towards the excavation areas. Unit supervisors must immediately inform the director of any safety hazards they observe.

Unit supervisors are expected to teach excavation and recording methods to their volunteers, and to involve them in all matters pertaining to the progress of excavation in the unit. They are responsible for maintaining a high level of morale among the volunteers (i.e., that they are involved, healthy, and not excessively worked).

Together with the area supervisor and the director, unit supervisors should pace and direct the work in their units. This involves decisions as to the order in which loci should be excavated; which volunteer[s] should be excavating in which locus, using what tools and at what pace; as well as organizing the logistics of dirt-removal. It also requires planning the work at least one step ahead ("what should X do once she finished cleaning the wall?") and having contingency plans in place for down-time (e.g. while waiting for the architect or photographer, or while the unit and area supervisors are having a discussion). Having the volunteers hanging about waiting for instructions, or worse – milling about out of control, doing things they were not instructed to do, is debilitating for morale, halts the progress of the excavation, and engenders errors and accidents. Because unit supervisors directly control a small number of volunteers each, their efficiency is the key to the smooth running of the entire operation.

The unit supervisor should be watching the dirt and the excavators at all times – alert to intervene if anything untoward is seen. They are required to inform their area supervisor and director of all the changes that occur in their units and to consult with them on all developments. For example, they must notify their area supervisor and director, as well as coordinate with the site architect and site photographer, before any feature is removed from their unit. They are expected to assist the area recorder by providing accurate information about the progress of excavation in their units (loci locations) and the provenience (locus numbers and elevations) of all of the material recovered from their unit each day. They should provide information to the various topical experts upon request, and coordinate with them and the area supervisor / director on all specialized sampling or retrieval procedures (e.g. sifting). Their participation in the biweekly pottery readings and weekly stratigraphy sessions for their area is mandatory, as is the prompt and accurate completion of all their paperwork (locus cards, section drawings, loci genealogies).

Unit supervisors are expected to digest all of the material discussed in the first three chapters of this staff manual. Since the locus is the basic component on which all of their work is based, particular attention should be given to the discussion of the locus system. It is especially important to understand when to open and close loci, how to maintain loci separations, what the possible relations are that can occur between loci, and what these mean. These observations are critical to properly excavating and recording all loci.

II. THE DAILY ROUTINE

Since it is assumed that unit supervisors have a solid grounding in proper excavation technique (identifying, cleaning, and defining loci), this chapter deals primarily with record keeping (daybooks, locus card, section drawings, and loci genealogies). However, some aspects of the daily routine at Dor need to be addressed.

The unit supervisors work closely with the area recorder to ensure that all of the finds from their units, along with their provenience (unit number, locus number, stratigraphic definition and value of the locus, and elevation), are registered accurately on the recorder's daily basket list. At the beginning of each day and during the day they must keep the recorder apprised about which loci are being excavated. These are recorded on the recorder's daily top plan, which is the area's daily record (in graphic form) of all loci opened, excavated, and closed each day. It also contains the elevations for closed loci, small finds, and end of day levels. It is the responsibility of the unit supervisors to deliver to the recorders all of the information they need each day.

A. BEGINNING OF DAY ROUTINES. The first task of the unit supervisor every morning is to check that his/her volunteers have arrived to work on time. If a volunteer is sick, injured or missing the unit supervisor is required to inform the director immediately.

Unit supervisors should coordinate with the designated "tool-master" and their peers and assist in getting the tools to the area, in order to ensure that their volunteers have the appropriate number and types of tools each day.

Before excavation in the unit commences, unit supervisors take **opening elevations** on each locus that will be excavated that day. The opening elevation is the highest point in the locus, i.e. the top elevation from which finds from that locus might have been retrieved on that particular day. The unit supervisor will inform the recorder of the number and type of basket tags needed for each locus (for example, "L00D1-999 needs one pottery tag, one bone tag, and one glass tag") and obtain the tags from them. If need be, they should also report to the recorder the stratigraphic definition and contextual value for each basket. (If they do not, these values will default to those in the locus card).

B. DURING THE DAY The unit supervisor must inform the recorder whenever there is a change in loci (see detailed procedure below) and appraise the recorder of which loci have been closed (and their closing elevations); the ID, spatial definition, stratigraphic definition, contextual value, and opening elevations for new loci.

Loci should be opened and closed in the unit in consultation with the area supervisor, who holds the bank of locus numbers and is responsible for assigning all locus numbers. Before any feature (floor, wall, pit, robber trench, *tabun*, drain, etc.) can be removed from an excavation unit, the unit supervisor is required to inform the area supervisor and director, to notify the site architect (so that the feature can be drawn onto the site plans), and to contact the site photographer for photographs of the feature. The aim of this cross-checking is to ensure the full recording of all features on the site, but unit supervisors are responsible for setting the process in motion.

C. END OF DAY PROCEDURES should be planned ahead of time (at least an hour) to ensure that precisely at the designated time the entire area is clean, last dirt buckets have been removed, tools taken out, and all recording done.

The latter involves making sure that all finds-baskets are tagged and removed from the area, taking **closing elevations** – which are the lowest point reached that day for each excavated locus, and reporting these to the recorder.

Unit supervisors will make sure their volunteers do not leave the tell (unless specifically told to) before all the tools are stowed away in order, and the finds have been taken to the museum. They must report to the "tool-master", area supervisor or director all broken or lost tools to ensure prompt replacement. When needed, unit supervisors will coordinate and assist in taking down temporary shades, covering critical areas, and the fencing of the area.

Before leaving the tell at the end of the day the unit supervisors need to take a last survey of the unit, making sure that no tools, finds, dirt buckets or personal items were forgotten in the area.

III. EXCAVATING AND RECORDING A LOCUS

The primary responsibility of the unit supervisor is the careful excavation and proper recording of all loci and finds in the excavation unit. In the field, a number of factors (such as fatigue, heat, and haste) can contribute to the loss of data through something being overlooked, forgotten, or mislabeled. To keep errors to a minimum, unit supervisors should go about their task as methodically as possible by adhering to the

following procedures. These steps are a kind of checklist, and the order is not rigid. In general, steps B through H should be completed before going on to step I. In practice, some of these steps usually are taken simultaneously – two people are taking elevations, while someone else retrieves basket tags from the recorder, or two people begin to dig the locus while another is getting basket tags.

D. CLEAN AND DEFINE THE LIMITS OF THE LOCUS. First, the limits of the locus should be clearly defined. When encountering a new deposit, careful cleaning is necessary to ascertain its nature and extent. This may require bringing down the entire unit (i.e., other open loci) to the level of that locus to delineate its full extent. Excavation should not go below this level until the limits of the locus have been defined.

E. CLOSE ALL LOCI ABOVE THE LOCUS. Once the extent of the new locus is clear, close all of the loci that were overlying it. All of the artifact and ecofact baskets for these loci should be closed, and they should be removed from the unit (usually they are placed near the recorder's table to be picked up at the end of the day).

F. TAKE ALL CLOSING ELEVATIONS. A high and low closing elevation is taken on the bottom surface reached for each locus that is closed. The closing elevations for the old loci and the opening elevations for the new locus will be given to the recorder along with the new locus number. It is especially important to take bottom elevations on walls (and / or other features standing in the area) before they are removed, and to make sure that these are entered in the locus cards – *especially if these are old loci, excavated in previous seasons.*

G. OBTAIN ARCHITECT'S PERMISSION TO REMOVE FEATURES. If one of the closed loci is a feature, it is necessary for the site architect to draw it before it is removed. The unit supervisor will need to coordinate with the site architect to ensure that this is done promptly, as the makeup of the feature (i.e. its walls, floor etc.) cannot be excavated before the feature has been drawn. Timely drawing of features (after they are defined and are clean, some time before you plan to remove them) may prevent stalling work while everyone waits on the architect. Unit supervisors must obtain specific permission from the architect before removing any feature (even if it has already been drawn) to ensure that the architect has finished his/her drawing, taken bottom elevations, etc.

H. PHOTOGRAPHS. Photographs must be taken by the site photographer of any feature before it is removed / excavated through. This includes all floors, pits, foundation trenches, robber trenches, installations, drains, or walls. The director and area supervisor should be informed that photographs are needed, and the unit supervisor will need to coordinate with the site photographer to get photographs taken promptly. When taking official photographs all loci will need to be cleaned and properly labeled. As for drawing – some planning and forethought will reduce downtime in the excavation of the unit while waiting for photographs; and not wasting the photographer's time (e.g. by calling him/her over before the unit is clean) will help prevent other unit supervisors from waiting too long.

I. OBTAIN A NEW LOCUS ID. The unit supervisor obtains a new locus number from the area supervisor from the bank of unused numbers in the area.

J. TAKE OPENING ELEVATIONS. A high and low opening elevation is taken on the topmost surface of each new locus. In practice, this can and should be done at the same time as taking closing elevations on previous loci. Note, however, that in as

much as the limits of the new locus do not necessarily coincide with those of the locus above, the two are not necessarily the same.

K. OPEN A NEW LOCUS ENTRY IN THE DATABASE as soon as possible (within 24 hours of the opening of the locus). At this point in time you only have information to fill a few of the fields (locus ID, area, opening date and elevations, loci above, reason for opening, etc.) but a minimal record should be opened on the database as soon as possible. (Once the network and the network-based database will be in place this can be done in the field). This will ensure that other data-items relating to that locus (digital images, finds etc.) are not left 'dangling' and also that the ID you have obtained does not get 'stepped' on inadvertently by someone else. Note that in the present system attaching a basket or an image to a not-yet-existing locus does not produce a fatal error, but it can lead to loss of database integrity.

L. OPEN NEW BASKETS. New artifact and ecofact baskets can now be opened for the new locus. The deposit determines the quantity and types of baskets. When a new locus is opened a new pottery basket will be needed immediately. Depending on what has been observed in the new locus, other baskets (glass, bone, etc.) might also need to be opened. If the new locus is a wall, no baskets are necessary, unless the wall is to be removed and pottery is found in it. The recorder will issue the necessary basket tags. A basket list should be started for the new locus in the daybook.

M. MAKE A PRELIMINARY ASSESSMENT OF THE LOCUS'S RELATIONS AND MATRIX. Before any new locus is excavated, the unit supervisor should make a preliminary assessment of the locus. The will mean carefully assessing the nature of the locus (is it a fill, a pit, a robber trench, OR an installation, and so on) and whether it should be removed before or after the surrounding loci. For example, if it is a sealed locus, the surrounding unsealed loci should be excavated first. The relations to surrounding loci also need to be assessed before excavation begins. The unit supervisor should begin recording this information in her or his daybook.

N. DRAW A PLAN: A plan of the unit should be drawn in the daybook showing the position of the locus in relation to surrounding loci. The limits of the new locus should also be drawn onto the recorder's daily top plan.

You are entitled to use the architect's plan as a base for your own. This can either be accomplished by printing out a hard-copy of the plan of the area (at the appropriate scale), pasting it in your daybook / draft locus card, and adding details by pen or pencil; or alternatively can be done with a graphics-program, using a copy of the 'official' top-plan as background, and adding new details as needed (preferably on a new layer). If the latter method is used, make sure to print a new hard copy every time the drawing is materially changed and to paste that copy in your daybook.

O. EXCAVATION. Now the locus can be excavated. The unit supervisor needs to make sure that the proper tools are being used: a construction fill should not be excavated with a trowel and brush, and a floor deposit should not be excavated with heavy picks and hoes or *turias*. Excavation should proceed carefully (even when using heavier tools) and the area should be cleaned after every pass. All excavated dirt should be removed by bucket, then placed in a wheelbarrow, and disposed of on the area dump. Before the removal of any feature, the unit supervisor must obtain the **site architect's permission** to remove it. This will ensure that official plans and photographs of all features have been completed before the feature is destroyed.

P. COLLECT ARTIFACTS AND ECOFACTS. While excavating the locus all artifacts and ecofacts being collected should be placed immediately in the appropriate

baskets (piling pottery sherds on the balk is not an appropriate collection technique). All baskets need to be clearly tagged to avoid confusion. Any new baskets that are needed should be immediately obtained from the recorder. Any special finds should be immediately tagged and recorded with the recorder, and the find spot marked (including elevation) on both daybook and daily top-plan (for critical finds – also the plan on the locus card.

Q. RECORD ANY NEW ASSESSMENTS OF MATRIX AND RELATIONS. While the locus is being excavated, new observations are bound to be made, and ongoing assessments about its makeup and relations need to be recorded in the daybook.

R. COMPLETE A LOCUS CARD. A locus card should be completed within forty-eight hours after excavation of a locus has been terminated and the locus closed.

At some point a new debris layer or feature will be encountered and this process will begin again with a new locus.

IV. DAYBOOKS

Unit supervisors must maintain an extensive daily record of all excavation in their units. Daily records should be neat, well organized, and include all of the information (rationale for opening and closing loci, matrix descriptions of loci, all observations of loci relations, baskets, photographs, and elevations). This information is needed for locus cards, for pottery readings, and for stratigraphy sessions. Reliance on memory is a primary source of errors.

One method of keeping daily records is to fill the locus card out in the field. The card is begun as soon as a new locus is opened. After the locus is closed, the field locus card can be transferred to a clean card, which in turn becomes the final record. The advantage of this method is that all information pertaining to a locus is in one place. It will also ensure prompt completion of locus cards. The disadvantage to this method is the loss of the process, as you are left only with an end product (the locus card).

The use of a daybook is the best form of daily record, since there is no other document quite like it. A daily record is a good source for tracking a unit supervisor's observations, descriptions, and possible errors. It is the best source to consult while completing locus cards. Even if locus cards are written on the tell, it is sensible to keep a daybook. Unit supervisors sometimes face a psychological obstacle to keeping a daybook: They do not want to give the impression that they are avoiding physical labor. But without accurate records, such labor is wasted.

The daybook should include a daily top plan of the unit on the left-handed that shows all of the loci open each day to scale. A daily list of basket numbers and a complete description of their contents (useful during pottery readings and a way to cross check the recorder's basket list) should be entered. All elevations taken that day, including the height of instrument (necessary for checking erroneous elevations). A daybook should include a list of photograph numbers and what was photographed. The unit supervisor should write down all observations and descriptions of each locus that were excavated, listing possible relations.

Over the years an efficient plan for organizing daybooks has developed. It includes the following items for each day of excavation.

FIGURE 4:1 ELEMENTS OF DAY BOOK

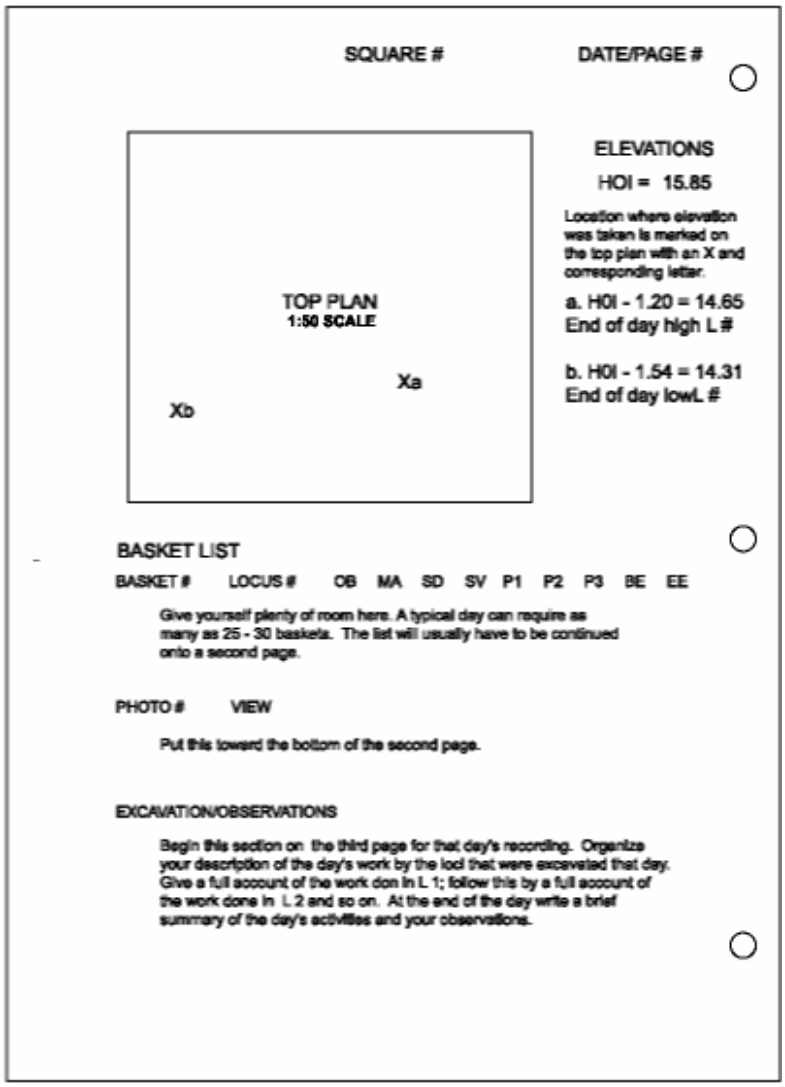
1. Square # and Date/ Page # should be on every page in case a page is lost.

2. Always have the height of instrument written down. It can help in locating errors later.

3. Include instrument readings when writing down elevations and subtract them from HOI. This can help locate errors.

4. Describe each elevation by adding a locus number or a basket number if it is for a special find.

5. Give a brief description of what was photographed, including locus number.



A. UNIT NUMBER AND DATE OF EXCAVATION. Each page should have the date and unit number, so that they can be returned to the proper location in the daybook and prevent the loss of pages.

B. TOP PLAN. Each day should have an accurate top plan that shows all open loci and features. The use of a scale between 1:20 and 1:50 is recommended for plans, as this allows for a detailed drawing that fits on a single page. Top plans should be accurate, showing the exact dimensions of each locus and feature. The top plan should illustrate all horizontal relations accurately (a wall that cuts another wall should be graphically shown as such). See previous section on how to use computer graphics in your daybook.

C. ELEVATIONS. All elevations taken each day should be listed beside the top plan and each location noted on the top plan.

D. DAILY BASKET LIST. A basket list records all of the basket numbers assigned by the recorder whether any material was collected from the excavation unit. Each basket list entry includes the basket number, the locus number for which that basket number was assigned, the objects (pottery, bones, glass, etc.), the material (ceramic, stone, bone, etc.), a stratigraphic definition of the locus (surface, stratified, non-

stratified, pit, robber trench, etc.), a stratigraphic value (in situ, sealed, unsealed, disturbed, etc.), periods (to be filled out during the pottery forum), and the beginning and ending elevations of that locus for that day. (The end of day HIGH elevations for a locus serve at the beginning of day elevations for that locus the next day and the end of day LOW elevations serve as the end of day elevations for the locus that day.)

E. PHOTOGRAPH LOG. From all photographs taken of a unit by the site photographer the best should be selected, catalogued in the image database and the image numbers should be written down in the daybook. A description of what was photographed and view should be included (W05D1-999 facing west, for example).

F. DESCRIPTIONS, OBSERVATIONS, AND INTERPRETATIONS. The daybook should include a description of each locus excavated on a given day. This consists of the depth excavated, a description of matrix, a note about the special finds coming from that locus, the reasons for opening and closing the locus, and any observations about the relations of that locus. If the relations are unclear, this should be stated, but possible relations and interpretations should be briefly enumerated.

Other items that might find a place in a daybook are section sketches or prints of digital photographs (other than the 'official' photos which are cataloged in the image database) to illustrate particular relations that cannot be depicted on a top plan.

V. ELEVATIONS

The dumpy level (transit) is used to take elevations. After the transit is set up and leveled, a backsight is taken to the benchmark (a known height in meters above the Dor grid zero level, which is set up in an area as a permanent datum), using a stadia or leveling rod. Sighting through the transit, the height is read on the stadia rod. It is then added to the benchmark elevation to calculate the elevation of the transit's sighting line (the height of instrument). The first unit supervisor to take elevations each day establishes the height of instrument (HOI) and gives this elevation to the rest of the unit supervisors and the recorder of the area. If the transit is bumped during the day and has to be leveled again, a new height of instrument needs to be taken and all personnel in the area informed of the new HOI. The elevation of any spot in the area can be calculated simply by subtracting the elevation read on the stadia rod at that given point from the HOI (Fig. 4:2).

Elevations are taken on the following occasions:

A. BEGINNING OF DAY elevations are taken on the highest point of the surface at each locus. This is entered as the opening elevation for the 'general collection' baskets for this locus (being the highest elevation from which any find in this basket may be derived.

B. WHEN LOCI ARE CLOSED AND NEW ONES OPENED: opening and closing high and low elevations are recorded for all loci. If one locus is closed and three new loci are opened, an opening high and opening low elevation for each of the new loci is required. The highest and lowest of these elevation will serve as the closing elevations for the old locus.

C. SPECIAL FINDS are artifacts or ecofacts individually recorded (rather than atched with in the 'general collection' baskets for the locus. Elevations are taken of the find spots of these

D. END OF DAY elevations are taken at the lowest point of the surface of each locus that was excavated that day and remains open. These are entered as the bottom

elevations for all 'general collection' baskets for that locus that day. Some supervisors prefer taking both a high and a low on each locus at the end of the day – and using the 'high' as the next day's opening elevation. This can save time at the beginning of the workday.

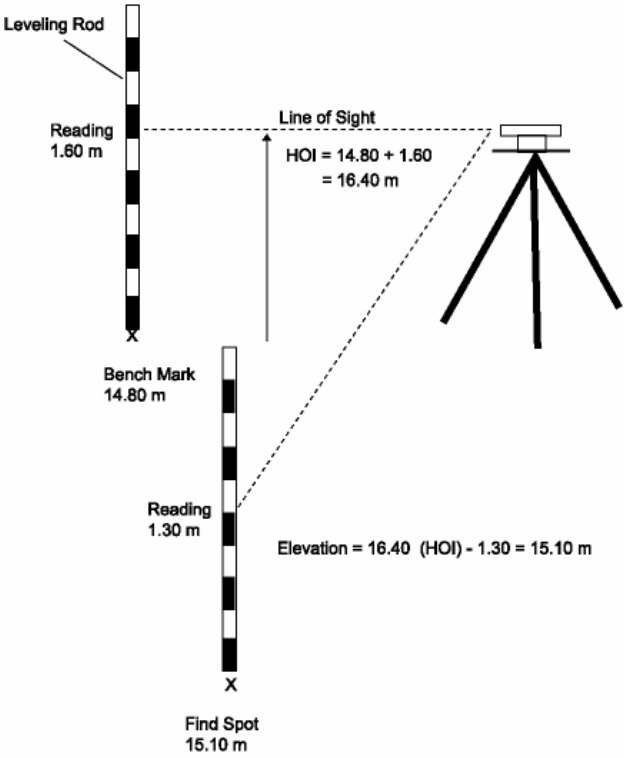


FIGURE 4:2 TAKING ELEVATIONS

1. Level transit.
2. Find height of instrument (HOI).
3. Subtract reading from HOI to get elevation

VI. DRAWING PLANS

The architectural staff maintains a **master top plan** for each area, on which all features are drawn. **Active features** are ones still standing in the field. A map of all the active features for each day (usually reduced to raster format) is given to the recorder as a base map for the daily top-plan. However – the master plan is not updated on-line. Features are usually not drawn until they are fully excavated, and sometimes are not deleted from the active list till a day or two after they are removed. Until such time as they are drawn by the architect, the recorders' and unit supervisor's drawings are the only record of these features. Also, divisions between dirt loci are not usually drawn by the architect. E.g. the architect might indicate the maximal extent of a pit on her master plan – but as the pit bottoms out and becomes smaller, the unit supervisor and recorder will need to redraw it on the daily top-plan and daybooks.

Unit supervisors are expected to produce plans of their units for their daybooks and for the locus cards. Unit supervisors may obtain copies of the master top plan for their area as base-plans for daybooks and locus cards, and add not-yet-drawn features and extra information. Plans are expected to be drawn to scale and depict the size and location of all loci accurately.

A. SCALE. As we move from hand-drawn to digital plans, scale considerations become less critical – as images can be rescaled and/or zoomed in and out of. However, raster images will become grainy when excessively enlarged, and may be bulky if drawn at an excessively large format and/or scanned at a high resolution. Plans that are repoduced each day in the daybook are done at a scale of at least 1:50 (2 cm = 1 m). This scale allows for most of the detail in a unit to be planned. Plans on the locus cards are usually reprodeuced at a scale of 1:100 (1 cm = 1 m).

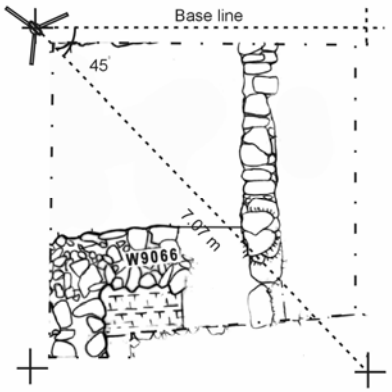
B. DETAIL. The detail of the top plans differs according to scale. At a 1:50 scale all special fines and elevations can be plotted and recorded intelligibly on the plan. At 1:100, where the emphasis is on showing the location of a particular deposit or feature in relation to the surrounding loci, it is necessary to show only loci.

C. METHODS. Various drawing methods can be employed to produce a plan. Some general principles need to be discussed first, though. A **secure point** or a **benchmark** or a **datum** is a point whose x, y and z coordinates (relative to the Dor grid) are known. A **base line** is any line between two base points. Since the end points of a base line are known, its position, length and angle (relative to the grid north) can be calculated. The basic base points at Dor are transects of the main (50 x 50 m.) grid. These are usually marked by thick (1 cm. diameter) rebar pegs encased in cement. From these, the architects shoot the **grid points** (usually marked by .5 cm. iron pegs) at the corners of excavation units. Where the grid points are impossible or unwieldy to establish (e.g. the get in the way of excavation) the architects will establish other secure points and will inform the excavation staff of their position. When drawing a complex feature (e.g. a stone-by-stone drawing of a wall), the procedure is to establish several secure points at convenient locations (e.g. the two edges of the wall) – from which secondary points can be measured (e.g. the corners of each stone). The surveyor can then "eye ball" the fine details (e.g. the outline of each stone) by eye or with occasional use of a tape measure.

1. **Distance and Angle.** This method usually requires a theodolite (though some transits can measure angles too) and an electronic distance measurer (EDM) – though a tape measure may be used on occasion. Setting up the instrument on a secure point (usually a grid marker) and using another secure point as a reference, the surveyor calculates the angle from the reference line to the point to be drawn, and then measures the distance (Fig. 4:3). These measurements are then transferred to the drawing. A theodolite can also measure vertical angles, to correct for declination – thus obviating the need to keep the tape horizontal when the elevation difference between the instrument and the measured point is large. When using a TOTAL STATION, the x, y and y coordinates of the measured point are automatically calculated from the horizontal and vertical angles and the distance measured. With a manual theodolite and EDM or theodolite and tape combination the coordinates can be calculated with the aid of a calculator (some EDMs have a built-in one). This measurement method is most accurate. If carefully done – to within 1 cm. However, it is also most time consuming (especially the exact setting of the instrument), and requires special equipment and skills. At Dor it is only used by the architects, and only to establish grid points, benchmarks, or other important secure points.
2. **Triangulation**. The surveyor measures by tape the distance of a point from two different secure points (Fig. 4:4). The tape should be held level between thumb and finger, while hanging a plumb bob from the tape down to the point on the ground that one wants to plot. The point has a measured distance from each grid point. Using a scale ruler and /or protractor these measurements are transferred to the plan. The distance from each grid point plots out in an arc. Where the two arcs intersect is where the point measured is plotted. The excavator continues this process until enough points have been plotted. Triangulation is a fairly accurate way to produce top plans, and is the method of choice at Dor. However – it, too, is time consuming. It should be used mainly to establish secondary base points from which one proceeds with other methods. Triangulating off of grid points is most exact. However, where the excavation pits are deep (relative to the grid points) this may get unwieldy due to the need to hold the tape level when measuring. In such cases, one can use other points which appear in the architect's master plan of the area (corners of walls etc.) Since the architects use the same procedure, however, not all points on their drawings are secure either. It is best to consult the architect about which points in each unit are secure.

2. **Base line and offset**. In this method to the surveyor measures by offsets from a base line (Fig. 4:5). Each point is recorded as being a certain distance along and out from the base line. The tape should be held level between thumb and finger, while hanging a plumb bob from the tape down to the point on the ground that one wants to plot. It is important to keep the tape measure perpendicular to the base line when taking an offset measurement. The potential for error is greater with this method, especially more than 2 m from the base line – due to the need to manipulate two tapes and a plumb bob while keeping all three perpendicular to each other. Where great accuracy is not a concern (e.g. when marking the find-spot of a 'special find') this is the method of choice. This is also a fast method to add detail after establishing several secure points near a feature. For example, if a wall face is set up as a base line in the unit, a number of points can be easily and quickly plotted off the wall face.
3. **Drawing frames.** This consists of a wooden or light metal frame which is strung with string at set intervals (usually 10 or 20 cm). The frame is leveled above the area to be planned. By standing vertically over the frame, the planner can record the surface details by plotting the details within the appropriate box by eye. The areas to be planned at Dor are usually large, which makes using a frame cumbersome.

FIGURE 4:3 DISTANCE AND ANGLE



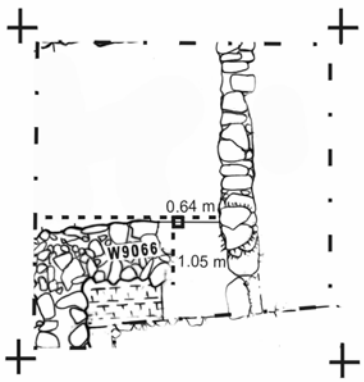
A theodolite is set on the grid point in the NE corner and the NW grid point is used as the zero line to establish a grid point on the SE corner. The horizontal distance to that point is measured using a tape measure and plumb bob, or an EDM..In a 5 m. square unit, the angle of the diagonal is 45^0 and its length is $\sqrt{5^2+5^2} = 5\sqrt{2} = 7.07$

FIGURE 4:4 TRIANGULATION

When plotting W9066, the end of the wall is triangulated off of the two southern grid points. It is 3.75 m from the grid point in the SW corner of the unit and 2.88 m from the grid point in the SE corner.

FIGURE 4:5 OFFSET FROM A BASE LINE

After establishing a base line between two triangulated points, the rest of the wall is drawn by wrapping a tape on the base line and measuring offsets perpendicular to it.



VII. BALKS

Balks and their graphic representations (sections) provide a view of an entire depositional sequence along a single vertical plane through an excavation unit. This view can be used to check the sequence of assigned loci along the face of the balk. For example, a close inspection of a balk may reveal the presence of a pit which went unnoticed during excavation. The balk profile can be used to elucidate the formation of individual deposits by revealing such things as tip lines or erosional surfaces. The judicious use of temporary balk profiles can aid in solving difficult stratigraphic relations between loci. Balks also serve as 'standing records' of past excavation, and as such are useful for re-evaluative analyses or ones requiring vertical sampling – e.g. micro-morphology. The disadvantage of balks is that they tend to arbitrarily cut across features, impeding the view of the feature in its entirety, sometimes hiding important stratigraphic relations. Hence the 'third law' which states that 'all walls end in the balk…'

Some excavation strategies are 'vertical' in orientation, others more 'horizontal'. One extreme is 'rolling balks' – where excavation proceeds by digging a deep probe and then widening it by trimming the balks back vertically, separating the finds from each deposit as it appears in section. In such a strategy horizontal features (floors, etc.) or occupation horizons are never really exposed, and can only be reconstructed from their transects on the architect's drawing-board. Section drawings are the primary records of 'vertically oriented' excavations, and top-plans are often schematic. At the other extreme are 'open area' excavations in which there are no balks at all. If any sections are drawn, they are of the 'cumulative' kind (see below). No vertical section through the deposits is ever seen in its entirety – except as assembled *post factum* on the drawing-board. The Dor 'zen' (see chapter 7.II.C) is 'slightly more horizontal than vertical' i.e. the plan view is the primary view and separation plans are the primary records. Nevertheless balks are kept as a check on the plan view and at least some are drawn and reproduced in the report – to illustrate and explain stratigraphic relations.

A. TYPES OF BALKS. There are two types of balks normally encountered: standing balks at the edge of the excavation unit and temporary balks used within the units that are created by the excavator to solve specific problems.

1. **Standing Balks**. When 5-x-5-m excavation units are opened from the ground surface, four standing balks will form the limits of the excavation unit. The standard standing balk at Dor is created by installing a 20-cm border of unexcavated material along each side of the unit. This results in a 40-cm balk between two adjacent units. Nonstandard balks, which usually 80 cm wide, are created every two units to facilitate dirt removal or a more secure edge to a unit. These balks are generally left standing until a clear architectural phase is

reached in adjacent units, then the balks standing between the units are removed to open up the excavated area across a single phase. However, units that are situated along the edge of an area will continue to have permanent standing balks as long as no unit is opened up next to them.

Standing balks are useful as excavation proceeds. These can be checked against the assignment of loci along the balk faces. To enhance the usefulness of the balks for stratigraphic assessments, the balk faces should be kept vertical and clean. Usually, the only information garnered from an untidy balk is the quality of the excavation unit.

2. **Temporary Balks**. In addition to the permanent or semi-permanent standing balks, temporary balks can be set up within the excavation unit to investigate stratigraphic relations prior to excavation. A temporary balk is useful for example while excavating loci that are bounded by the four walls of a room. Only half of the room might be excavated at a time, thereby creating a temporary balk across the middle of the room. This balk can be used to check the stratification of the deposits in a room as the excavation proceeds. Excavation can proceed in step fashion until a floor is reached. A temporary balk might be created while excavating two intersecting pits to aid in sorting out the relation of the pits. A temporary balk might be established perpendicular to the face of a wall in order to look for floor levels or a foundation trench. If used creatively, temporary balks can provide a view of the deposits present in a unit prior to excavation while excavating them.

B. BALK REMOVAL. Except for standing balks at the edge of an excavation area, most balks will eventually be removed, usually upon reaching a clear architectural phase. There are two methods for removing balks: excavation and demolition**.** The decision to remove a balk is taken only by the director / area supervisor, in consultation with the architect, site-stratigrapher and scientific advisors – to make sure all possible information has been obtained from the balk prior to demolition.

1. **Excavating Balks.** When balks contain important features or stratigraphical relations, they will be removed by excavation. This means the assignment and excavation of loci, which are removed in the normal fashion. The balk loci are then incorporated into the unit of the supervisor who excavates them. Relations will need to be determined if possible. Sometimes this is not possible, since the deposits on either side of the balk have been removed—this applies especially when balks are removed in seasons subsequent to the excavation of the adjoining deposits.

2. **Demolition of Balks:** When the stratigraphical information in a balk is deemed minimal, then the balk will simply be demolished. The process for balk removal is uncomplicated: Cut a 20-cm gap through each end of the balk, undercut the side of the balk where the balk will be toppled, and push the balk over. Balk debris should fall onto plastic sheeting to keep the deposits below the balk debris clean. The balk debris should be cleared as quickly as possible. Only small finds that come out of the balk will be kept, they will be tagged as coming from balk removal. (Note: toppling large balks can be dangerous, and every caution should be taken during the demolition of a balk.)

3. **Combination of the above:** Occasionally, some special feature in the balk is deemed important. For instance – if the balk cuts a restoration deposit, the 'missing pieces of the puzzle' needed to complete the restoration of pots on

either side may be in the balk. In such cases it is possible to demolish the balk till just above the critical point, and excavate the rest.

C. PREPARATION AND DRAWING TECHNIQUES. Preparing a section to be drawn can be a tedious chore, but the techniques are easy to learn. Time should be taken to create as vertical and as clean a surface as possible. Keeping the balks of the unit vertical as excavation proceeds will minimize the cutting-back that would need to be done before drawing. Check the verticality of your balks occasionally with a plumb bob and trim back. After trimming, the balks should be scraped flat with a spatula or a trowel, to hide the pick gouges. Balk trimming is a good 'down-time' chore if work is stalled in the unit for one reason or another. Always clean the balk from top to bottom to minimize re-cleaning of the surface.

1. **Establish a baseline**. Once the section has been cleaned, a baseline is established across the balk face at a level that facilitates tape measurement above and below the string. The baseline consists of a string that is attached to the two edges of the balk face with nails. The string is leveled using a line level. A horizontal measuring tape is stretched along the leveled string and fastened to the balk with nails. The elevation of the string is then taken using the transit, holding the bottom of the stadia rod at string level.

2. **Drawing the Section**. To begin the section drawing, draw in the baseline on a clean piece of metric paper and write the elevation of the string (the datum level of string) on the line. Add a scale on the section drawing. Sections at Dor are typically drawn at a 1:20 scale (5 cm equal 1 m). Begin the section drawing by measuring in the top, bottom, and end limits of balk section. Then begin filling in this frame with the main strata by measuring control points on the main features off of the baseline. The last part of the section drawing is to "connect the dots" and "eyeball" in the more complex areas of the balk profile.

3. **Drawing from a photograph.** In this method, one measures the basic features of the balk as above, and then draws the actual lines in by rectifying one or more digital images of the balk onto this frame and tracing off them. Care must be taken to take the images perpendicular to the balk, and to have each image small enough to avoid parallax effects. The finished drawing must then be rechecked in the field as, depending on light, camera setting, etc. some features visible in the balk may not show in the photo, or some features in the photo may be artificial.

D. TYPES OF SECTIONS

1. **Full standing-balk sections.** Prior to the removal of a balk or at the end of a season of excavation in a unit, the completely exposed balk section is drawn. This is the typical section drawn at Dor. Not all balk sections are of equal value and therefore not every balk section is drawn. A 1-m-high balk section that shows only construction fill would normally not be drawn, but a section that shows important stratigraphic relations would. Whether or not a section is to be drawn is determined in consultation with the area supervisor and director. Each area has one or more 'master sections' which are drawn and published in full. It is important to know which these are and to make sure that each portion of these is drawn before it is removed. Temporary balks (see section A above) may occasionally be drawn to illustrate the stratigraphic relations which they were set up to check. Their main disadvantage is that they are not continuous.

2. **Cumulative sections or 'virtual balks'.** Some archaeologists advocate the cumulative section (Baker 1993). In this method, excavation is taken up to a

predetermined line across the excavation unit, and the section of the 'mini balk' thus created is drawn. Then the 'mini balk' is destroyed and excavation continues past this line to the end of the unit. This process is continued until a cumulative section of the unit results. The advantage of the cumulative section is that it can be placed on any vertical plane through a unit that the excavator chooses. The disadvantages are that this method of section drawing requires meticulous measurement in determining the levels of loci surfaces, and that since feature surfaces are not really seen from the side, detached from the active locus being excavated, such sections cannot really be seen as an independent check on the locus system. For these reasons, they are rarely used at Dor.

3. **Realistic vs. Stylistic sections.** The realistic section attempts to depict the balk as it actually looks in the field (Fig. 4:5). Similar-appearing deposits are drawn to resemble each other. Interface lines are only drawn in if they appear bold in the balk profile. This will result in deposits blending into each other rather than appearing as distinct units. Although realistic sections might seem a more honest depiction of the section, as an interpretive tool in stratigraphic analysis they are not very valuable. Such sections are not drawn at Dor – though photos of the balks are taken if an 'objective' record is sought.

   The stylistic section is more interpretive. The interfaces between deposits are drawn in (Fig. 4:6). Deposits are marked with contrasting raster marks, which do not need to resemble the matrix of the deposits themselves. Sections at Dor are depicted in the stylistic mode.

4. **Schematic sections.** Schematic sections present in a diagram form the main stratigraphic elements under discussion (Fig. 4:7). They do not need to be to scale, nor do they normally depict all loci. Schematic sections are normally used on locus cards to show relations between important loci that cannot be depicted on plan. They are also drawn *post factum* during stratigraphic analysis (cf. chapter 7.IV) to illustrate relations which do not show up on any of the published section-drawings.

FIGURE 4:6 REALISTIC SECTION

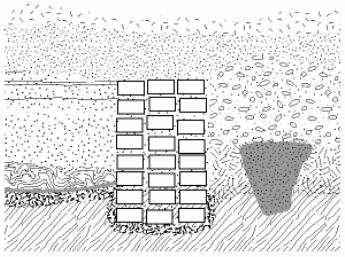


FIGURE 4:7 STYLISTIC SECTION

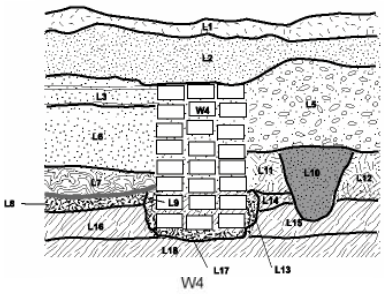
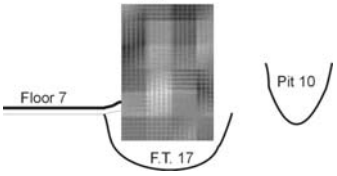


FIGURE 4:8 SCHEMATIC SECTION



VIII. PHOTOGRAPHY

The unit supervisor is responsible for the photographic record of his or her unit. This includes notifying the site photographer, team director, and area supervisor whenever photographs need to be taken in the unit, preparing the unit for photographs, checking all photographs taken and cataloging the selected ones into the database. Because of the demands on the time of the site photographer, it is important to plan ahead, and give adequate time for preparation.

A. WHEN AND WHAT TO PHOTOGRAPH.

1. **Features and relations**. It is the policy at Dor to photograph all features before they are removed. Before digging through a floor, dismantling a wall, or excavating a pit, robber trench, foundation trench, or any installation, the unit supervisor must make sure that the site photographer has photographed the feature. (Before removal of any feature, the site architect's permission to remove it is also required.) When photographing a feature, one has to make sure that all of its significant relations are included. Ideally, each statement of the type "Wxxx --- ---- Fyyy", in a locus card or a report, should be backed up by an image. Composite features (e.g. a multi-staged wall) should be photographed so as to show all of their characteristics. Some features, especially walls, are left standing for more than one season. The unit supervisor should remember to get photographs of these features, especially photographs that show any significant relations they might have with other features, even though they are not being removed. In addition to features, some interesting or significant loci may call for photographs. For example, an in situ pile of storage jars, an intact floor deposit, a distinctive construction fill, or a destruction layer. Dirt loci are not normally photographed. It is also a good idea to record especially significant finds as they are made in the field, before removal of the artifact.

2. **End of Season.** The last two or three days of the excavations each year are used to take end-of-season photographs. These include area-wide photographs, as well as photographs of each unit. This is always a stressful time and unit supervisors are expected not only to have their units ready for photographs, but also to assist by performing whatever task is asked of them.

3. **Working Photographs**. In the past, Polaroid pictures, which were expensive and poor in quality, were used for working photographs. Digital cameras will allow the unit supervisor to really get all the shots they want in the field. The unit supervisor is advised to take any number of working photographs during excavation. These might record the physical characteristics of a locus: for example, the supervisor might photograph a wall to show its type of construction or its different stages of construction. Photos of the balks may be taken in preparation to drawing them (see section VII. C above). It is always useful to make a photographic record of important stratigraphic relations in the unit. The supervisor might want to photograph the elements of a specific construction stage – walls, floor, and *tabun* associated with a single building. Such photographs can be useful as an *aide-mémoire* while writing locus cards. Area supervisors, team directors, or any of the 'experts' often also take photographs for their own records.

   Working photos, which are not recorded in the image database (see below) are not part of the official record of the excavation, and will not be kept beyond the season. They can be printed and pasted in the unit supervisor's daybook but may not be referred-to in locus cards, area supervisor's report or any other permanent record. One of the oft recurring frustrations during stratigraphic analysis is to read

"We took a photo of this-or-that" and have no actual picture at hand… It is possible to 'upgrade' a working-photo to an 'official' photograph by simply recording it in the image database. The question which arises in such a case is why wasn't an official photo taken by a professional in the first place. The unit supervisor should keep such lessons in mind the next time a similar situation occurs in the field.

4. **"Public Relations" Photographs**. It is a fact that photos showing two walls and a floor, adorned with a meter stick and some ID plaques, are useful but boring. Such pictures are rarely, if ever, used in lectures, articles or volunteer brochures. A photo showing the object of interest with people working in the background, taken from a particularly interesting angle, or at a dramatic time of day, is always preferable in such situations. Nothing can convey the excitement of a real discovery like a live photo of the discoverer with his/her prize. The responsibility for taking such photos is the photographer's – but the unit supervisor can help by pointing out significant features and discoveries to the photographer.

FIGURE 4:9 AN EXCAVATOR WITH HER PRIZE

The down-side of the digital-photography revolution, which rid us of expensive film and long production turnaround time, is that now it is all too easy to take too many pictures.

B. PREPARATION

1. **Permission**. Preparation for photographs begins with getting permission from the site architect to remove a feature. Before excavation of any feature the site architect must confirm that the feature has been drawn for site plans. Next the unit supervisor must coordinate with site photographer to schedule a time for photographs. Ideally, the cleaning of the unit should occur immediately before the site photographer arrives to shoot the photographs, so that volunteers are not standing around with nothing to do. The unit supervisor should also notify the area supervisor and director. This is to ensure that team photographs can be taken at the same time as the site photographs.

2. **Cleaning**. Before any official photograph is taken, the excavation unit should be properly cleaned. Besides looking sloppy, a poorly cleaned unit very often will not show the required detail needed for a useful photograph. Edges are made sharp; stones, bricks, etc., are defined enough to stand out in a photograph. Light brushing should begin at the highest spot in the unit and continue in one direction (usually with the wind) so that areas do not have to be cleaned more than once. Care must be taken not to leave footprints in the brushed areas. Adjacent loci should be brushed in different direction if they need to be distinct from on another in the photograph. Dirt loci may be brushed at right angles to

the camera to texture them and so distinguish them from floors. After cleaning all tools, finds, dirt buckets, etc. must be taken out of the area.

3. **Labeling.** After the unit is cleaned, the feature to be photographed and all other significant loci have to be correctly labeled and a scale and north-arrow placed in a prominent place in the unit.

C. TAKING THE PICTURES

The unit supervisor's role in the actual taking of the pictures includes, but is not limited to, adjusting labels for the photographer or moving and holding ladders. First and foremost, the unit supervisor should explain to the photographer – in archaeological terms – what it is that needs to be photographed. The features themselves should be obvious by now – they are labeled – but the relations that need to be shown are not always so. Knowing what these are will enable the photographer to figure out the number of shots needed, angles, etc.

For various reasons it is usually the case that there is a 'default' direction in which shots of each unit are taken – the direction of the sun at the 'usual' picture-taking time, the possibilities of placing the ladder, or pure laziness. The result is that certain features and relations show up time after time, while others are depicted only rarely, or not at all. The unit supervisors know best which shots have been taken, and at what angles – and they should advise the photographer to vary them as much as possible. Different views of the unit will be essential for working with the photographic record – especially if we missed features or relations in the field. In such cases, the analyzers might scan all the pictures to see if the required feature / relation shows up in the background. The more different angles we have the better.

D. SELECTING PICTURES

The many different types of pictures that need be taken notwithstanding, unit and area supervisors need to avoid taking too many photographs. The downside of the digital photography revolution is that it is now all too easy to overload the system with redundant graphics. The photographer will download all the images at the end of the workday to a designated folder on the expedition's main computer. It is the unit supervisor's responsibility to select the images they need, rename the graphics files to IDs out of their own 'bank', open records for them in the image database, and to link these images to the appropriate locus cards (see appendix 1). Only the best, most appropriate shots need be selected. Duplicates or near-duplicates, photos which show only features already shown on other images, poor pictures etc. should be deleted. All images not specifically cataloged in the image database will be deleted at the end of the season.

IX. LOCUS CARDS

Unit supervisors are required to complete a locus card for every locus opened in their unit. Even if a locus number is eventually cancelled, a cancellation card must be written to explain why the number was cancelled. Every locus ID must be accounted for. Locus cards are not completed until the area supervisor or director has examined and signed them. Locus cards should be opened on the day the locus is assigned and completed promptly upon closing a locus, while the information is still fresh in the unit supervisor's mind. The Dor locus card is described in detail in chapter 7.

CHAPTER 5

THE AREA RECORDER

Contents:

I. INTRODUCTION

Area recorders are responsible for recording the bulk of the raw data produced by the fieldwork during each season. This includes tagging, recording, and plotting on daily plans all of the finds from their areas each day. They must work closely with the unit supervisors, from whom the recorders get all information pertaining to the excavation of each unit: the opening and closing of loci, their locations in the unit, their stratigraphic definitions and value, their opening and closing elevations, the types of material being collected, the elevations of small ("special") finds, and end-of-day elevations. If the material coming from the units is not properly tagged and recorded, data will be lost.

This chapter explains the basic tasks that the recorders face each day: writing basket tags, completing the basket list, and keeping current the daily top plan. Each basket of pottery, each bag of faunal bone, and every small find must be properly tagged. Every tagged item is entered onto the basket list, along with provenience and descriptive information. Recorders not only must produce completed basket lists, but these lists have to be entered into the computer data base. In all, the recorder's job is one that demands patience, organization, attention to detail, and hard work.

II. BASKET TAGS

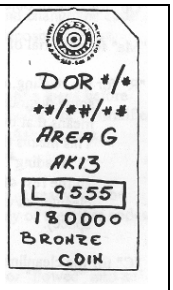
A basket tag must be filled out for every find or group of finds (e.g., one for pottery, one for glass, one for bones etc.) from every excavated locus in the area on each day a locus is being excavated. Whenever a new locus is opened, immediately a new tag will be needed for pottery, and usually for other material such as bone or glass. New basket tags will be needed for a locus every day it is excavated. This means that at the start of each day, the recorder will be inundated with requests for basket tags. It is a good idea for the recorder to prepare a number of blank basket tags (i.e., without the numbers of the square, locus, basket, and the material) before the start of each day. This will enable the recorder to deal more efficiently with the rush for basket tags each morning.

When faced with a request from the unit supervisor for a basket tag, the recorder needs to get from the unit supervisor the following information: square number, locus number, elevation, type of material, stratigraphic definition and stratigraphic value. Usually, it is helpful to have the unit supervisors write all this information on post-its.

A basket tags is a small, rectangular piece of perforated poster board. The perforation allows a string to pass through it, so that it can be easily attached to a bucket handle. Waterproof ink is used to write out the basket tags. When pottery is sent to the Glasshouse for washing, many times the tag will end up soaking with the pottery. All information on the basket tag needs to be written legibly, so that numbers and letters are distinct.

FIGURE 5:1 BASKET TAG

Each basket tag contains the following information:
"Dor"/"Excavation Permit Number"/"Year"
"Date" [day, month, year]
"Area"
"Square Number"
"Locus Number" [boxed]
"Basket Number"
"Material/Contents," [e.g., pottery, coin, etc.]



Sometimes a basket of pottery will need to be sent for restoration. The basket tags for restoration pottery must have a circled capital "R" written on them. **For the Sifting process, see below**. Any special note about the material that needs to be conveyed to the restorers or conservators at the Glasshouse should be written on the back of the basket tag, as well as in the comments section on the basket lists.

"Special" finds are placed in their own bags or boxes, along with the basket tag. If placed in a paper bag, it is a good idea to duplicate the information from the basket tag onto the bag itself. **Do not** write anything on cardboard boxes. These tend to be recycled, and end up having three different legends on three different sides (and a completely different artifact inside them…

III. THE BASKET LIST

When a basket tag is filled out, the recorder will also fill out a new line for that basket on the daily basket list. The first item in each line is the new basket number. Each basket ID at Dor is unique. Basket IDs are built by the same logic as locus IDs (see chapter 2) and consist of prefix and sequential number separated by a dash. The prefix indicates year (two last digits: "05" for 2005 season) and area (capital letter and optionally number: "G", "D1"). The sequential four-digit number (between 0001 and 9999) is taken from the area "bank" of basket numbers which are divided between recorders (if there is more than one for the area). The complete basket number follows the formula [season][area]-[number], for example, "05D1-0001". As a new basket tag is filled out, the recorder assigns a new basket number. The numbers are assigned sequentially out of the bank. The basket list must have no 'holes' i.e. if a tag is cancelled for any reason, the recorder may write 'cancelled' in the 'comments' field and not fill any of the other fields, but may not delete the basket altogether from the file. If multiple banks are issued to different recorders, they must take care not to overstep their own banks, to ensure uniqueness of the basket numbers.

Each entry on a basket list comprises a catalog of specific details pertaining to the provenience, nature, and date of the finds, which the recorder must fill in. Some of the details are filled in when the basket tag is written and the basket number issued (i.e., information regarding the provenience and nature of the finds); some details are filled in during pottery reading (i.e., periods, restoration value, and additional comments supplied by the pottery reader). Detailed description of the form and explanation of the different

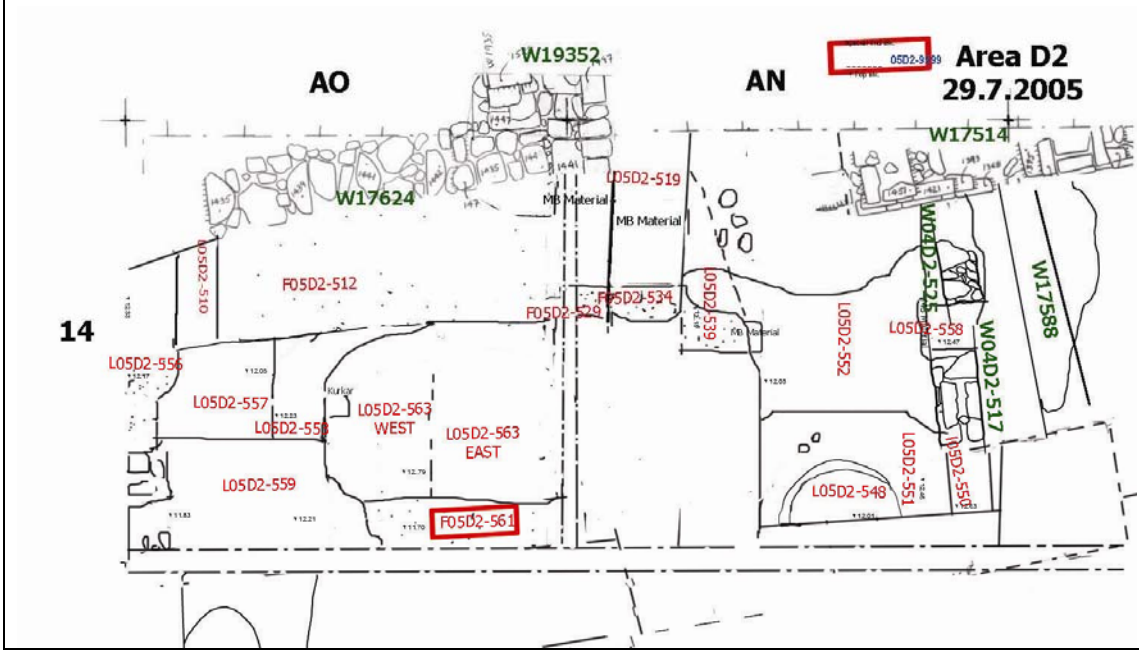
codes will be found in chapter 7. IV Once an entry is completed, it is entered into the Dor computer database (see appendix 1).

IV. DAILY TOP PLAN

The daily top plan is the recorder's plan of their area on a particular excavation day. It shows all loci and walls already open at the beginning of each day and opened during the course of a day. It is an important record of the daily progress of excavation and finds in the area. Care should be taken in producing a complete plan of the daily work. The recorder works with the unit supervisors to keep abreast of all activities taking place in each unit.

Each day the recorder will receive from the site architect top plan template file for the area. This plan usually will include the architect's drawing of the walls and features that are likely to be left in place for several weeks or the entire season. The templates do not change until the architects draw new features and digitize them into the master plan (or remove ones from it after they have been dismantled in the field. Therefore, the template will usually not be quite up-to-date and the recorder will need to update it, using Adobe © Photoshop tools as described in Appendix 2.

FIGURE 5:4 THE DAILY TOP PLAN



Unless he/she is working with a laptop on the tell, the recorder will draw on the plan with pencil the outline of all loci open that day. This means all loci which were open at the beginning of the day or were opened during the course of the day, even if they were not excavated.

At the end of the day the recorder will enter the changes (loci opened / closed, elevations reached in every locus, special finds with basket numbers and elevations) onto the

computer image, save a 'flattened' copy and print it out. This digital image of the changes in the area for that day should be cataloged in the database. For detailed instructions for digital top plan creation see Appendix 2.

The end-of-day top plan also serves as the base for next day's top-plan. The recorder should simply slip in an updated template drawing instead of the old one, and delete the numbers of closed loci and all basket numbers and elevations.

V. HANDLING SMALL FINDS AND OTHER ARTIFACTS

A. POTTERY. Pottery that is found in a locus is collected together in buckets. Each bucket will have a single basket tag which is tied to the bucket with string. The pottery is sent to the Glasshouse in its own buckets.

B. BONE AND GLASS. Bone and glass samples are also collected as a group, and are usually placed in bags with a single basket tag. Bags should be perforated to allow them to breathe. At the end of the day all bags of bone or glass should be placed in buckets to send to the Glasshouse. These bags must not be put into pottery buckets, because these buckets will be filled with water upon arriving at the Glasshouse to soak for pottery washing.

C. PLASTER AND FRESCO. Plaster and fresco pieces should be placed in open containers filled with clean sand.

D. ARCHITECTURAL FRAGMENTS. Large artifacts (e.g., architectural features like column capitals, drums, etc.) have their basket numbers painted directly on to the piece prior to sending them to the Glasshouse.

E. SPECIAL FINDS. All small ("special") finds are placed in boxes with their basket tags, and the information on the basket tag is written on the outside of the box. Any special find of great value (e.g., seal, coin, jewelry, etc.) should be sent to the Glasshouse soon after it has been recorded. In some years, Glasshouse staff have made the rounds of the areas during the day to collect the special finds. They should not be left lying on the recorder's table or placed in the recorder's bag for safekeeping. Fragile finds should be padded with tissue paper.

F. MATERIALS FOR ANALYSIS. Materials for analysis (e.g., residues) should be wrapped in aluminum foil before being placed in a box. All such materials should go directly from the dirt to the foil with the trowel; to avoid contaminating the specimen, they should not be handled at all.

VI. SIFTING

When a locus is being sifted (see below) the recorder should issue two sets of tags for the sifted buckets. The first set needs to have 8 tags in anticipation for the finds that will come out of the sifted buckets (labeled: pottery, bones [2 tags, one for micro fauna and one for macro fauna], shells, sediment sample, botanical samples [1 tag for heavy flotation], slags, and flints. This set of tags should be handed over to the archaeozeologist managing the sifting process. The other set of tags should be put **inside** the buckets and should include only the date and Locus number of the sifted buckets. When the locus is being sieved **all** of the finds-baskets tags and notes need to be "S"ed. Once the desired number of buckets have been sifted (usually 50), all the baskets tagged with an "S" are closed, and new baskets, which do not have the designation "S," are opened.
VERY important finds (e.g. figurines, complete vessels etc.), and material that should not be washed (e.g. coins, glass) should be hand picked at the field. This material will be tagged with different basket number with an "S" although it was collected at the field.

Sometimes the decision to sift a locus will be made after excavation has started that day. If this happens, all of the baskets from that locus are closed, and new ones are opened. The new baskets will have a circled “S” written on their basket tags, and an “S” is written in the comments on the basket list – together with the sifting procedure, amount of dirt, and mesh size. E.g. “S – 50 buckets wet sieved 1 mm.”

VI. POTTERY AND SMALL FIND READING

Another task of the recorder is to take part and prepare the pottery readings in the afternoon (normally pottery reading takes place twice a week). The main purpose of pottery reading is to have a preliminary notion about the chronology of the excavated loci. The recorder should prepare everything needed for the reading about half an hour ahead of time. This means to arrange all the dried pottery trays by their loci number next to the reading table. Recorders should bring with him the recorder bag (including small bags, a marker, empty tags and strings), hard copy of the daily top-plans and the basket list.

During the reading the recorder's main task is to update all the information into the basket list and likewise write on the reverse of the tags. This information concerns the date of the basket and remarks about its nature (e.g. many CP, worn pottery, etc.).The status of the basket must be clearly defined (i.e. was everything tossed, where some things kept), this relates especially with small finds that can easily become lost.

The recorder will be asked to issue new basket numbers for finds that have been pulled out of their original basket. It's extremely important to mention this transition **both in the original and in the new** basket record (for instance: if we are pulling an Attic shard from basket 07D5-1234 and we give it a new basket number, 07D5-4321, it needs to be mentioned in the remarks of both baskets- that basket 07D5-4321 was taken from 07D5-1234).

VII. BACKUPS

Daily backups are vital during the excavation. EVERY DAY the data should be printed and filed as a hard copy in the recorder's folder. If field recording is done on a computer the digital information should be saved daily in a USB flash drive, and on another computer. In order not to confuse versions, every daily backup name should contain the date. Once a week recorders should burn all the digital information on a CD (see also appendix 1).

CHAPTER 6

THE AREA SUPERVISOR, THE DIRECTOR, AND SPECIALISTS

Contents:

I. INTRODUCTION

The purpose of archaeological excavation is understood as the removal of deposits from the site, the recording of all observations made about them, and the formulation of interpretations of these observations. The main burden of detailed observation and recording falls on the unit supervisors and the area recorders (see Chapters 4 and 5). The responsibilities of the area supervisor and group director are to make decisions about where and how to excavate, deal with the preliminary area-wide interpretation (e.g., phasing), and deal with personnel and other questions and problems.

In order to make valid inferences from observations made in the field, it is necessary to have a perspective broader than the individual excavation unit. No unit will contain the full stratification of the site, nor even a full set of clues to the stratification of the elements which appear in the unit itself. The answer to a puzzle in one unit may lie in another, or even in a different area. Moreover, no matter how carefully a unit is excavated, the clues in any single excavation unit may be misleading. A strong interpretation is one which is supported by recurring evidence from a broad frame of reference.

The area supervisor and group director must not only be experienced excavators, but they should be aware of current issues facing Near Eastern archaeology, and have a wide knowledge of all aspects relating to the excavations at Dor. They will move from unit to unit in the area, and spend some time studying other areas also.

The area supervisor may have a wider vista, but he or she will not match the unit supervisors in their awareness of the details in their individual excavation units. The fruitful interchange between the unit supervisors and the area supervisor and director is the key to the understanding of the area.

II. THE GROUP DIRECTOR

Group directors are the persons who recruit and organize students / volunteers, and as such, their primary task is the safety, welfare, and education of their groups. Group directors often double as area supervisors, but sometimes (e.g. if they bring a very large group) they may split the group between several areas. Sometimes they have other roles in the executive structure (e.g. “experts” – see below) and sometimes (e.g. in the case of non-academic groups) they may have no additional role. In the following discussion we shall consider group directors and area supervisors together – and take the case-study where a group director functions as an over-supervisor. The division of responsibilities will be slightly different, of course, if the group director holds a different role.

III. THE AREA SUPERVISOR

The responsibilities of the area supervisor entail a number of duties for ensuring proper excavation and recording in the area. Unlike the unit supervisors and recorders, the records that the area supervisor and director keep do not have any fixed format. It is recommended that area supervisors keep some kind of field notebook—for keeping track of locus numbers, features, important loci, and artifact interpretations.

A. LOCI. The area supervisor should assign all loci in his or her area. At the beginning of each season, the area supervisor is given the bank of locus numbers for the area. These are assigned in sequential order. The area supervisor should maintain a current record of all assigned loci so that locus numbers are used only once. She or he should keep track of when the loci were opened and closed, where they were opened, and a general description of the nature of the locus. This record of assigned loci can be used during and at the end of the season to check against all completed locus cards. It can also be used as a basis for the locus index that will be attached to the supervisor's end-of-season report.

The area supervisor is advised to either keep locus genealogies for each square in her or his areas, or to obtain copies of locus genealogies from the unit supervisors on a weekly basis (a good time to do this is at the weekly stratigraphy session). Both the locus list and the locus genealogies will be useful when checking locus cards, preparing the unit supervisors for stratigraphy sessions, and producing a technical report on their area at the end of the season.

Care should be taken when assigning loci. The reasons for opening and closing loci should be clear to the area and unit supervisors, as well as where the limits of each locus are and what important stratigraphic relations are present.

The area supervisor should keep track of potential key contexts in his or her area. Key loci should have all (or as many as possible) of the following attributes:

i. They are 'clean' – preferably 'in situ' or primary deposition, or at least sealed.
ii. Their stratigraphic attribution is unambiguous. Note that this is not always known during excavation.
iii. They contain a fairly large assemblage of pottery and other artifacts. This also is something cannot be determined before the locus has been completely (or at least sufficiently) excavated. Note that in some cases a context may be formed of several different loci – e.g. when some 'technical' locus divisions have been made. In ssuch cases, although each locus in and of itself is not large enough to yield a representative sample of diagnostic pottery, the context as a whole may be sufficient.
iv. It contains absolutely-datable artifacts / ecofacts.

Key contexts are the ones which will be represented in the final report as diagnostic of the phase / structure / space being excavated. Therefore (if they are not sent *in toto* to restoration) potential key contexts should at least have all diagnostics saved. These contexts (if recognized as such in the field) should receive first priority for sample sieving, radiocarbon sample collection, etc.
One other demand is that there be at least one key-context per phase per area or sub-area / architectural unit. This means that if not even one context can satisfy all of the above, lower-order contexts might have to be considered, and treated accordingly.

B. FEATURES. The area supervisor should decide on the 'main' locus number which designates a feature. As many features span more than a single unit, the naming of features entails supra-unit-supervisor coordination. Area supervisors also monitor the removal of any feature in their area. Before any feature (this includes robber trenches, pits, walls, floors, etc.) is removed, official photographs have to be taken, every feature has to be drawn by the site architect, and levels must be taken. Approval must be obtained from the site architect and director before any feature is removed.

The area supervisor is advised to give special attention to features, noting which loci constitute each feature, what their significant stratigraphic relations are, and keep notes on the preliminary phasing of features in their area. One effective way to do this is keep a list of feature loci in tabular form, where all pertinent information can be kept in one location. The locus genealogies can also be used to note the significant relations and judgments with regard to phasing.

C. RECORDING AND LOCUS CARDS. The area supervisor should make sure the unit supervisors and the area recorder are completing their daily tasks in timely fashion (locus cards, daybooks, end of day levels, proper excavation, basket lists, daily top plans, the cataloging of photographs, etc.).

The area supervisor keeps the recorder supplied with a bank of basket numbers. He or she must periodically check the recorder's work to ensure that the record of artifacts (basket list) and daily top plans are completed and digitized each day. The area supervisor should periodically check the work for accuracy and clarity. At the end of the season the area supervisor is responsible for collecting the daily basket lists and top plans from the area recorder and attaching them to his / her end of season report. The area supervisors must make sure that an end-of-season top plan, showing all loci open and all elevations of all features and loci exposed in the area (whether or not they were excavated at all that season) when excavation was stopped.

The area supervisor or group director must check all locus cards for completeness and accuracy. Once the cards are completed, they are signed by the reader. A locus card has to be filled out for every locus number assigned, even if that locus was subsequently canceled. Features which appear in more than one unit or have been partially excavated previously present a special problem of coordinating between unit supervisors. In such cases (and only in such cases) the area supervisor needs to assign **continuation cards**. Continuation cards should be numbered /0 (default) /1. /2 etc. The area supervisor needs to assign these ordinals to the unit supervisors. At the end of the season the area supervisor is responsible for collecting all of the area locus cards and attaching them to his / her end of season report.

D. IMAGES. In the beginning of the season, the area supervisor is assigned "banks" for the various types of images that will be taken / drawn for the area (photos, locus-card sketches, daily top-plans, genealogies etc.). The area supervisor assigns these IDs (individually or as sub-"banks") to his/her recorder and unit supervisors as appropriate, and should periodically check to see that the images are stored in their proper names (their bank IDs) in the assigned folders, and that they are properly cataloged in the image tables on the database. At the end of the season the area supervisor is responsible for collecting all of the area's images and attaching them to the end-of-season report.

E. STRATIGRAPHY SESSIONS AND POTTERY READINGS. The area supervisor must attend all stratigraphy sessions and pottery readings for her or his area, and

must be prepared to explain why loci were opened or closed. The area supervisor should also be able to answer any questions relating to loci relations in her or his area. The area supervisor should make sure that the unit supervisors are prepared for these sessions as well.

F. PERSONNEL. The area supervisor is responsible, together with the group director, for the safety and wellbeing of their volunteers and staff. Together with the senior field archaeologist and the field director they should devise schemes and strategies that will keep the personnel out of harm's way, and are responsible for implementing them. She or he is responsible for information, instruction, and morale. The area supervisor should watch to see that all volunteers are receiving proper instruction from their unit supervisors; that they are treated well; and that they feel they are getting their money's worth. The area supervisor is responsible for passing on any complaints immediately to the director, and for catching potential problems before they become serious.

It is the duty of the area supervisor to secure transits, tools, and any other items necessary for excavation in his or her area.

The area supervisor is responsible for the timely execution of all area-related chores, both in the field itself and in the glasshouse. This includes making sure that the pottery from the area gets washed before the next pottery reading, and that it gets registered afterwards, that sieving tasks are completed, that personnel are allotted to supra-area tasks such as assisting the site-conservator etc. But the assigning of special tasks for staff personnel or any operational decisions should be done in consultation with the group director, who always has the final say.

G. WORKFLOW. The area supervisor is responsible to maintain the proper balance between speed and meticulousness, to ensure that the overall goals for the area are achieved without missing significant detail. She or he should instruct unit supervisors on when and where to pick up speed and when and where to slow down or stop. They should devise ways and means for efficiently removing dirt from the area and plan and implement any other necessary logistical tasks. The area supervisor should coordinate with all the various experts, fora, and professionals (architect, photographer etc.) to ensure that all procedures and protocols required by these experts are properly executed and to attempt to minimize both down-time in the area while waiting for such 'outsiders' to come in and perform their tasks, and the waste of their own time – by ensuring that the area / feature / workers are ready for the procedure at the appointed time.

H. THE BIG PICTURE. The area supervisor, in consultation with the group director, site stratigrapher, and site architect, should focus on the stratigraphy of the area as a whole, and particularly on the relations of features over the whole area (see above). This may entail a review of records from previous years or other areas. Area supervisors should keep unit supervisors informed about what has happened or is happening in the area as a whole.

I. PREPARING AN AREA END-OF-SEASON REPORT

While the main burden of daily recording falls on unit supervisors and recorders, the area supervisor must sum it all up and present a coherent stratigraphic scheme at the end of the season. At the end of each season the area supervisor will prepare a report encompassing all the records (textual, tabular, graphic) pertaining to the area that season, plus explanatory texts reflecting the supervisors' understanding of the area at the time of writing. For preparation of the report, reference should be made to section IV in Chapter 7 and Appendix 4 of the *Staff Manual*, as well as to the

summary in volume one of the published reports of Areas A and C (Stern et al. 1995:16-20).

IV. SPECIALISTS

Years ago, it was possible for the raw recruit to spend afternoons with the director of an excavation, sorting through the pottery recovered that day, discussing the stratigraphy of the site, and planning the next stages of the work. This can occasionally happen today on very small excavations. At Dor, as with most excavations today, no one person has the time or the expertise to tackle all aspects of the excavation.

At Dor, an attempt is made to include people on the staff from as many different fields of interest as may be relevant to the fieldwork at Dor. Each one may assume responsibility for a given aspect or topic as it relates to the whole site. Indeed, the organizational structure of the expedition might be described as a consortium of scholars in differing but overlapping fields, who have assembled to pursue common goals, rather than as a strict hierarchy. The term "specialist" is applied somewhat loosely, and includes such functionaries as the area draftsperson, the photographer, and the pottery restorer. It might also pertain to any student who has obtained permission to research a certain type of find, or a site-wide phenomenon.

Some of the specialists utilized in the analysis of excavation data may not actually participate in the fieldwork. For example, the coins found during the excavation need weeks or months of conservation work to remove the crusts of oxidation before they can be examined by a numismatist. Therefore, the numismatist do not contribute directly to the progress of any particular season's excavation. Other specialists are highly involved in the day-to-day work on the tell. They perform various tasks that will assist in an enlightened interpretation of what is being excavated. For them to be effective, it is important for them to receive any information or assistance they need from the area and unit supervisors, as well as the area recorders.

A. THE SITE ARCHITECT AND AREA DRAFTSPERSON. Each area has one person to draw the plans of all of the features uncovered in a season. That person might be the site architect or a draftsperson working in coordination with the site architect. The site architect is not necessarily a professional architect, but is a qualified archaeologist whose job is to maintain the site grid, to double check that all features of the excavation are drawn by the end of the season, to make sure that work is performed by each draftsperson according to a single standard, and to note down preliminary phasing as it is done in the field or the stratigraphy sessions. After the season, it is the site architect's job to maintain and update the expedition's master plan set and to prepare, according to the area-supervisor's end-of-season report, a set of phase separation plans for each area.

The area draftsperson is a member of the area team. Along with the site architect, the draftsperson appraises any new feature that is found in the area. The draftsperson attends the area stratigraphy sessions and takes part in any discussions in the field concerning the stratigraphy of the area.

Together, the area supervisor, unit supervisor, and draftsperson should plan well ahead of time when each feature is to be drawn, so that work in the unit will not stall or be delayed because features have not been drawn.

The draftsperson takes levels on each feature independently from the unit supervisor. This is because plans must contain many more levels that required in locus cards or

daily top plans. These two sets of levels will also be used to cross check each other. The unit supervisor provides all locus numbers needed by the draftsperson.

Before the removal of any feature in the area, the site architect and draftsperson must give their permission. This includes walls, floors, pits, and installations. This is done even if the area and unit supervisors are certain the feature has been drawn. This is the last opportunity to check the drawing of the feature, the levels, and the locus numbers. Sometimes they will have special instructions about how the feature should be dismantled (e.g., a wall with multiple stages has to be removed stage by stage, with the top of each stage drawn and photographed).

B. THE SITE PHOTOGRAPHER. The site photographer is responsible for producing the official photographic record of the excavation. This record requires a number of different types of photographs.

1. **Detail photographs.** Each feature in the excavation must be recorded in at least one photograph (though not necessarily a separate one for each). Some features will require a number of photographs from different angles (e.g., a wall, if it is a multiphase wall). Important feature relations (e.g., wall to wall, floor to wall, etc.) must be recorded photographically. The image ID is recorded by the unit supervisor on the feature locus card. Two types of detail photos should be taken (usually at least one-of-each per feature): a) A labeled photo in which each feature has a sign with its ID, as well as a north arrow to indicate the direction from which the photo was taken and b) a 'clean' photo with only a metric scale. Whereas the first kind is useful for working photos, the second will often be preferred for publication purposes.

2. **Area photographs.** Wide views of the area (or portions of the area) are taken to record the progress of excavation, area wide architecture (i.e., buildings and streets), and feature details in a broader context. When taking area photographs, major features should be labeled with their proper locus numbers. The area photographs are usually taken from a ladder or crane. Area photographs are always taken at the end of each season, but it is good practice to have them taken during the middle of the season also.

3. **General photographs.** Sometimes photographs are taken of features to characterize the site, rather than to document the feature. Examples would be photographs of wall construction techniques (e.g., Hellenistic header walls) or photographs showing the layout of rooms in a building. Only the main features in the photographs need to be labeled with locus numbers.

4. **Aerial photographs.** These are usually taken at the end of the season or after it is over, but while the area is still clean.

5. **Public relations photographs.** These photographs are used in lectures, brochures, popular books, and newspaper or magazine articles. They often show people working, and may refer to no particular area.

When the site photographer arrives in the area to take photographs, it is expected that the unit will have been cleaned. Stones should be dust free and sharply delineated, and all surfaces cleared of loose dirt. A surface should be brushed at right angles to the camera to reveal it, the other way to conceal it. All buckets, tools, and wheelbarrows should be removed from the unit. All loci should be properly labeled with their locus numbers. A meter stick should be placed in the area for scale.

C. THE POTTERY ANALYSTS. The main job of the pottery analysts is to read all of the pottery recovered from the excavation. This consists primarily of typing the pottery, assigning a chronological period to it, and deciding which pottery to keep for analysis or send for restoration. They try to make regular visits to the areas whose pottery they are reading. They should be kept informed about all developments in the area's excavation, especially with regard to its stratigraphy (e.g., phasing, important loci, and other problems).

D. THE POTTERY RESTORER. Although most of the pottery restoration takes place after the season is over, pottery restorers are on site during the excavation season. Most of their time is spent in the Glasshouse. Through restoration forms and during site visits, they should be informed about all restorable pottery and *in situ* loci. It is a good idea to consult the pottery analyst and pottery restorer about separating and recording vessels in an *in situ* locus prior to the removal of the pottery from the field.

E. OTHER. Other specialists involved in the Dor expedition include the Laboratory and Museum directors, who are involved in the running of the Glasshouse. There may be occasion to have on site other specialists, such as a zooarchaeologist, a paleoenvironmentalist, or paleobotanist.

IV. PROFESSIONAL FORUMS

Some large excavations in the 1960s and 1970s were brought to a virtual standstill because their centralized organization was unable to cope with the weight of data produced by the excavation. Many of the organizational innovations at Dor are attempts to deal with this problem. Division of responsibilities and employing outside (and inside) expertise is one such attempt. Another is what is usually referred to in computer science as "parallel processing"—setting several machines to work side-by-side on different aspects of a common problem. For such a scheme to work, information has to be shared across the organization as well as passed up and down the hierarchy. The way we attempt to accomplish this at Dor is through splitting the staff into professional forums. A forum includes all staff members who deal with, or collect information about, a single problem or facet of the excavation. Some forums are pre-established, and have a fixed schedule and predetermined agenda; others may be formed ad-hoc during the season to deal with a specific problem. Each forum holds scheduled or impromptu meetings where the particular issue facing them is discussed. Each member of the staff may be included in one and sometimes several (but never all) of the forums.

Several of the forums at Dor—the late and early pottery reading groups and the stratigraphy sessions—are discussed elsewhere in the manual. Several other forums have been held in the past and may be ongoing.

A. THE DIRECTORS' FORUM. This involves the excavation director and the group directors, who hold meetings twice or three times during a season. Here they discuss policy decisions, research objectives, and priorities. These are then translated into decisions as to where to dig and how much manpower to devote to each task.

B. THE DRAFTSPERSONS' FORUM. The site architect meets regularly with the draftsperson from each area to compare notes and ensure the standardization of their work.

C. THE REGISTRATION OR COMPUTER FORUM. All of the people involved in computer registration should meet once a week with the staff computer specialist, more often if needed, to discuss problems and bugs encountered with the computer programs and to suggest improvements to the system.

D. THE IRON AGE FORUM AND THE HELLENISTIC/ROMAN FORUMS. These forums include all staff members who are concerned with the problems and issues concerning these particular periods. They meet on an irregular basis, either in the field or in the glasshouse or during the year, to share information relating to their fields of expertise, or to study problems related to their particular periods as they are raised by the fieldwork at Dor.

E. OTHERS. Other forums include a small finds forum (to "read" the finds and decide what to do with them), a field school forum (designed to teach practical field methods), an environmental or ecofact forum (which deals with sediments, flora and fauna that are found at Dor with archaeological science specialists), or forums for other special areas of interest (e.g., ancient technology, science-based dating, etc.).

CHAPTER 7

THE DOR REGISTRATION SYSTEM

Contents:

I. INTRODUCTION

If the purpose of stratigraphic excavation is to model the processes of construction, use, destruction and abandonment at the site, dividing it (and the artifacts and ecofacts in it) to excavation units – the purpose of the registration system is to model these excavation units on paper. Computerized registration systems are virtual models of paper ones.

In considering the structure of the registration system we need to think of what is being registered (archaeological objects) and the structuring principles therein, as well as the means of registration (archaeological records).

A. THE OBJECTS BEING REGISTERED

We have already met the 'what's' (archaeological objects) of the recording system in the course of this manual. These include:

1. **Individual finds**, both artifacts and ecofacts. Since the ecofacts of interest are usually ones altered and / or used by humans, there is no real distinction between the two categories anyway. For the purpose of registration thematic divisions between categories of finds (pottery, coins, bones, soil samples etc.) are of more importance as it goes without saying that the type of information we might wish to record on a soil sample is rather different from that of a bone or a coin. These various type of finds do have some similar fields – namely their archaeological provenience. Not all finds at Dor get cataloged individually and therefore we also need to record –

2. **Collections of finds.** We have already met one type of collection – namely the 'basket' (chapter 2.V, chapter 5) ; but a 'type' is also, in essence, a collection of individual artifacts. any set of [one or more] finds for which we wish to collectively record some information might be considered a 'collection': e.g. the bone assemblage of locus X. Finally, collections are hierarchical – i.e. their elements might be collections in themselves. Thus the 'Catalog of Lamps of Area G' is a collection of 'types' and the bone assemblage of phase Y might include the bone assemblage of locus X as a sub-collection.

3. **Loci,** being the primary excavation units at Dor were already discussed in detail (chapter 2). Note that there is an implied structure between the individual find and the locus in as much as each find must belong to one locus and one locus only. Strictly speaking, there are finds which are not from any determinable locus – e.g. surface finds, finds from the dump, things which fell out of the balk; but we can get around this difficulty by simply

defining a ‘blank’ locus. The reverse relation – all the finds from one locus – is a ‘collection’ as defined above.

4. **Relations and interfaces** between loci (chapter 2.IV) further structure the locus system. The fields ‘loci above’ / ‘loci below’ in the locus card (see below) enable the browser to navigate the system according to order-of-excavation. This structure is graphically illustrated by the ‘locus genealogy’ (section III). Other relations (‘seals’ / ‘sealed by’; ‘cuts’ / ‘cut-by’ etc.) establish the stratigraphic structure of the data-base. Interfaces can be regarded as special cases of relations – where – in addition to stratigraphical relations there is also an adjacency relation between the two loci. Relations and interfaces can alternately be regarded as properties of the locus, or as independent entities in the recording system. The advantage of regarding relations as separate objects from the loci they relate is that a relation from X to Y always implies a reverse relation from Y to X. Recording this relation separately for X and for Y thus involves double-book-keeping and increases the danger of errors in the data base structure. The present version of the database, however, still records relations as descriptive data for the locus.

5. **Features** can be considered sets of loci. In the Dor system, every feature must comprise of at least one locus – if it does not, we manufacture a ‘phantom locus number’ for it – see chapter 2.II.H). Some features comprise of many loci, but each feature should be named after some locus within it. This locus number, then, can be used as a ‘main’ ID for the entire feature. The same definition of a feature can be stretched to subsume more abstract aggregation of loci (e.g. a phase, a stratum). These are not usually identified by locus IDs, so feature IDs should include names like ‘STR IV’ or ‘D2/5a’ or even ‘the Persian palace’. Some feature-aggregates have no stratigraphic meaning per se. For instance – the set of all features discovered before 31/7/05 in area H and not dismantled by that date (=the top-plan of area H for July 31 2005). Like artifact-collections, features can be defined hierarchally – i.e. ‘STR IV’ might comprise of {D2/5a = {building X ={Lxxx; Wyyy;…}; building Y={…}; …}; D1/4;…}

B. TYPES OF RECORDS

Archaeological records used to be distinguished by the media they were recorded on, and this is still reflected by their names – locus **cards**; basket **lists**; **tzetale**; **photo**; etc. The digital revolution has blurred the difference between many of them, because all records are (as of 2003 at Dor) kept on the computer, and it is often possible to view the same information in several different formats. Nevertheless different types of data are kept in different digital formats and are displayed and manipulated by different software handles.

1. **Tabular data** consists of any information in which fields of predefined format are arranged in sequential order. Thus both the traditional **card** and **list** are subsumed within this format. Note that a table, or form, can also host other types of information (e.g. free text, or graphics) in specially-formatted data fields – just as a photo could be pasted on a locus card in the old days.
2. **Raster graphics** are any graphical records consisting of a mosaic of different-colored tessarea (pixels) arranged in rows and columns. The most obvious instances of raster-graphics records are photographs, so are scanned drawings. Other types of graphics may be kept in raster form too – as are our daily top-plans. These are kept in this format simply because raster graphics programs (e.g. Adobe Photoshop) are more generally familiar. We require all our unit supervisors and recorders to be conversant with these. Most all graphics at Dor depict in some way either one locus or more, and / or to some find or collection of finds. The data base must be able to make that connection (see sections 5 and 6 below).
3. **Vector** or ‘co-ordinate geometry’ graphics are ones where each drawing element is some geometric shape (point, line-segment, arc, etc.) designated by pairs of x,y coordinates (or x,y,z for 3D shapes). Vector graphics files are

generally smaller, have no picture size / resolution problems and individual drawing elements can each be manipulated as independent objects. They generally require specialized software to manipulate, though (we use AutoCAD, Adobe Illustrator and other programs) and, at Dor, are usually restricted to the use of architects and computer graphics specialists. One exception are the locus genealogies, which are kept in vector-graphics format and manipulated with a simple vector-drawing program.

4. **Free texts** or hypertexts are files like this manual, written in some text editor or word processor, and kept either in text format or as hypertext documents (.html format). Such texts may refer to various recorded elements (loci, finds etc.) and incorporate other types of records (graphics, tables, other texts) within them.
5. **Meta-data** are documents which – instead of describing archaeological elements directly, describe other data records. One important meta-data file is the 'graphics register' in which are kept the ID, actual location, and various technical data (size, resolution, date of entry etc.) of each image in the Dor data base. Meta-data files can be tabular or free text. Indeed, this entire chapter might be regarded as a meta-data document, in as much as it describes the database, rather than the data itself.
6. **Log books** can be seen as a special kind of meta-data which records transactions and workflows. The supervisor's daily logs were already discussed, but other staff-members keep their own. Logbooks are usually free texts but can be tabular in form. Most data files have logbook-like fields appended to them (also referred-to as 'timestamps') so that you might know when that particular record was opened, when it was last modified, etc. Such fields are vital for various administrative procedures – for instance, for end-of-season reports the area supervisor will want to print out not only loci opened this season, but also any locus card that has been modified since the last hard-copy of the file has been printed out. One important logbook is the artifact movement logbook, in which a transaction is recorded every time a batch of artifacts is moved from one place to another (from the glasshouse to the photographer's; from the photographer to the draftsman; from there back to the glasshouse etc. To know where an artifact is now, you should query its last movement (if this query comes up empty, it has never left the glasshouse). To know what treatment[s] an artifact has been through – search through its history in the artifact movement logbook.
7. **Pointers** or **connectors** are data-elements of the format:

   <data object> <some relation> <data object>

   Such connectors enable many-to-many relationships in relational databases. Relations between loci, referred to above, may be described as connectors of this type (between a pair of locus cards), and the connection between images and the objects (loci or finds) depicted in them is of this sort too. Note that the 'many to many' relation is necessary in this case, since most images show more than a single object, and one object may be depicted in several different images.

C. FORMATS OF RECORDS

The excavation uses various graphic software (Adobe Photoshop, Adobe Illustrator, SmartDraw and Auto CAD). The formats specified below are those in which the final images should be saved. Temporary working files, not under a data base name, can be saved in any other format.

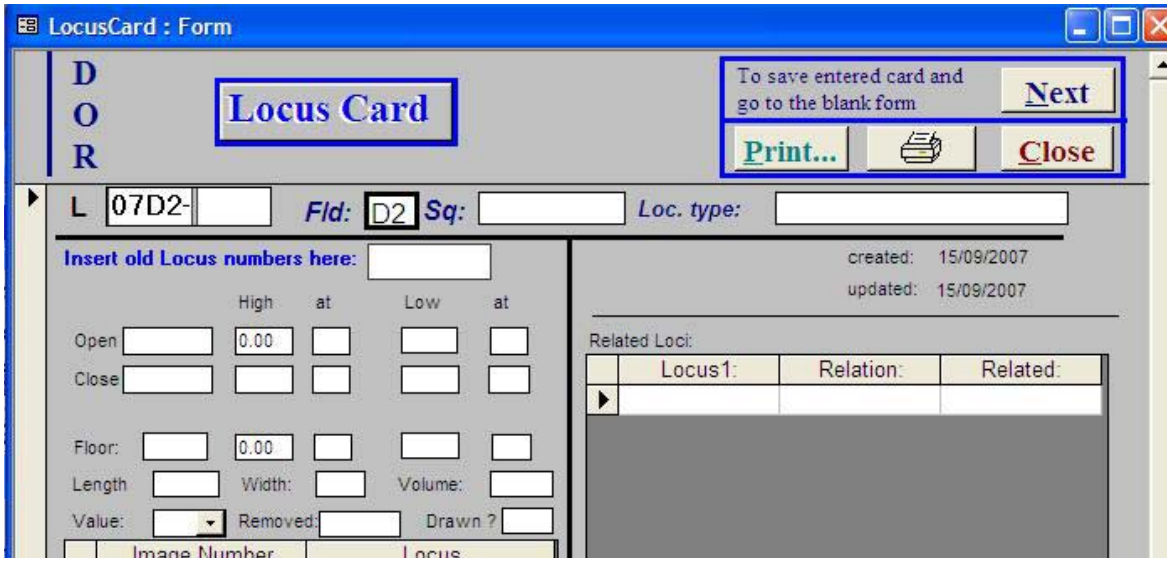
1. **dxf** – standard format for vector graphics,
2. **svg** – internet-friendly vector format. Can be used for all vector files.
3. **Tiff, LZW compressed** – will be used for all future publication raster images: ceramic, photos and other small find drawings and the architectural scans.
4. **Jpeg** – used for raster images: daily top-plans and pictures.
5. **sdr** – genealogies.

II. THE LOCUS CARD

The locus is the basic excavation unit. Every locus ID in the bank (including ones which were opened accidentally and cancelled) should have a locus card. Locus cards contain several sections:

A. THE LOCUS HEADER

FIGURE 7:1 THE HEADER OF THE LOCUS FORM



1. **Locus Number** consists of*:

   1.1. **L/W:** An L is placed before all locus numbers except walls, which are preceded by the letter W.

   1.2. **Prefix:** two last digits of the excavation season and Area. This field is filled automatically with current year and according to the area selected in the main menu.

   1.3. **Number:** Enter the unique locus number for this specific deposit or feature. This is a number from the sequence of your area/sub-area bank.

   * Features registered before 2004 season use different numbering system (see below).

2. **Fld__:** This refers to the area in which a locus was excavated. Area designations are an uppercase letter (e.g., D) or an uppercase letter plus a number (D1). The field is filled automatically according to the area selected in the main menu.

3. **Sq_____:** This refers to the excavation unit. If the locus is located entirely within a 5-x-5-m grid square, enter that square's designation, (e.g., AW/25). If the excavated locus falls within more than one grid square, enter all grid squares: AK-AJ/31 (east-west orientation), AK/31-32 (north-south orientation), or AK-AJ/31-32. If only a portion of a feature or wall was excavated during the current season, enter only those grid square designations where excavation was conducted.

4. **Locus type:** This is a brief (1-5 word) description of the type of locus being recorded. The range of locus types encountered in the field is too varied to offer a comprehensive list here, but the more common types of deposits observed at Dor in the past are briefly discussed. When entering the locus type, avoid terminology that is vague, if possible. For example, to characterize a locus as a stratified accumulation really says little about the locus. Almost any deposit lying below the

surface of the site can be called a stratified accumulation. Italicized terms represent locus types used in the past.

a. **Non-Stratified Deposits:** Various types of deposits have little value for stratigraphic analysis because they have been created by their removal from the stratified context of the buildup of the tell. They include such things as *erosional wash* from the surface and from balks which is deposited in excavation units after the winter rains; debris which might have been washed up into an excavation area by the sea; debris left behind by site looting or vandalism; and *backfill* from previous excavations. It is usually not advised to even open locus numbers for such "deposits" (If any exciting things are found while cleaning the pits of winter wash they can be given basket numbers without a locus designation at all) – but it will happen that one knows one cannot be sure that the deposit is non-stratified till it has been excavated – and in that case it is better to be safe (and issue a locus ID) than sorry (e.g. when excavating Garstang's backfills).

b. **Surface Soil:** The upper 5-35 cm of soil in an excavation unit. *Surface soil* is assumed to be highly disturbed by recent human activity (foot and vehicle traffic, plowing, digging, etc.), by bioturbations (plant growth, animal and insect burrowing, etc.), and by erosion (wind and rain).

c. **Horizontal ("stratified") Layers:** This type covers most stratified dirt and debris deposits. Unit supervisors should attempt to give a more specific characterization to stratified layers, if possible. A major challenge is to identify the agent of stratification – One should try to identify whether one is excavating *accumulations* (gradual buildup of material during the use-phase of a feature (e.g. *refuse dump* or *midden*, *ash layers*, *floor deposits*, etc.); *debris* or *collapse* - *fallen stones* or *bricks*, *destruction layers* and intentional constructions like *construction fill*, and *floor makeup*. In practice these distinctions are often difficult to make – how would one know if a *rubble layer* is the collapse of a wall or an intentional constructional fill? If there is a micro-morphologist around, it will be a good idea to consult them. There are also 'mixed categories' which occur quite often as one hits the interface or bedding-plane of the deposit such as *fill down to floor* (if a floor is encountered while excavating the locus) or *floor makeup and fill below*.

d. **Vertical "layers":** Since these 'defy the law of gravity' they are almost always man-made features created for specific uses. They include cutting features such *as pits, foundation trenches, robber trenches*, *drains*, *cisterns*, and so on. Remember that *robber trenches* are ghost features which indicate wall positions. Alternatively they are built-up features including *walls*, *tabuns, baths,* and so on.

5. **Old Locus Number** refers to the numbers issued according to the pre-2004 locus/basket naming convention which consist of digits only. If you are going to open a card for an "old" feature, insert its number here only.
6. **Opening and Closing Date:** Enter the day the locus was opened using the European-style formula day/month/year. Enter the day the locus was closed using the same formula. Note that some features (e.g. walls) may stay around for a long time after they are closed – therefore the removal date of the locus may not be the same as its closing date (see below).

7. **Open High at/Low at:** This refers to the opening elevations taken prior to excavation of the locus. Elevations should be written to the nearest centimeter: 13.00, for example, and not simply 13. In addition to the elevation, indicate the general location of the elevation within the locus with relation to the points of the compass (N, NW, etc.). If a locus is level at opening or closing, the high and low elevations will be identical. For walls and other features, the opening high is the top of the highest stone or brick in the uppermost course of the wall, and the opening low is the top of the lowest stone in the uppermost course. The 'opening high' of the wall defines a

hypothetical plane called the *lowest possible elevation* for any floor *covering* (i.e. strictly later than) that feature.

8. **Closing High at/Low at:** The same as above, for the closing elevations taken on the surface of the locus as it is closed. For walls, the closing high and low are the bottom of the highest stone in the last course and the bottom of the lowest stone in the last course, respectively. It is especially important to take bottom elevations on walls as soon as they are floating (even if they are not removed – and see below). The bottom elevations of a feature (and especially the 'bottom high') define the *lowest possible floor elevation* relating to that feature. All deposits below the *l.p.f.e* are by definition earlier than the feature. Bottom elevations of features are thus critical for the purpose of stratigraphic analysis, and it is especially vexing when the unit supervisor forgets to take them.

   All dirt loci are closed at the end of the season due to the fact that off-season disturbances (erosion or tourists, for example) will deposit a layer of non-stratified material on top of them. Many walls and features remain open for more than one season. Features which do not have closing dates and elevations are assumed to be still open – i.e. not floating – at the end of excavation.

9. **Floor type:** If a locus ends on a floor, the floor information is entered on the card for that locus. A separate record of high and low elevations is required for the floor surface. If a floor covers the entire area of the locus, the closing high and low elevations of the locus will be the elevations of the floor, but if it does not, the high and low elevations on the floor may not coincide with the ones for the locus as a whole. Unit supervisors are to record two types of information to describe floor type: its certitude and its extent.

   a. **Floor Certitude:** This refers to how certain the excavator is that the surface encountered is indeed a floor (as against, for instance, a random tip-line in an accumulation or an interface between two fill-layers). This is indicated by using the following codes:

   c is a certain floor. A surface was delineated and the excavator has no doubt that it is a floor (e.g. broken pottery in primary deposition is scattered on it).

   ? is an uncertain or doubtful floor. A surface was observed but the excavator is unsure whether it is a floor. A clear surface will receive a **?** designation even if the excavator is morally certain it is *not* a floor.

   h is a hypothetical or ghost floor. No surface was observed but the excavator surmises the existence of a floor at that level from other evidence (the foundation of a wall and a foundation trench appear, for example).

   b. **Floor Extent:** Floor extent refers to how much of the area of the locus the floor covers. Its extent is indicated by the following codes:

   e means that the entire area of the locus was covered by the floor.

   p means that the floor was substantial but partial—that is, it only covered a portion of the area of the locus.

   f indicates that the floor was fragmentary and was observed only in patches. The excavator cannot vouch that *any* deposit below that floor is sealed

   The codes **c** and **?** for floor certitude can be combined with all of the codes for floor extent: **cp** is a certain but partial floor, or **?e** is a questionable floor across the entire locus. The code **h** for a hypothetical or ghost floor cannot be combined with any of the floor extent codes since, by definition, a ghost floor has not been observed. All **ce** and **cp** floors will seal the loci below them. A **cp** will mean that more than one locus was opened below the old locus, one of which will be a sealed locus. **?** floors may occasionally seal the locus below them. Consider the case where a sandy grey constructional fill interfaces with a destruction layer of compact red collapsed mud brick. The interface surface will receive a 'floor?' (it may have been the exposed surface of the site – upon which people walked – for a while, but we have no way of verifying that) and finds from

within the red brick material may be considered sealed even if the top of the red layer was not a floor.

10. **Dimensions:** The length and width of the locus are recorded to the nearest decimeter—1.0 m not 1 m. Since most loci are not perfectly rectangular, the average length and width are recorded. A computer will generate the volume of the locus by multiplying these dimensions with the depth of the locus, which is derived from the high and low elevations. No great exactitude is attempted (nor is it possible, when the shape of the locus is not known) – but this can still provide rough estimates e.g. for judging whether a locus is particularly rich in finds, or just large.

11. **Contextual Value:** The unit supervisor assigns a stratigraphic value (or 'cleanliness') for the **finds** in the locus. This serves as a flag to the stratigrapher and artifact analyst, alerting them to the integrity of the deposit. These are specified by using the following codes:

    i stands for *in situ*, -finds are *in articulation* and therefore probably in their original positions as when last used. *In situ* finds date to the final use of the feature in which they are found, and indicate the use of that feature.
    p refers to primary material that is almost in its original position – e.g. a refuse pit with restorable pottery, potsherds scattered on a floor. Primary deposits date the stratum in which they were found, but may have been laterally moved (e.g. the finds in a refuse pit are not in their use-context but merely in theor context of discard.
    s stands for a sealed context. Finds from a sealed context may date any time before the sealing of that context – but there should be no later intrusions.
    u stands for unsealed locus (no sealing element is present but there is no obvious contamination).
    d stands for a disturbed locus, a deposit known to be contaminated by intrusive material. Note that a pit is not *ipso facto* a disturbed context. As long as it was not recognized to be a pit, material from it may have contaminated surrounding loci – but as soon as it is segregated, its contextual value should be determined on its own terms. It may well be primary (e.g. a refuse pit, as above) or even *in situ* (as in the case of a burial).
    d? is used when the excavator suspects the locus is disturbed but is uncertain.
    n is used for all non-stratified deposits—cleaning, erosional wash, or surface finds.

Note that the codes are listed from highest valued deposits to lowest valued deposits. The contextual value assigned to a locus on a locus card should correlate with the contextual value or cleanliness assigned baskets from the locus on the recorder's basket registration list. Exceptions are rare: an unsealed fill comes down onto a floor with *in situ* pottery on it. The stratigraphic value assigned to baskets containing the pottery would be marked **i**, while the fill above is still **u**. Potsherds suspected to have fallen from the balk into a primary deposit will be marked **d?**

12. **Date Removed:** Some features and walls are not removed for many seasons. The excavator who finally removes a wall or feature that was left for more than a single season must go back to the original locus card and enter the date of removal. Enter the day the locus was removed using the formula day/month/year.

13. **Drawn?:** Enter "yes" or "no." The site architect must draw all walls and features prior to their removal. Walls and features that will not be removed for several seasons are added to the site plans during the season in which they were first encountered, but the architect will need to verify their drawing as well as take additional elevations etc. prior to final removal.

14. **Photograph Numbers:** All floors, walls, and other features (pits, installations, robber trenches, foundation trenches, drains, sumps, tabuns, etc.) must be photographed by the site photographer before their removal. The photograph numbers (issued automatically while cataloging in the database) are written on the locus card. If no photographs were taken (fills, for example, are usually not

photographed), then place a minus sign (-) in the spaces for photograph numbers. Unit supervisors are responsible for checking all taken photographs and cataloging only the best ones.

15. **Written by/Checked by:** The initials of the unit supervisor are written here. The area supervisor or director initials the card once the locus card has been checked and accepted.

16. **Related Loci**: three categories of loci are entered in this list (Fig. 7:3) formatted as [main locus number], relation, related locus number (e.g. [07D2-002] [is_below] [07D2-001]). Relevant types of relations are:

    16.1. **Seals/Sealed by:** Record here the number or numbers of the locus or loci that seal the locus under discussion. If the stratigraphic value of the locus was marked as **s** (sealed), there should be at least one locus number entered under the section "sealed by." If a locus seals an underlying locus or loci, enter the number or numbers in the section "seals." For example, the locus ends on a floor (**ce** or **cp**): that floor seals the underlying locus. Note that the sealing locus is not necessarily one of the ones directly above the current one. If a locus was changed for technical reason in a sealed deposit – the original sealing element is still entered as **sealed by**. On the other hand, the **sealing / sealed by** designation should apply only to *relevant* elements. An Iron Age deposit may be sealed by a Roman floor floating 2 meters above it, but this is hardly relevant.

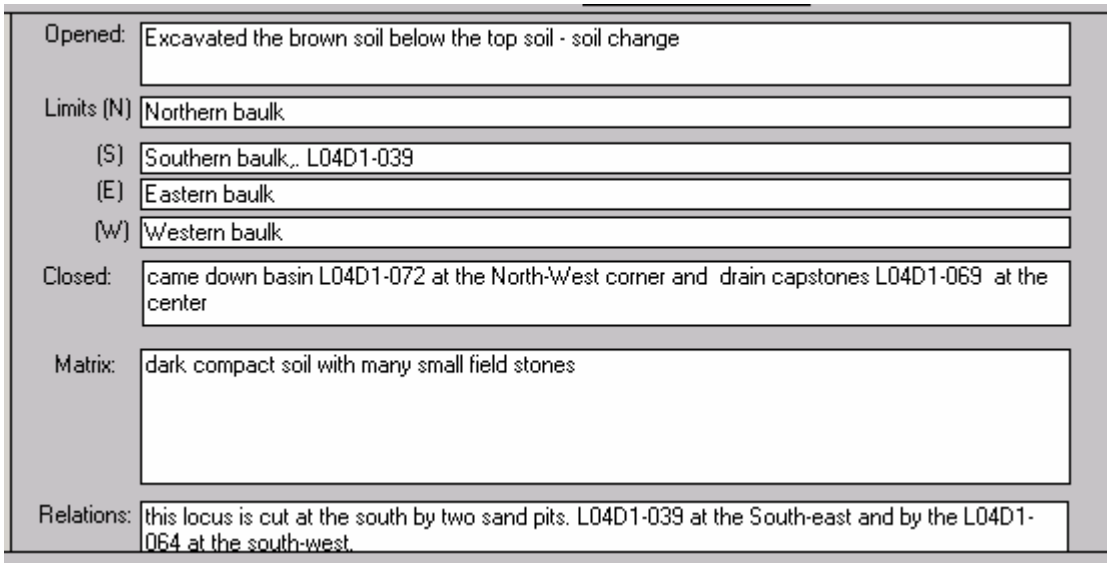
    16.2. **Loci Above:** Except for a surface soil locus, every locus will have at least one locus directly above it. This refers to loci lying above the locus that are in physical contact with it (i.e., those loci that were closed in order to open the locus). Even if an overlying locus covers only a portion of the locus, it is recorded here. The 'loci above' / 'loci below' fields enable the construction of the 'locus genealogies' (see below) and browsing the locus data base in the order of excavation of the elements.

    16.3. **Loci Below:** Except for loci that remain open at the end of the season (walls, for example), every locus will have at least one locus underlying it. Only those underlying loci that are in physical contact with the locus are recorded here (i.e., those loci opened below the locus when it was closed). Even it an underlying locus is covered in part by the locus, its number is recorded.

17. **Stratigraphic Attributions and Summary:** The stratigraphic attributions include the unit, the phase, the stage, the stratum, and the phasing of material (POM). These are filled in by the site stratigrapher, not the unit supervisor, during the post-excavation stratigraphical analysis.

B. DESCRIPTION OF THE LOCUS

FIGURE 7:2a THE DESCRIPTIVE FIELDS IN THE LOCUS FORM



18. **Opened:** The reason the locus was opened is explained in a single sentence. The reason could be a change in soil or sediment color or composition, a new wall or feature, or a technical separation. For example, the reason for opening L05D1-002 might be that "L05D1-001 came down on a partial floor, and a sealed locus L05D1-002 (floor makeup and fill below) and an unsealed locus L05D1-003 were opened."

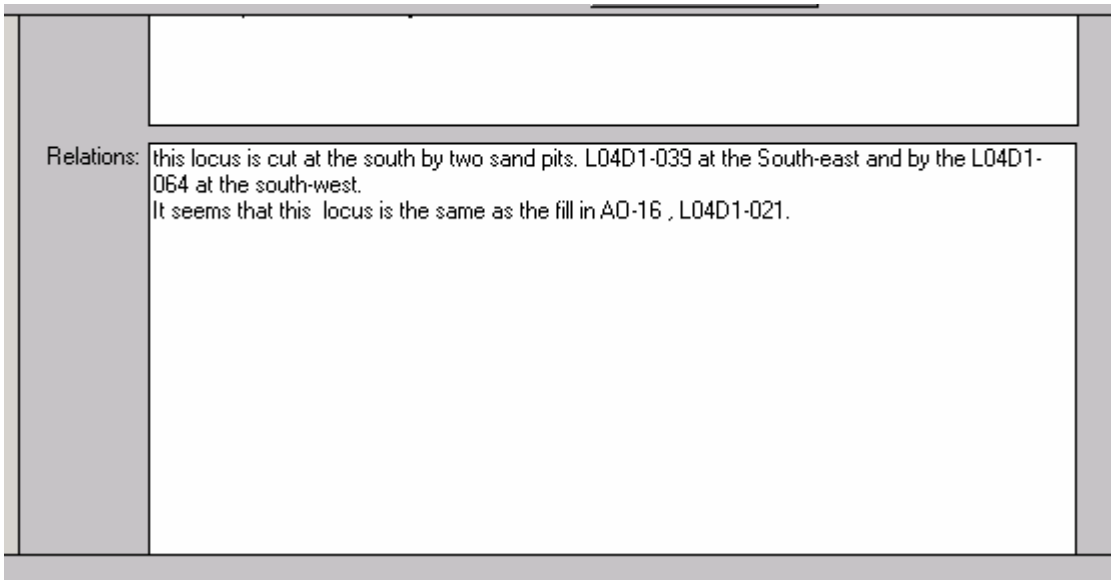
19. **Limits:** Simply list the adjacent loci that form the boundary of the locus. A deep robber trench can be bounded by numerous loci through which it cuts, but it is not necessary to list every single one. List only those loci that form the boundary of the locus at the time of closing. These are the loci that will also appear on the locus card's top plan.

20. **Closed:** The reason the locus was closed is explained in a single sentence. This sentence could be used as the reason for opening on the locus cards for the new loci opened below the locus.

21. **Matrix:** Matrix refers to the physical makeup of the locus as the context in which artifacts and other finds originate. In general, information about the locus matrix should include the color, composition, and unique aspects of the locus. Descriptions of dirt loci should not only include the color and composition (clay, sand, gravelly sand), but should include notes on the contents that make it distinctive from other deposits (concentrations of shell, ash, pottery). Descriptions of floor deposits should also include a brief mention of *in situ* material (number and type of vessels). Significant finds should be mentioned (a large pit that contains architectural fragments). Some descriptions may entail more specific details, like the construction method of walls and features (header-stretcher wall built of kurkar ashlars built on top of a field stone foundation, wall of pier and rubble construction, etc.). Different stages of wall construction should also be detailed.

C. RELATIONS

FIGURE 7:2b RELATIONS IN THE LOCUS FORM



22. **Relations:** This is the place for noting the relations of the locus to all other loci with which it has physical contact: the loci above and below and all adjacent loci. Relations can be statements about the stratigraphic value (sealed versus unsealed) of the locus. Fundamentally, relations are statements about the temporal sequence in which loci were deposited. The stratigraphic sequence for each excavation unit is constituted from the relations between its loci.

    The relations should consist of simple statements describing the nature of the physical contact between two loci. Simply stating, for example, "locus 1 covers locus 2," implies a relation of superimposition in which the upper locus is later than the lower one. Most relations require only this sort of simple statement. Sometimes, though, it may be necessary to elaborate. For example, it is important to state the evidence for deciding that one wall cuts another wall rather than being abutted by it. In this case, the sequence of the walls is dependent on it. Another example where elaboration might be required is where a robber trench cuts a floor. While cleaning the floor, the excavator may have observed that along the edge of the floor adjacent to the robber trench the floor sloped upward. This may indicate that the floor originally reached the ghost wall, which is an important stratigraphic detail that needs to be recorded on the locus card.

    a. <u>Possible relations between walls</u>:
    - W1 **cuts** W2 (W1 is later than W2.). No foundation trench is observed.
    - W1 **floats above** W2 (W1 is later than W2).
    - W1 **abuts** W2 (W1 is later than W2. They may be considered contemporary, if it can be shown they are part of the same construction phase.).
    - W1 is **bonded** or **dovetailed** into W2 (W1 and W2 are contemporary).
    - W1 is **built on top of** W2 (W1 is later than W2).
    - W1 is **built up against** W2 (W1 is later than W2).
    - W1 and W2 are **adjacent**, but are too close to form a logical architectural unit. The exact relation is **indeterminate** unless observations from other related loci form a logical sequence.

- If a wall has more than one phase, the relations of each phase should be discussed separately: W1 cuts W2a, W1 floats above W2b.

b. <u>Possible relations between a wall and a fill</u>:

- W1 **cuts** L2 (W1 is later than W2). Wall foundations at Dor sometimes fill a foundation trench completely so that no foundation trench is observed or are built up against one side of the trench so that the foundation trench is seen only on one side of the wall.
- L2 **reaches** W1 (W1 is earlier than L2). After walls go out of use, deposits form against the wall faces or the area between walls is filled in preparation for new construction.
- L2 **covers** W2 (L2 is later than W1).
- W1 **seals** L2, the locus lying immediately below the wall (W1 is later than L2).

c. <u>Possible relations between a floor and a wall</u>:

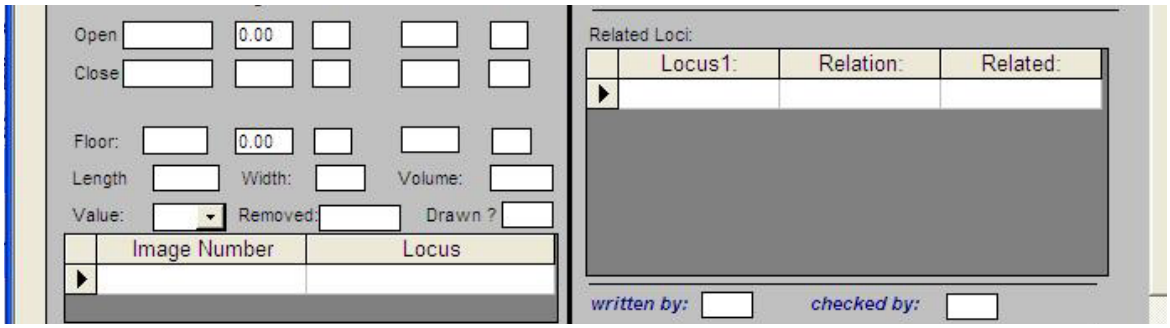
- Floor of L1 **reaches** (i.e., was built up against) W2 (The floor of L1 is later than W2, but was in use at the same time as the wall). Confusion sometimes arises because the connection between a floor and a wall can be erased by postdepositional events (e.g., erosion). The rule is that if a floor reaches a wall at only one place, then the floor is said to reach the wall.
- W1 **cuts** the floor of L2 (W1 is later than the floor of L2). This situation arises when no foundation trench is observable (e.g., the wall is laid up against the side of the foundation trench where the floor is. The floor may appear to actually reach the wall.
- W1 **floats above** the floor of L2 (W1 is later than the floor of L2). They may be considered contemporary, if it can be shown they are part of the same construction phase.)
- W1 is **built on top of** the floor of L2 (W1 is later than floor of L2).
- The floor of L1 **seals** W2 (the floor of L1 is later than W2.)
- In the case where several superimposed floors reach the wall, the excavator attempts to determine the lowest possible floor.
- In the case where walls have more than one phase, the phase of the wall with which a floor relates must be noted.

d. <u>Possible relations between two dirt loci</u>:

- L1 **covers** L2 (L1 is later than L2).
- L1 **reaches** (i.e., is deposited against) L2 (L1 is later than L2).
- L1 **cuts** L2, where L1 is a cutting feature like a pit, robber trench, or foundation trench (L1 is later than L2). Cutting features by definition cut all adjacent dirt loci. Robber trench L1 cuts the floor of L2, even if it is determined that the floor of L2 originally reached ghost wall of L1.
- Robber trench L1 **covers and cuts** W2 (L1 is later than W2), where the relation of cutting refers to the interface of the actual robbing action. Technically, the robbing action cuts the wall and the subsequently deposited fill covers the bottom of the trench. The sequence from earliest to latest is wall-robbing-fill.
- L1 is **adjacent** to L2. The exact relation is **indeterminate** unless observations from other related loci form a logical sequence.

D. DRAWINGS

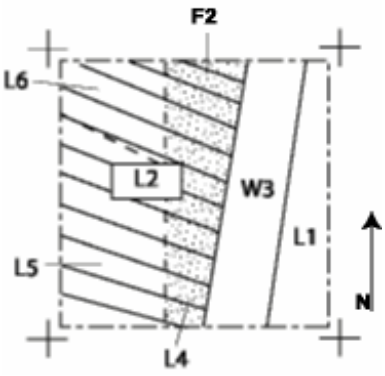
FIGURE 7:3 THE IMAGE – LOCUS AND RELATED LOCI LISTS IN THE LOCUS FORM



23. **Plans**. The locus under discussion should be clearly distinguished from all other loci on the top plan of each locus card (Fig. 6:4). This is done by placing the locus number within the area of that locus and putting a box around it. The area of the locus should then be hatched with diagonal lines. The areas of all **adjacent** loci are drawn in with **SOLID** lines. On the top plan you will also be required to show the loci which are directly **below** the locus under discussion. The areas of these loci are indicated with **BROKEN** or **DASHED** lines. The locus numbers of adjacent loci should be placed on the top plan if possible. The numbers of the loci below should be placed off of the plan with a line directing the reader to their locations. Floors are indicated by dotting in the area of the floor and writing F------ outside the top plan with a line drawn to the floor. All top plans should be oriented to the north and a north indicator placed beside the plan. Show locus at end of excavation in order to show the locus or loci that underlie it.
The numbers of the digitized plans are registered separately and linked to the relevant locus card though the Image Number inserted into list of graphic files (Fig. 7:3).

FIGURE 7:4 TOP PLAN ILLUSTRATED

This top plan shows clearly that L2 ended on Floor 2 and that three loci were opened below L2: a locus (L4) for the floor make-up of floor 2 and two dirt loci, L5 and L6.



25. Sections. Use sections to show any vertical relations of features or difficult loci. It is always appropriate to include sections on your locus cards, but sections are required whenever there are any vertical relations which can not be made completely clear in the top plan. Usually a schematic section will do. If you include a section in your locus card you will need to indicate where that section occurs on the top plan. If you have drawn a section on your locus card and labeled it "Section A-B", then on the top plan you will have a dashed line cutting across the top plan where that cross-section occurs. One end of it will be labeled A and the other end will be labeled B. Below any section you include write "View facing –" giving the direction in which you are viewing that section.

26. Photographs. The photo numbers are registered separately and linked to the relevant locus card though the Image Number inserted into list of graphic files (Fig. 7:3). The photos can be viewed in their Image Cards (see Appendix 1 for details). In very specific cases the photos might be printed out in appropriate scale and affixad to the back side of the card.

III. LOCUS GENEALOGY (BLOCK DIAGRAM / 'HARRIS MATRIX')

Unit supervisors are required to produce a locus genealogy for their excavation unit. The locus genealogy consists of a block diagram of all loci excavated in the unit. The block diagram shows the order in which loci appeared in the unit and the relationships of superimposition between the loci (i.e., which loci appears above and below a specific locus). Locus genealogies also have a list of important feature relationships attached to them. The locus genealogies allow analyzers to navigate the locus system by order of superposition.

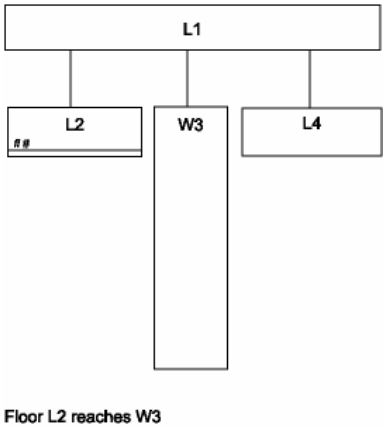
Those who are familiar with the 'Harris Matrix' will observe that the block diagram utilized at Dor resembles the Harris Matrix. The difference between the two is that the excavator connects loci in the Harris Matrix according to the order in which he or she believes that they were deposited. Therefore, the Harris Matrix is a representation of the final interpretation of the stratigraphic analysis. In the Dor block diagram the loci are simply arranged in the order in which they were encountered during excavation. That is, it shows which locus or loci was opened below any other in the excavation unit. As such, it is a representation of the raw data for stratigraphic analysis (Stern et al. 1995a).

A. MANUAL DRAWING OF THE LOCUS GENEALOGY

Each locus is depicted as a block in the diagram and is connected by lines to each locus that was immediately above or below it. Each 'locus above' / 'locus below' relationship should receive one line exactly, connecting the two boxes. i.e. the lines are not to split or converge. The size, placement, or distance separating the blocks are not meant to reflect the dimensions, placement, or distance between loci as observed in the units. The size of the box is usually determined by the amount of text needed and number/location of other boxes at its vicinity. Locus genealogies are to be drawn so that they are optimally readable—to have as few "knots" in the connecting lines as possible—rather than conform to the physical arrangement of loci in the unit.

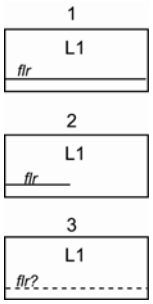
FIGURE 7:5 LOCUS GENEALOGY

Shows that L1 covered L2, L3, and W4 and that L2 came down onto a floor. The relation of floor 2 to W4 is listed.



Block diagrams show all floors and possible floors by adding a line at the bottom of a locus block. As in Fig. 7:6 (1) the floor of L1 is depicted as a solid line across the bottom of the block for L1. Certain floors are indicated with a solid line. Possible floors are drawn as a broken line as in Fig. 7:6 (3).

FIGURE 7:6 HOW FLOORS ARE DEPICTED ON LOCUS GENEALOGIES



1. A solid line across the whole block is a complete floor.
2. A solid line across part of the block is a fragmentary floor.
3. Possible floors are indicated with a dashed line.

Lines linking loci blocks should be clearly drawn to show the relation. Linking lines are drawn as vertical lines or a combination of vertical and horizontal lines; diagonal lines should not be used. A line that crosses another line can be shown to "jump" the line. Loci genealogies should be drawn with as few jumps as possible (Fig. 7:7-8).

FIGURE 7:7 LOCI DRAWN WITHOUT "JUMP"

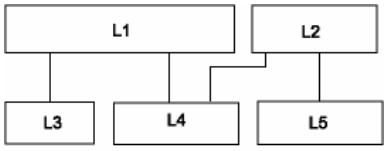
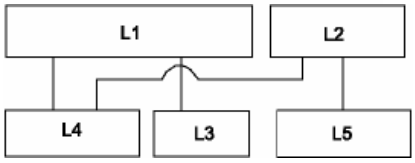


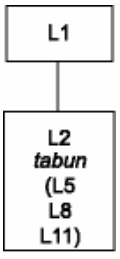
FIGURE 7:8 LOCI DRAWN WITH "JUMP"



In cases where sub-features were assigned different locus numbers, these loci can be written into the block for the feature locus. For example, several locus numbers might be assigned to the outside walls, flue, and sediment within a large *tabun*. Instead of trying to arrange these in some sequence, simply write the numbers of the fills inside the block for the drain or *tabun*.

FIGURE 7:9 LOCI INSIDE A FEATURE

L2 is a tabun. Three separate layers were excavated inside the tabun: loci 5, 8, and 11. These are simply written inside the block for L2. Note that features like pits, robber trenches, *tabuns*, etc.,have the feature type written in the block also.



B. COMPUTER GENERATED LOCUS GENEALOGIES

Appendix 3 details the use of the [not so] SmartDraw © program to generate computerized versions of the genealogy. Completed genealogies (and sometimes – for older seasons – scanned hand-drawn genealogies) are kept in the image data base (see below).

IV. ELEMENTS OF A BASKET LIST ENTRY

A. THE FIELDS IN THE BASKET RECORD.

1. **Date.** Each entry is dated (day/month/year).

2. **Excavator's Initials.** Write the initials of the unit supervisor from whose unit the material originates.

3. **Basket Number**. Assigned sequentially from the recorder's bank of unused numbers (see the detailed explanation above).

4. **Locus Number.** The locus number is preceded by an "L" or a "W" for walls.

5. **Square.** Square designations include a letter or double letter followed by a number (e.g., AS20).

6. **Beginning Elevation (BE).** For baskets of pottery the beginning elevation is the opening elevation of the locus, if the locus is new that day. If the locus was open on the previous day, the beginning elevation for the pottery is the closing high elevation from the previous day. If a basket for pottery is closed in the course of the day, and a new basket for the same locus is needed, an ending elevation should be taken on the old basket, which can be used as the beginning elevation for the new basket. Elevations for individual ("special") finds are taken on the fine spot, so the beginning and closing elevation will be the same. A large object, such as an in situ standing storage jar, will receive a beginning elevation for its highest point.

7. **Closing Elevation (CE).** For baskets of pottery the closing elevation is the closing elevation of the locus, if the locus is closed that day. If the locus is not closed that day, the closing elevation of the basket is the end-of-day low elevation taken at the end of the day. If a basket for pottery is closed in the course of the day, and a new basket for the same locus is needed, an ending elevation should be taken on the old basket. Elevations for individual ("special") finds are taken on the fine spot, so the beginning and closing elevation will be the same. A large object, such as an in situ standing storage jar, will receive a closing elevation for its lowest point.

8. **Stratigraphic Definition (St Df).** A category of locus is assigned for the deposit from which the finds come. For example, is the locus surface soil, stratified fill, a pit, robber trench, or wall makeup? By default the recorder leave this blank, the value will be taken later from the locus card.

9. **Local Stratigraphy (Loc Str).** The recorder leaves this blank, as the stratigrapher is responsible for this entry.

10. **Object (Ob).** The type of object collected is listed here (e.g., sh = sherds).

11. **Material (Ma).** The material of which the object is made is listed (e.g., cr = ceramic). **Object and material codes specified below refer only to the 2005 season and on. In previous years other codes were in use and these can be found in previous years manuals.**

12. **Reading (R).** This is filled out during the pottery reading, and it is only used for pottery. A "0" means than none of the pottery was kept for analysis; a "1" means that some diagnostic pieces were kept; a "2" indicates that all of the diagnostic pieces from that basket were kept; and a "3" is used when the entire basket is kept.

13. **Cleanliness** (C). The cleanliness of the basket ranges from *in situ* pottery found intact to a highly mixed assortment of pottery from a disturbed locus. By default the recorder leave this blank, the value will be taken later from the locus card. The field will be filled out only if area supervisor decides to make special cleanliness designation for specific basket(s) and informs recorder about this.

14. **Periods** (P1, P2, P3). These refer to the chronological periods represented in a particular basket of pottery. If more than three periods are represented, the others are noted in the comments section. These are listed in the order of the quantity of pottery from each period (e.g., rm, hl, pr indicates that most of the pottery in the basket was Roman, but that there was some Hellenistic and a little Persian).

15. **Comments.** This space is used to note any special information about the nature of the find or its provenience. It is also where any comments made by the pottery expert during pottery reading are noted. The reader may ask, for example, that certain types be specified (e.g., EGR for East Greek). Baskets that are sent for restoration have an R written in the comments. Sometimes the restorability of a basket of pottery is only discovered during pottery reading.
    It is highly important to follow all the designations made during the pottery reading and fill out appropriate fields according to the "Code List" values (Fig. 5.3).

FIGURE 5:2 THE BASKET LIST

Daily Basket List Tel Dor 11/07/91

Date Bask. No.	Excavator's Initials Locus No.	Sq.	Beg. Ele.	Clo. Ele.	St	Lc Df	St	Ob	Ma	R	C	P1	P2	P3
11/07/91	AFS													
90513	W9153	AL32	13.45	11.97	wm	se	fa					--	--	--
Comments: A scarab found while removing W9153; it is clearly from the wall make up. The decoration is very difficult to make out.														
11/07/91	AMA													
90514	L9002	AK31	12.50	12.25	sa		sh	cr	1	d	rm		hl/rm	hl
11/07/91	AMA													
90515	L9005	AK31	12.39	12.30	rt		sh	cr	0	n	rm	--	--	
11/07/91	AMA													
90516	L9010	AK31	12.45	12.40	sa		ma	bn		i	--	--	--	
Comments: This is about half a bucket of what appear to be fish bones.														
11/07/91	JLS													
90517	L9872	AK22	15.66	15.04	ss		fr	pl	0		rm	--	--	
Comments: Chunks of fresco with floral motifs. Green and brown on yellow-brown.														
05/08/91	IS													
90518	L9162	AH21	17.75	17.70	tz		sh	cr	0		rm	pr	hl	
Comments: This is a twilight zone basket between L9164, a pit, and L9163, an Ir1 fill.														
05/08/91	AG													
90519	L9144	AG29	17.63	17.52	is		cv	cr	3	i	ir2b	--	--	
Comments: Most of a crushed storage vessel, sent for restoration. Some parts of this vessel may be in basket 100445 from 04/08/91. (R).														

FIGURE 5:3 DOR CODE LIST		
Objects:	**Periods:**	**Strat. Value – Cleanliness:**
sh – sherds	-- – undatable	i – *in situ*
cv – complete vessel	mixed – mixed dates	p -- primary
mo – mosaic tesserae	early – pre-MB	s -- sealed
af – architectural frag.	Iba – Indeter. Bronze Age	u – unsealed
fr – fresco	Mb1 – Middle Bronze 1	d – disturbed
cn – coin	Mb2 – Middle Bronze 2	n – nonstratified
se – seal	Mb2a	?d – possibly disturbed
jw – jewelry	Mb2b	
tw – tool/weapon	Mb2c	**Restoration:**
wr – writing	Mb/lb – MB to LB transitional	0 – none kept
sc – sculpture	lb – Late Bronze Age	1 – few kept
os – osteological sample	lb1	2 – all diagnostics kept
ds – dating sample	lb2	3 – restoration
ss – sediment samle	lb2a	
ma – other material for analysis	lb2b	**Comments:**
ot – other find	ir – Iron Age	myc – Mycenaean
bs- flotation	ir1	cyb – Cypriot Bronze Age
	ir2	phl – Philistine
Material:	ir2a	geo – geometric
cr –ceramic	ir2b	bic – bichrome
cm – cement	ir2b/c	bor – black on red
pl – plaster/stucco	ir2c	irs – Iron Age red slip
so – soil	pr – Persian period	idp – Iron Age decorated
mr – marble	Epr	ibt – Iron Age baking tray
st – stone	Lpr	ach – “Achzivian”
gl – glass	hl – Hellenistic period	cyi – Cypriot Iron Age
fa – faience	Ehl	smr – Samarian
br – bronze/copper	Lhl	atc – Attic
ir – Iron	rm – Roman period	egr – east Greek
sr – silver	Erm	lgn – lagynos
ld – lead	Lrm	sgl – terra sigillata
gd – gold	bz – Byzantine period	eth – eastern sigillata Hellenistic
mt – indeter. Metal	late – post-Byzantine	meg – “Megarian” bowl
no – nonorganic		lmp – lamp fragments
bn – bone	**Strat. Definitions:**	wes – West Slope
sk – human remains	sa – stratified accumulation	rho – “Rhodian” (or other) stamped handle
ib – ivory/worked bone	ns – nonstratified	hpp – Hellenistic painted
sl – shell	ss – surface soil	wts – (Roman) western terra sigillata
sd – seeds	pt – pit	etr – (Roman) eastern terra sigillata
ch – charcoal	rt – robber trench	lrr – late Roman red
vg – vegetal matter	ft – foundation trench	brz – brazier
un – uncertain	tz – twilight zone	wst – kiln waster
	is – in situ	iat- imitation ATC
Floor Type:	al – ash layer	bwi- bowl with incurved rim [HL]
C – certain	dl – destruction layer	rsj- Roman ribbed jars.
h – hypothetical (ghost)	fb – fallen brick	Amp- imported amphora
? – uncertain	fs – fallen stone	bhj – Basket-Handle Jar
e – entire	fm – floor makeup	(R) – restoration
p – partial	wm – wall makeup	(S) – sifted
f – fragmentary	cl – cleaning	

CODES FOR BASKET LIST ENTRIES. Because of the limited space allotted to each basket list entry, a system of codes has been developed for recording information in the stratigraphical definition, object, material, cleanliness, periods, and comments sections.

Sometimes the unit supervisor and recorder have trouble deciding what code to use for a particular locus or find. Sometimes, for example, ideas about the nature of a locus (e.g., stratigraphical definition or cleanliness) will change during its excavation. It is always permissible to go back and change the code. If a decision is made to change a code, it has to be changed on all of the baskets from that locus.

1. **Stratigraphic Definition Codes**. These codes refer to the nature of the locus itself. Try to choose the code that comes closest to describing the locus. For example, it would be easy to categorize almost every locus that is excavated on the tell as a "stratified accumulation (sa)." Usually, there will be a better designation, one that is more descriptive of the locus (e.g., destruction layer or floor makeup).

   SA – Stratified Accumulation. Used generally for stratified fills or debris layers. The recorder should always check first to see if a more descriptive designation is available before assigning "SA" to a locus.

   NS – Non-Stratified. This designation applies to all finds discovered on the surface or in a dump. It also applies to cleaning loci (e.g., where a group of visitors to the site have trampled through a unit. The area has to be cleaned before excavation can begin again.), erosional wash, Garstang's backfill, or site looting debris.

   c. SS – Surface Soil. This code is reserved for all material found in the topsoil. Whenever a new unit is opened from ground surface, it will get a "SS" code until deposits or features are uncovered that indicate the excavation has reached below the surface soil.

   d. PT – Pit. Pits are features that cut into and remove existing stratified material, and that are later filled with newer material. They are usually are distinguished from the surrounding deposits by their color, texture, and compaction. If a pit is used for refuse, it can contain ash, bone, shell, and pottery sherds. The presence of ash, charcoal, or decayed organic material will give the sediments in the pit a light gray to black color. Trash pits can have a higher concentration of inclusions (bone, sherds, and shell) that give it a different texture and affect its compaction. Material in a pit can also be less compacted than surrounding material, because the material has not been buried as long as the surrounding earlier deposits.

   e. RT – Robber Trench. Walls and features are often removed for their building material (stone, brick, etc.). Sometimes the material is dug out of the ground, leaving behind open trenches that are subsequently filled up with sediments and other debris. Usually robber trenches are distinct from the surrounding deposits for the same reasons that pits are, but robber trenches tend to be linear (i.e., robbed walls).

   f. FT – Foundation Trench. Trenches are dug into the ground to construct foundations for walls and other architectural features. A wall foundation can be laid in the center of the trench, be built up against one side of the trench, or fill the entire trench. In the latter case, it probably won't be visible in the archaeological record. If it is visible, it will show up as a narrow band along one or both sides of a wall. The "FT" code is used only for observed foundation trenches. If a foundation trench is

suspected, but cannot be observed, a twilight zone can be opened for material coming out from next to the wall. This material would get a "TZ" code, and a note written in the comments, "suspected foundation trench."

g. **TZ – Twilight Zone.** This code is used for material coming from an indistinct or "gray" area that sometimes occurs between two loci. The use of twilight zones is usually an act of desperation, and should be avoided if at all possible. However, they can sometimes be used with great effect (see above, foundation trench) to separate out material from the surrounding deposits.

h. **IS – *In Situ* Artifacts**. This code is used for intact material left in place (*in situ*) at the time of site destruction or abandonment. Such material is usually found on floors, but also can be found in or on features (such as pits used to cache objects).

i. **AL** – **Ash Layer.** Ash layers are formed by depositing burned material. Ashes and charcoal may accumulate on a floor, because of the presence of a hearth or *tabun*. Industrial areas used for pottery production or metalwork can produce ash layers. Ash layers tend to be more localized than destruction layers (see below).

j. **DL – Destruction Layer.** Distinct from ash layers usually by extent and by the fact that it usually includes fired building materials (mud brick, stone, etc.). A destruction layer might be only a few centimeters in thickness, or it might be over a meter in depth.

k. **FS – Fallen Stone.** Fallen stone usually refers to wall tumble, but it can also be used to designate any locus that consist mainly of stone (e.g., a large rubble pile, the type sometime found at the bottom of a robber trench).

l. **FB – Fallen Brick.** Comparable to fallen stone, only consisting of mud brick. This is different than a locus consisting simply of mud brick material. The "FB" code is reserved for cases where individual bricks can be differentiated in the matrix. If the bricks are highly fragmented and deteriorated, they can be difficult to distinguish from a layer of mud brick material. A note can always be added to the comments, "possible fallen brick."

m. **FM – Floor Makeup.** If floor construction is substantial, and the material contains a substantial number of artifacts, the floor makeup will be given its own locus number, and the "FM" code will be used. Finds from the floor makeup predate the floor construction, and they can be use to assign chronological dates to phases.

n. **WM – Wall Makeup.** When a wall is removed, any finds that come from inside the wall (from between the stone or bricks, or from the mortar used to bind the stone or bricks) will be given a "WM" designation. Finds from the wall makeup predate the wall, and they are consequently important for assigning chronological dates to phases.

o. **CL – Cleaning.** This code is used for any find found during the cleaning of walls or balks. Finds found while cleaning units are given a "NS" code. The difference is that finds from wall and balk cleaning tend to come from stratified contexts, so the differentiation is made.

2. **Object Codes.** This is the entry for the general category of object found.

a. SH – Sherds. This is by far the most common find. All broken, nonrestorable pottery gets this code.

b. CV – Complete Vessel. This is used for vessels which are found in one piece, or which were crushed or broken, but all of the pieces are present.

c. MO – Mosaic tesserae. Mosaic cubes (*tessarae*) are found primarily in Roman contexts. They are cubes of (lime)stone (5-10 mm^3 in size) used in creating floor and wall decorations. The comments should include an estimated volume collected (e.g., one-half bucket of mosaic cubes). Sometimes, the cubes will have colored glaze on them. Individual mosaic cubes are usually discarded, but if any intact segments of a mosaic with a design are found, these are kept.

d. AF – Architectural Fragment. This code is used for fragments of architecture (e.g., column capitals, bases, or drums, plaster moldings, etc.). Large stone architectural fragments are normally found in large fills, pits, or in reuse as part of a wall. The basket number is usually painted onto the object itself. Smaller items (e.g., molding pieces) can be collected and tagged normally.

e. FR – Fresco. The code is used for any surviving wall painting. Like mosaic cubes, if fresco fragments with decoration are found they are kept. If they are plain pieces, they are noted and then discarded. Any *in situ* fresco remnants may require special treatment (e.g., conservation by a specialist). When fresco fragments from such *in situ* frescos are found in another context (e.g., in the surrounding fill), a note in the comments should indicate this.

f. CN – Coin. Coins can be found from Persian and later contexts. All coins are special finds, and given their own box. Bronze coins almost always require conservation work, and they should be handled with care. If any part of an inscription or figure is visible on the coin, it should be noted in the comments.

g. SE – Seal. Two types of seals are found at Dor: stamp and cylinder seals. Most of the seals found in Israel are of the stamp variety, usually of the Egyptian scarab type. As with coins, any visible inscription or figure should be noted in the comments.

h. JW – Jewelry. Indicate the type and material of the piece, if possible, in the comments (e.g., “gold earring” or “faience necklace bead”).

i. TW – Tool/Weapon. Typical weapons are bronze arrow/spear heads and sling stones; typical tools include bone or metal needles and spoons, or metal knife blades. Lithics—such as cores, bifaces, or flaked tools—belong here.

j. WR – Written Material. This includes all written material (except coins and seals with inscriptions). Inscriptions on architectural fragments are included under this code. Other possible written documents include clay tablets, *ostraca* (pottery sherd reused for documents), and papyrus (possible, but highly unlikely).

k. SC – Sculpture. This code is used for whole or fragmentary figurines or statues.

l. OS – Osteological sample. This code is used for any osteological finds, both human and faunal.

m. DS – Dating sample. This includes all samples taken for dating, both charcoal and seeds. The samples should be taken with trowels with minimal human contamination, folded in aluminum foil, and not crunched.

n. SS – Sediment sample. This includes sediment samples taken by of by the instruction of the professional.

o. MA – Material for Analysis. Any material not specified above that should be examined using scientific techniques is included in this code (e.g., unkown sediments, chemical analysis, paleobotanical analysis, pollen analysis). Samples should be taken only if the context is valuable and the material can contribute to our knowledge of it. A form should be filled by the unit supervisor specifying for what purpose it was taken and to whom it should be sent (see restoration/sample form). To avoid contaminating such materials, they should be collected with a trowel (not with a human hand) and placed in aluminum foil.

p. OT – Other Find. This category includes everything else. An explanatory note should always be added to the comments.

q. BS- Flotation.

3. Material Codes. These codes are used for the material composition of the artifacts or other materials that are collected.

a. CR – Ceramic. This code is used for all artifacts produced by firing clay at high temperatures: all pottery, figurines, *ostraca*, etc.

b. CM – Cement. Architectural fragments might be made of cement.

c. PL – Plaster/Stucco. Plaster is used for architectural moldings and for wall paintings/frescos.

d. SO – Soil. This code is used for all samples containing soils and not artifacts (e.g., clay, silts, gravel etc.). It will include most of the sediment sample material.

e. MR – Marble. Some architectural fragments might be made of marble.

f. ST – Stone. This code is used for all stone artifacts except those made of marble. This includes architectural elements, stone tools, vessels, grinding slabs, weights, anchors, etc.

g. GL – Glass. Most glass artifacts are found in the latest levels at Dor. Usually glass fragments from a locus will be collected in a glass bag. If some fragments appear to belong to the same vessel, they should have a separate basket number and be placed in a separate bag. All intact glass artifacts are special finds (i.e., they require their own basket numbers, elevations, etc.). A note in the comments should accompany any individual glass artifact.

h. FA – Faience. The Egyptian “plastic.” All types of small artifacts were mass-produced using faience. It is usually blue in color, but also shades of white and green are found. A note in the comments should accompany any faience artifact.

i. BR – Bronze. Copper is a soft metal that is usually alloyed with another chemical (e.g., tin) to produce the harder bronze. When both copper and bronze corrode, they turn a turquoise-green color (cuprous oxide). Both

metals get this code. A descriptive note should be added to the comments (e.g., “bronze blade”).

j. **IR – Iron.** When iron corrodes, it turns a reddish orange color (ferrous oxide). A descriptive note should be added to the comments (e.g., “iron slag”).

k. **SR – Silver.** Silver is rarely found, but it can be found in coins, and possibly jewelry. Silver corrodes to a dull gray.

l. **LD – Lead**. Lead is a soft metal that can be distinguished from other metals (especially silver) by its heavy weight. A descriptive note should be added to the comments (e.g., “lead weight”).

m. **GD – Gold**. Gold is rarer than silver, but is found in jewelry and coins.

n. **MT – Metal**. This code is used for metal objects, when the type of metal is indeterminate.

o. **NO – Nonorganic**. This code is used for any material that is clearly not organic, but cannot be more precisely identified.

p. **BN – Bone (Faunal).** Faunal bone is usually collected in a bone bag. Some animal burials will get their own locus number (a dog burial in a Persian context), but usually animal and fish bones are scattered randomly in a locus. If it cannot be determined that the bone is faunal or human, then it will get this code.

q. **SK – Skeletal Remains (Human).** Any bone identified as human will be designated with the “SK” code. A human burial will receive its own locus number.

r. **IB – Ivory/Worked Bone**. These are usually indistinguishable when found. Bone and ivory were used as raw material for tools and decoration (e.g., furniture inlays).

s. **SL – Shell**. Shell was readily available to the inhabitant of a coastal city. At Dor, murex shells were harvested for the purple dye they produced when they rotted. Other shells were used in jewelry production.

t. **SD – Seed.** Any type of seeds (burnt and unburnt) should be included in this code (e.g. olives, grapes and other unknown seed types).

u. **CH – Charcoal.** Any cha

v. **VG – Other Vegetal Matter.** This code is used for plant remains other than seeds and charcoal (e.g. unburned wood, extremely rare at Dor). .

w. **UN – Uncertain.** This code is used for anything that just cannot be identified.

4. **Cleanliness Codes.** The same set of codes that are used in the locus cards for the stratigraphic value are used here.

a. **I – *In situ*.** This refers to material found in an original context. This code is usually given to complete pottery found on a floor.

b. **P – Primary**. Material almost in its original context. For example, pottery that has fallen from a shelf might be found just above floor level.

c. **S – Sealed.** Material from a sealed locus gets this code (e.g., material from a locus below an intact floor or a wall).

d. **U – Unsealed**. Material from an intact deposit, but not sealed, get this code.

e. **D – Disturbed**. Material from a deposit that is clearly disturbed, so that the deposit contains intrusive material.

f. **?D – Possibly Disturbed.** This code is used when there is no clear indication of a disturbance to the locus, but intrusive material is turning up.

g. **N – Nonstratified.** This code is used for all finds coming from the surface of the tell, from the cleaning of walls and balks, the dumps, or from erosional wash.

5. **Codes for Chronological Periods.** The codes for chronological periods are similar to their abbreviations that are found in the literature. Dates associated with the periods are approximate, and they are devised purely for pottery reading at Dor.

   a. **-- – A date cannot be assigned.**

   b. **MIXED – Mixed.** Basket contains pottery ranging over many periods (e.g., rm [Roman] to iriia [Iron IIa]). The basket is worthless for dating purposes.

   c. **EARLY – Early.** The material dates to before the Middle Bronze Age. Since almost no Early Bronze Age finds occur at Dor, there is no further classification of these materials.

   d. **IBA – Indeterminate Bronze Age.** The material dates to sometime in the Bronze Age.

   e. **MB1 – Middle Bronze I**. The material dates to ca. 2200-2000 BCE.

   f. **MB2 – Middle Bronze II.** The material dates to sometime in the Middle Bronze Age, 2000 – 1500 BCE.

   g. **MB2a – Middle Bronze IIa.** The material dates to ca. 2000 – 1750 BCE.

   h. **MB2b – Middle Bronze IIb.** The material dates to ca. 1750 – 1600 BCE.

   i. **MB2c – Middle Bronze IIc.** The material dates to ca. 1600 – 1550 BCE.

   j. **MB/LB – Transitional Period.** This material is not to be confused with IBA above.

   k. **LB – Late Bronze Age**. Material dates to Late Bronze Age (1550 – 1200 BCE), but a more certain determination cannot be made.

   l. **LB1 – Late Bronze I.** The material dates to ca. 1550 – 1400 BCE.

   m. **LB2 – Late Bronze II.** The material dates to ca. 1400 – 1200 BCE.

   n. **LB2a – Late Bronze IIa**. The material dates to ca. 1400 – 1300 BCE.

o. **LB 2b – Late Bronze IIb.** The material dates to ca. 1300 – 1200 BCE.

p. **IR – Iron Age**. Material dates to Iron Age (1200 – 586 BCE), but a more certain determination cannot be made.

q. **IR1 – Iron Age I**. The material dates to ca. 1200 – 1000 BCE.

r. **IR2 – Iron Age II.** The material dates to sometime within the years 1000 – 586 BCE, but a more certain determination cannot be made.

s. **IR2a – Iron Age IIa**. The material dates to ca. 1000 – 900 BCE.

t. **IR2b/c – Iron Age IIb/c.** The material dates to sometime within the years of 900 – 586 BCE, but a more certain determination cannot be made.

u. **IR2b – Iron Age IIb.** The material dates to ca. 900 – 732 BCE.

v. **IR2c – Iron Age IIc.** The material dates to ca. 732 – 586 BCE.

w. **PR – Persian Period**. The material dates to ca. 586 – 330 BCE.

x. **EPR – Early Persian Period**. The material dates to ca. 586 – 400 BCE.

y. **LPR – Late Persian Period.** The material dates to ca. 400 – 330 BCE.

z. **HL – Hellenistic Period**. The material dates to ca. 330 – 63 BCE.

aa. **EHL – Early Hellenistic Period.** The material dates to ca. 330 – 200 BCE.

bb. **LHL – Late Hellenistic Period**. The material dates to ca. 200 – 63 BCE.

cc. **RM – Roman Period.** The material dates to ca. 63 BCE – 325 CE.

dd. **ERM – Early Roman Period.** The material dates to ca. 63 BCE – 135 CE.

ee. **LRM – Later Roman Period.** The material dates to ca. 135 – 325 CE.

ff. **BZ – Byzantine Period.** The material dates to ca. 325 – 640 CE.

gg. **LATE – Post-Byzantine. Arabic, Crusader, Turkish, or Modern.** The material dates to ca. 640 CE – present.

6. **Codes used in Comments Section.** The following codes should be used in the comments, when more specific information about the material needs to be recorded.
   a. **MYC – Mycenaean**. This code is used for the high quality, lustrous pottery imported from the Aegean in the Late Bronze Age.

   b. **CYB – Bronze Age Cypriot.** This code is used for imported Cypriot pottery of the Late Bronze Age. This pottery includes many types of wares, but chiefly handmade “Base Ring” (gray, metallic vessels) and “White Slip” (vessels with black geometric design on a white background).

   c. **PHL – Philistine.** This is used for pottery typical of Philistia during the Early Iron Age (usually with black and red geometric designs).

d. GEO – Geometric. This is used for imported Greek pottery of the Iron Age (i.e., sub-Mycenaean, proto-Geometric, Geometric, and Archaic). This pottery is usually black, highly lustrous, with Geometric designs.

e. BIC – Bichrome. This code refers to Phoenician Bichrome pottery of the Iron Age. It is usually decorated with black and red concentric circles.

f. BOR – Black on Red. Iron Age pottery, mainly bowls and *amphoriskoi*, with black decoration (mainly concentric circles) on a red, usually lustrous surface. Origins of this pottery is debated—Phoenicia, Cyprus, or other?

g. CYI – Iron Age Cypriot. Imported pottery from Cyprus during the Iron Age. This pottery comprises many types, chiefly wheel-made "White Painted" (black decoration on a white background), "Bichrome" (with black and red decorations), and "Black Slip" (gray vessels).

h. IBT – Iron Age Baking Tray. These are round ceramic trays with one surface partially covered with small wedges or prick marks.

i. IDP – Iron Age Decorated Pottery. This code is used for any type of Iron Age decorated pottery not covered by the previously listed codes.

j. IRS – Iron Age Red Slip. This code refers to Iron Age red slipped pottery, which is often burnished.

k. IRC – Iron Age Red Chrome. This code is used for Early Iron Age pottery with monochrome red decoration, usually consisting of concentric circles.

l. ACH – "Achzivian." This code is used for a specific class of Iron Age red-slipped pottery—mostly jugs with either trefoil or mushroom-shaped rims. The slip is usually highly burnished. It is typical to Phoenicia and Cyprus mainly in the 9^{th}-8^{th} centuries BCE. It is also found at Punic sites.

m. SMR – "Samarian." The code is used for very delicate shallow bowls, decorated with a highly lustrous red slip, sometimes with reserved concentric bands on the base. This was the typical high quality tableware of Phoenicia, Israel, and Cyprus in the 9^{th}-7^{th} centuries BCE.

n. ATC – "Attic" Ware. This code is used for pottery imported from mainland Greece, mainly from Athenian workshops, during the 6^{th}-4^{th} centuries BCE. It includes black-slipped plain pottery, as well as Black Figure and Red Figure pottery.

o. EGR – East Greek. This code is used for painted pottery, chiefly banded bowls and jugs, imported during the Persian period (6^{th}-4^{th} centuries BCE) from the eastern Greek islands and Turkish mainland.

p. SGL – Terra Sigillata. This is a general term assigned to a Hellenistic and Roman group of fine pottery consisting mainly of open vessels that is characterized by a dark red slip. This pottery is named after the western, stamped version of this fabric that originated in Italy and Gaul (see WTS).

q. ETH –Eastern Terra Sigillata (Hellenistic). Light buff clay and a reddish-orange slip, sometimes with stamped decoration of palmettes and roulettes characterize this pottery. It was produced in Eastern Mediterranean workshops from the 2^{nd} century BCE to the early Roman period.

r. **MEG – "Megarian."** This code is for a series of Hellenistic hemispherical, mold-made, relief bowls, which were produced in Attic, Ionian, Syrian, and eastern workshops, mainly in the 2nd and early 1st centuries BCE. This pottery was once though to have originated in the Greek town of Megara, and the name has stuck.

s. **LMP – Lamp**. This code is used for lamp fragments from all periods.

t. **BRZ – Braziers**. Braziers, or portable ovens, are shaped like high pedestaled bowls, and were used for heating and slow cooking. The cooking pot was held on the oven by three decorated lugs. Most braziers found at Dor were imported, probably from the Aegean, during the 2nd century BCE.

u. **WES – West Slope Ware**. This refers to a black-slipped pottery (mainly open vessels), decorated with floral or geometric patterns in white or clay-colored paint that are combined with incisions. West Slope ware was invented in Athens around 350 BCE, but most examples found at Dor were manufactured in the Eastern Mediterranean during the 3rd-2nd centuries BCE.

v. **RHO – "Rhodian**." This code is used to designate all types of stamped handles of the Persian to Roman periods, although most examples come from the island of Rhodes.

w. **HPP – Hellenistic Painted Pottery**. This code is used for all Hellenistic painted pottery not covered in previously listed codes.

x. **WTS – Western Sigillata**. Typically fine, red glossy, open vessels, decorated with roulettes, relief work, and sometimes stamped with the maker's name. It was produced in Italy during Augustus' reign (27 BCE-14 CE), and throughout the 1st century CE, and in Gaul in the 1st-2nd centuries CE.

y. **ETR – Eastern Terra Sigillata (Roman)**. This code is used for eastern terra sigillata of the Roman period (compare ETH), which was produced until the 2nd century CE.

z. **LRR – Late Roman Red Slipped Ware**. This refers to a class of red-slipped ware (only open vessels), whose clay is coarser and slip is duller than ETS vessels. It was produced in the 2nd-4th centuries CE.

aa. **WST – Wasters**. This code is used for kiln wasters, lumps of either baked or unbaked clay, vessels deformed by misfiring in a kiln, etc., which provide evidence of on-site pottery production. This material is vital for identifying the composition of locally produced wares.

bb. **IAT**- **Imitation ATC-** Local bowls from the Hellenistic period who are imitating the attic bowls.

cc. **RSJ**- **Roman Ribbed Jars**

dd. BWI- Bowl with Incurved Rim

ee. **Amp- Imported amphora**

ff. **bhj – Basket-Handle Jar**

V. DAILY TOP PLANS

A. GENERAL

'Flat' copies of computer-generated daily top-plans (or scans of hand-prepared top-plans) are kept as .jpg files. The daily top plan is a graphical depiction of activity in the area that day. The background drawing depicts the area as it appeared at the end of the day. On it are shown all open loci – and ones closed during that day, elevations reached in each locus by the end of the day (or closing elevations if it was closed during the day), and basket IDs (special finds baskets are marked at the place of the find, and provided with an exact elevation.

Daily top plans are cataloged (as all images are) in the graphics data-base.

B. CODING CONVENTIONS FOR TOP PLANS

1. **RED INK.** Each locus number in its entirety (e.g., L05D1-001) is written within its boundaries in red ink. The "L" must be written, because when the plans are photocopied the colors are not reproduced. If the area of the locus is not large enough to hold the number, it may be written to one side and an arrow used to mark the location of the locus.

2. **GREEN INK.** Wall numbers are treated like locus numbers, except that they are written in green ink. Again the "W" must be written in, so that the complete number is on the plan.

3. **BLACK INK.** All elevations are written on the plan in black ink. Elevations for special finds and the closing elevations for loci that are closed on that day are written in their appropriate locations, which are marked with an "x" in black ink on the plan.

4. **BLUE INK.** The special finds should have their precise find spots marked on the plan with a capital "X" and their basket numbers in blue ink.

5. **CIRCLE CLOSED LOCI.** Whenever a locus is closed, its number is circled on the plan, and its closing elevations are circled to distinguish them from the elevations of the new loci that are opened below it. The unit supervisors should indicate for the recorder where the limits are for the new loci and provide the recorder with the new locus numbers.

C. COMPUTER GENERATED DAILY TOP-PLAN

The excavation allows recorder to produce either scanned hand-prepared top-plans or computerized top-plans. Appendix 2 details the use of Adobe-Photoshop to generate computerized versions of the daily top-plan and the hand-prepared demands. Completed daily top-plans (scanned or computerized) are kept in the image data base (see below).

VI. GRAPHICS DATA BASE

A. IMAGES

All graphics at Dor, whether they are plans, photographs, artifact drawings, or diagrams (e.g., genealogies) at whatever format, will be referred to as

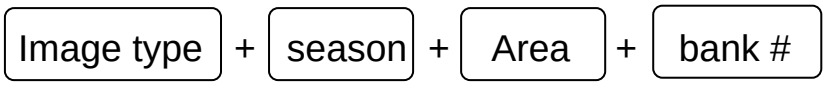
'images'. Each image has a unique image distinctive name (see below) which is also its file name on the computer.

By 'creating an image' we refer both to the primary saving of a new image file (e.g., taking a [digital] photo, creating a genealogy, scanning a drawing) as well as manipulating, combining, or materially changing existing images and resaving the result (under a different name). E.g., when a recorder copies a master top-plan and adds the locus numbers opened during the day it should be saved under a new and unique image-number. When several individual artifact drawings are combined for a pottery plate, the plate should receive its unique image number.

Exceptions: if you are merely correcting, enhancing, or changing the format of an existing image – and there is no reason to keep the original data, you need not [re]save it under a different image number. E.g.: when adding basket numbers onto an existing top-plan during the day the recorder need not resave it under a different name. You may keep draft-files, but as soon as they become part of the official data-base of the excavation they must be given 'official' image numbers. If more than one image is saved (even if they are only slightly different) they need different image numbers. Temporary image files will not be kept, and must not be referenced in any excavation record (locus card, report, etc.)

B. IMAGE IDS

As noted above, all images at Dor have distinctive file names. They are numbered in sequential order from an image "bank" and registered in the image data base. Each area will receive a 'bank' of IDs.. A separate bank will be given to those producing images unconnected to the current season (e.g. artifacts being scanned for publication). In this case, the initials will not indicate the excavation area, but will be arbitrary. The image ID is composed of an alphabetic prefix and a number. Each of the alphabetic signs will refer to the content of the image.



1. **Image type:**: will specify the type of the image saved. We use three different image types.
   a. **p** for photos: all photographs (digital photographs or scanned slides, films and pictures).
   b. **d** for drawing: all drawn material. This includes daily top-plans, ceramic drawings, field drawings, digital drawings etc. It includes both newly created images (as vector made line art) and area drawings.
   c. **v**. for varia: will include all images that are not photographs or drawings. This category can include genealogies, 3d reconstructions, graphs etc.

2. **Year**: two last digits of the year, e.g. 05. The year designation should be the one the image was created and not the year the objects in it were found: if a drawing of a pottery shred that was excavated in 1984 and scanned in 2008 the year will specify 08.

3. **Area**: For images relating to the current season the excavated area will be specified (D1, D2 etc.) Research assistant and researchers producing images unrelated to a specific season will use arbitrary letters according to image content.

a. **Z#** for ceramics. (if ceramics are scanned on more than one computer concurrently each one will be identified uniquely Z1, Z2 etc.)
b. **W#** for architecture.
c. **V#** for varia.

4. **Bank numbers:** the image ID ends with three digits that will be supplied by the data base automatically. If more than 999 images are entered in a single year a new prefix can be issued – d05Z1-999 will be succeeded by d05Z2-001, etc..

   Examples:
   a. Top-plan from area D1, created on 2006: d06D1-654. D for drawing, 06 for 2006, D1 for the area and 654 was the next available number in the image data base that was given automatically (see appendix 1 fro image data base use).
   b. Photograph taken in area G in 2005: p05G-634.
   c. Scanned pottery sherd found in 1996 from area D2, scanned in 2004: d04Z1-437.
   d. Photograph of pottery sherd found in 1996 from area D2, scanned in 2004: p04Z1-492.

B. IMAGE DATA-BASE

The image database is composed of three interconnected tables – a unique image record is opened in the main image table for every image in the system. In addition there are two connector-tables, one to connect images to loci and one to connect images to finds. Such a connection can be made either from the image form or the locus card / object card.

The image database must be updated as soon as the image is created and saved in its appropriate folder. Each person who creates images and uses its 'image bank' is accountable for each number given out of the 'bank' and must fill out an image database record for each number in the 'bank' (even if cancelled or unused).

The image name is a unique designator for the image, and the image record in the image database is its only descriptor. There are various ways (automatic and manual) to search for and to locate an image file (or all copies of same), if we know it exists in the system – i.e., if it is correctly named and has a record in the image database. If an image is created and no database record exists for it (or if the image file name and its image name in the database do not match), that image is lost. If two or more images are given the same number, one of them will surely be lost. The latter can happen if the person who uses a 'bank' has forgotten to record an image and/or tick the name off the 'bank' as soon as the image is saved.

Staff members typically create only specific types of images, and repeating the same type of information record after record might seem tedious, but remember that there are thousands (and eventually will be millions) of images in the system, of varied kinds. There is no other way of knowing what each image file is but for the image data base, so it is very important to fill these forms accurately. Different types of images require different information to be recorded for them. Do not save an image until all the essential details are known.

1. **Specifics for genealogies:** If you are starting a genealogy from scratch, open a record for it in the database the first time you save it. Enter the area and grid unit in the appropriate fields. Locus numbers should not be inserted.
2. **Specifics for top-plans:** After the basket numbers and elevations are inserted to the master top-plan at the end of the work day, a 'flat' .jpeg copy should be made, given an ID as described above, and a record for it inserted

to the data base. The data base entry should contain the area and the date, but not locus or basket numbers.

3. **Specifics for field photographs:** The pictures will be inserted to the data base by the photographer only after they have been screened by the area supervisor. The data base must contain the area and season in which the picture was taken, and the loci noted in the image-locus sub-form.

4. **Specifics for locus-card sketches:** separate image entries should be made for top-plans and sections appended to the locus card. The area, grid square, and season should be entered in the appropriate fields. Only the main locus ID to which the specific image is attached should be specified in the image-locus list.

5. **Specifics for architect's field-drawings:** Before scanning and entering 'tzetalach' make sure that they has the area, the grid square[s] (including at least four grid points) and the season marked on the drawing. Enter these in the appropriate fields. All the locus numbers that appear on the sheet should be specified in the image-locus sub-form.

6. **Specifics for vectorized field-drawings:** The vector file will be saved as a svg file and inserted into the image data base with the same details as the raster image and a reference to the raster image from which it was converted.

7. **Specifics for object-drawings:** scanned object drawings should be saved as .tiff files, vector drawings as an svg file. A record should be inserted into the image data base, and the object ID noted in the image-object sub-form. Drawings of multiple objects (e.g. pottery plates) should be connected to all of the object-IDs therein.

8. **Specifics for object-photographs:** object photographs should be saved as .tiff files. A record should be inserted into the image data base, and the object ID (or IDs, in the case of assemblage photographs) should be noted in the image-object sub-form.

CHAPTER 8

EXCAVATION AND STRATIGRAPHY

Contents:

I. HISTORICAL OVERVIEW: THE DEVELOPMENT OF STRATIGRAPHIC EXCAVATION IN ISRAEL

Stratigraphic analysis at Dor follows the theories and principles of architectural stratigraphy, which developed over the course of the twentieth century as a way to explain the stratification of large urban sites, especially tells. Its beginnings can be traced back to the first use of stratigraphic excavation methods in the Near East.

A. THE BEGINNING OF STRATIGRAPHIC EXCAVATION. The beginning of stratigraphic excavation should be placed around the end of the nineteenth century. Heinrich Schliemann must have developed some sort of intuitive notion about tell formation towards the end of his excavations at Troy, since he was able to distinguish up to seven successive occupation levels. But it was Sir Flinders Petrie (1904) who was the first person to actually write down the most elementary law of stratigraphy, namely, that in a site with many superimposed occupational levels, the lower levels are earlier than those which overlie them.

The earliest model of the structure of a tell, as it was initially held by Petrie and his contemporaries, has been described as the “layer-cake” or “onion” theory. It assumed that strata were deposited on a tell horizontally, much like geological deposition. Therefore, the correct procedure for excavating a tell seemed to be to strip off its layers by a series of arbitrary horizontal spits, putting all of the walls which appeared in a single pass on the same plan. The only way to record an artifact stratigraphically under that recording system was by its find elevation. The assumption was that all of the artifacts found at the same absolute elevation over the entire tell were contemporary. This system continued in use as late as the 1950s (e.g., in Byblos).

The true founders of the architectural school in Israel were George Reisner and Clarence Fisher, field director and architect of Harvard University’s excavation at Samaria in 1908-1910. They recognized that tells were built up (rather than laid down like geological deposits) through repeated episodes of construction. Accordingly, they used walls as the main phasing criterion, connecting all walls associated to an architectural complex, and then assigning buildings to strata according to the superpositional relationships between their walls. Most of the large-scale excavations in the 1920s and 1930s emulated these methods (some with markedly less success than others).

The “Reisner-Fisher” method predominated in large tell excavations into the 1940s. William F. Albright’s “locus to stratum” system introduced some changes, mainly in the handling and registration of artifacts, but he himself professed to follow the methods of Reisner and Fisher. In neighboring countries similar

methods were used. The large tell excavations in Syria, Iraq, and Pakistan all used architectural approaches, as did Classical excavations around the Mediterranean.

While architects were honing their skills at locating phases and subphases in the construction of walls, the dirt archaeologist did not always follow suit. For example, even though the importance of floors was realized early on, excavators did not usually dig carefully enough to locate beaten earth surfaces. A locus was opened as soon as the walls of the stratum started showing up, and often was not closed until the excavators reached the top of another wall system. Since excavators usually recorded artifacts by locus (i.e., a room) number alone, finds postdating the destruction of the stratum were sometimes mixed with those predating its construction. Add to that the fact that the existence of pits was often ignored, and the problematic nature of evaluating the results of many excavations of the 1930s and 1940s becomes clear. The reason they are referred to at all is that some of these remain treasure troves of information, if only because they have never been equaled for sheer scale and exposure, and the numbers and importance of the artifacts recovered.

B. THE WHEELER-KENYON METHOD. Archaeology had been developing in a different way in northern Europe where stone and brick architecture became prevalent only well into the Middle Ages. There, archaeologists had mainly been digging sites without architecture or sites with wooden structures where the walls did not survive. These sites also contained far less pottery, at least in preRoman eras, than Near Eastern tells. If the archaeologist wanted to recover anything from these sites, she or he had to dig carefully, and watch the soil at all times. In England, the formulation of stratigraphic excavation techniques is credited mainly to Sir Mortimer Wheeler. The first consistent use of the "Wheeler method" was in the excavations of Maiden Castle in 1934, though he committed it to writing only twenty years later (Wheeler 1954).

Wheeler stressed the exact delineation of individual dirt deposits, their labeling, and the isolation of artifacts according to the deposits in which they were found. Another basic principle of his method was to establish strict vertical control by means of balks between excavation units. The limits of each dirt deposit are traced on the balks, and the overall stratigraphic scheme is obtained by sequential enumeration of the dirt layers on the balk.

This system had several implicit assumptions:

1. Every occupational activity causes the deposition of (exactly?) one dirt layer on the site. (This supposition was amended by Dame Kathleen Kenyon, who included as units intrusive elements, such as pits or ditches, which are the results of the removal rather than the deposition of layers.)

2. Every deposit in the unit extends to the balks, and consequently every relation between two units is visible at the balk.

3. Possibly influenced by geological deposition models, Wheeler seems to have regarded most deposits as continuous occupational accumulation (vs. the architectural view which sees most deposits as constructional fills and destruction debris). Thus, for instance, he supported rate-of-accumulation arithmetic to estimate the chronological range of a deposit by its thickness, and the notion that a sterile deposit denotes an occupational gap. Finding decreasing amounts of potsherds typical of older assemblages in deposits of a new culture is interpreted as cultural overlap, rather than redeposition of sherds in a fill (Wheeler 1954).

Wheeler had some experience digging in the Near East, and some appreciation of the importance of architecture to the understanding of the stratigraphy of the

site in which it is a dominant factor, but architectural considerations are not part of the formal stratigraphic model which he proposed.

Dame Kathleen Kenyon introduced the Wheeler method to Palestine. She excavated with Wheeler in England, but unlike him was primarily a Near Eastern archaeologist. Some of her early work, in the joint expedition reexcavating Samaria (1931-1935), should still be characterized as architectural in essence, although it already shows heightened awareness of the role of debris layers for the dating of architecture. Her later work at Jericho (1952-1956) shows wholesale use of Wheeler's excavation strategies and analytic techniques (Kenyon 1962).

C. DEVELOPMENT OF DIVERSE EXCAVATION METHODS IN ISRAEL

Two expeditions held the archaeological spotlight in Israel in the late 1950s and early 1960s: the Israeli expedition to Hazor, and an American expedition which excavated Shechem, and later went on with largely the same staff to excavate Gezer. The impact of these excavations is such that nearly all the directors of active projects in Israel in the 1990s were junior staff members in these projects, while most of the younger excavators working into the early twenty-first century are their students.

The methods used by both of these expeditions essentially combined the Reisner-Fisher and the Wheeler-Kenyon methods (although the Israelis would not admit to the latter). Each saw itself as the legitimate heir to Albright. The central figure in establishing the stratigraphic methods at Hazor was Emanuael Dunayevski, the expedition's architect. The Hazor policy was to use a locus-to-stratum method, amending it as needed. The Shechem-Gezer team, on the other hand, adopted the Wheeler-Kenyon method, combining it with elements of the architectural method.

The Israeli "school," which developed from the excavation methods employed at Hazor, emphasized the construction-destruction cycle of a tell. Fill/debris usually accumulates in short spurts, rather than over a long time (i.e., years or more). A fill laid as a podium for a building is laid in weeks, sometimes months, and destruction happens in minutes or hours. These comprise the majority of the deposits on a site. Garbage heaps or pits are rarer. Even the housekeepers tried to keep floors clean, and streets rose slowly.

Emphasis was placed on small, well-controlled deposits. A group of complete vessels found on a floor is regarded as much more important than the entire fill thrown in on top. Loci which are doubtful, disturbed, or represent materials not in their original contexts have less stratigraphic value. The necessity of a certain minimum number of artifacts in the sample is recognized. The larger the sample the greater the likelihood that it is a "representative sample." In a small deposit with few sherds, the archaeologist cannot know how representative those few sherds are of the total assemblage of that culture. This is why pits are usually dug as units rather than by individual tip lines; the number of sherds in each tip line will usually be very few; those in an entire pit, though spread over a greater length of time, will represent the assemblage better. And since the pit falls within one construction-destruction cycle such microstratigraphy is of less use.

How loci were defined is somewhat subjective. Two archaeologists excavating the same square, without the benefit of consultation, will likely define the deposits differently (this goes against the theory of the "balk and debris" school that each deposit can have only one correct definition, and that careful observation can determine this).

By the mid-1960s most excavations were digging in 5-x-5-m squares, isolating the finds by the deposit in which they were found, and most were defining their

strata by the relation of debris loci to superimposed architectural complexes. The inter-school controversies had deteriorated to bickering about whether to draw all balks and at what stage to remove them (Aharoni 1973).

Comparison of Architectural vs. Balk/Debris Methods

	Architectural	**Balk/Debris**
Founders	Reisner/Fisher	Wheeler/Kenyon
Tell formation	Construction-destruction cycles	Continuous occupational accumulation
Deposits	Sealed, intact deposits distinguished from less valuable disturbed or doubtful deposits	Each deposit the result of occupational activity
Fill/debris	Constructional fill and destruction debris deposited over short period of time	Slow accumulation of deposits at discernible rate during occupation; sterile fill = occupational gap
Artifacts	Individual deposit as provenience; large "representative" samples and primary context emphasized	Individual deposit as provenience
Control	Combined horizontal and vertical control	Deposits delineated and labeled on sections
Presence of older artifact types	Understood as residual (redeposited) material	Evidence of cultural overlap
Relations	Relations of loci to wall systems emphasized	Relations of deposits to each other traced in balks
Stratigraphic method	Loci grouped into strata on the basis of relations to buildings	Sequential enumeration of deposits

In the 1970s, most of the Hazor and Shechem-Gezer junior staff graduated to running their own projects. As they dispersed, these two approaches to excavation diversified into many different methods, to fit the individual aims of the new projects and sometimes the personal preferences of their directors. Soon, the differences between excavations professing to belong to the same school became as great as, and sometimes greater than, those between projects owing allegiance to different traditions.

As field methods became more diversified, they also acquired increasingly sophisticated excavation and recording techniques, resulting in more and more complex data sets. This necessitated corresponding advances in the analysis of the data that led to ever more unwieldy report formats. Augmenting these changes was a corresponding decrease in funds available for analysis, laboratory work, and publication. The entrenched organizational structure of the expeditions could no longer cope with the advances in field techniques. Most expeditions up to the late 1970s were sponsored by a single institution and were committed to the research goals of one person. This structure tended to inhibit the intellectual contribution of the rest of the staff, who were essentially regarded as technicians. With increasing specialization a single person could no longer command all of the required skills, nor could direct personal attention be given to every detail in a large excavation (e.g., the Wheeler-Kenyon dogma which requires that the director himself draw all the balks). Final publication of results could no longer keep up with the fieldwork. The final results of the four "formative" excavations mentioned above—Hazor, Jericho, Shechem, and Gezer—were not published until the 1980s, and in part are still unpublished. The folly of pursuing these trends was not realized, however, until it culminated in the 1970s in such dinosaur projects as the Southern Wall excavations in Jerusalem.

D. THE IMPACT OF THE "NEW ARCHAEOLOGY" ON NEAR EASTERN ARCHAEOLOGY

The late 1970s and the 1980s again witnessed the importation of a new methodology, this time mainly from North America. The impact of the "New Archaeology" on Near Eastern archaeology can be discerned along two different dimensions.

1. An important aspect of the new methodology was the contention that archaeology is (or at least can be made into) a science: that the accuracy of knowledge about the past can be measured. "It is this assertion which most sharply differentiates the new perspective from more traditional approaches. The yardstick of measurement is the degree to which propositions about the past can be confirmed or refuted through hypothesis testing" (Binford 1968). The controversy over whether such a program could be implemented has divided the archaeological community in the Near East as it has in other parts of the world.

2. Another aspect of the "New Archaeology" was a change of orientation; it advocated that archaeology dissociate itself from the aims of history and collaborate with the social sciences. Its proponents argued that long range social processes are a more appropriate subject matter for archaeology than individuals or particular events.

   Excavations in the Near East have been traditionally motivated by an interest in history, biblical studies, and to a lesser extent, classics and art history. In the nineteenth and beginning of the twentieth century, explorers of the Near East, especially in Egypt and Mesopotamia, handed historians a wealth of documents which caused a significant transformation in the perception of ancient history. Until the nineteenth century, a well-educated person knew the Bible and the classics. That meant that the intellectual world's perspective reached back to about the tenth century BCE. By 2000, historians knew details of events that occurred in the thirtieth century BCE. Humanity's historical perspective had nearly doubled.

   This transformation was every bit as dramatic in the field of biblical studies. Up to the nineteenth century the Bible was considered a unique document, but during the nineteenth century it was unexpectedly supplemented by a large corpus of related literature, theology, and mythology discovered in Near Eastern tells. As long as archaeology could hand over such goods, both historians and archaeologists were content with the view of archaeology as "history's handmaid." To a certain extent this situation still exists in Egypt and Mesopotamia, where excavations routinely produce written documents; embarrassing questions about the role of archaeology are rarely asked, and the boundaries between archaeology, linguistics, and history are still indistinct.

   The Holy Land itself, however, was proving somewhat of a disappointment. Not only did it appear that it was a poor cousin as far as inspiring monuments were concerned, but the "People of the Book" were also a disappointment in expressing themselves in writing. In two centuries of research only two or three written documents of any groundbreaking historical value were found, and most of those before the twentieth century. After the 1950s all but die-hard optimists were despairing of any significant change in this state of affairs.

   By the 1970s, some people were beginning to wonder aloud about what real contribution archaeology could make to historical research. It has been argued that in periods where no historical documentation is available, archaeology has done little beyond indicating some of the long-range

processes which are the background before which historical events take place. Where documents do exist, archaeology has sometimes provided striking illustration to events attested in the texts, but added little to our understanding of the historical process itself. In cases where the historical evidence is vague or conflicting, archaeology has generally not been able to resolutely confirm or refute any of the problems that have emerged.

Here the case of the Israelite settlement in Canaan might be cited. Three general theories (and a myriad of variations) have been proposed. All were based on historical and not archaeological considerations. Honest efforts by leading archaeologists over more than a century have brought to light a host of new data which have confused the issues even further. At last count, all of the theories are still alive and kicking, and each claims some support from archaeology.

Thus, when "New Archaeology's" proposal that archaeology divorce the humanities and ally with social sciences had filtered to Near Eastern archaeology the ground was already prepared for change.

The bond between archaeology and biblical history is not easily broken, however, and few are trying to argue that it should be. For an anthropologist a society which happened to exist between the desert and the Mediterranean is but another case study. For a student of monotheistic religions, however, this society is a unique source of empirical data. The same is true for other Mediterranean archaeologies (e.g., Greek Bronze Age and Classical Archaeology). The argument is, however, that historian and biblicists will gain if they let archaeology do what is does best, and that many issues will be better defined if the vicious circle between historical and archaeological considerations is cleanly cut.

It remains to be demonstrated that archaeology can serve anthropology any better than it served history. A stumbling block here is that the social sciences usually require that the researcher provide more than merely a feasible scenario for his or her propositions to be considered acceptable. This explains the insistence of "new" archaeologists on an implicitly scientific epistemology. Given the consistently poor track record of archaeology in proving anything at all, a certain amount of pessimism in this respect is understandable. Inasmuch as a new discipline can be judged from a perspective of only a few decades, the new archaeology is showing every sign of following the old, as the grand visions of the 1960s deteriorate into many arguments of a technical nature.

Due to their proximity to it, some American archaeologists were exposed earlier to "new archaeological" influence. By the end of the 1980s not a single research project was unaffected by these ideas, and opinions as to how many of them ought to be accepted is as divided in Near Eastern archaeology as anywhere else.

Excavations begun in the 1980s diverged into one of two molds, mainly because of increasing financial constraints. The first is the small scale, short-ranged project that functions on a modest budget and is narrowly focused on solving a few specific problems. The other is for several excavators of different backgrounds to pool their resources and form multi-institutional (and usually multinational) consortiums to investigate larger sites. In these, for the first time, excavators schooled in very different traditions and with varying theoretical commitments have started working together. The main challenge of these projects is working out strategies which will simultaneously address the different dimensions in which their participants specialize. Whether these encounters will produce methodological breakthroughs remains to be seen.

II. EXCAVATION STRATEGIES AT DOR

In addition to placing the excavation methods practiced at Dor against the historical background summarized above, consideration of some of the strategies employed in the Dor excavations offers some insight into how they differ from other methods found in the Near East and elsewhere.

A. ENDS AND MEANS. A method, by definition, is a regular, orderly way of accomplishing something. It is always a means to an end and not an end in itself. Different objectives and different conditions necessitate the use of different methods. An archaeologist interested in town planning should not employ methods developed for stratigraphic probes, nor can an Indian campsite be excavated like a Byzantine city. These truisms would not have deserved mention except that all too often archaeologists design their research objectives to fit the working methods they are used to, rather than the other way around.

In evaluating an excavation method, attention must be given first to what the excavator wants to achieve, second to the nature of the site, and third to the means at his or her disposal (personnel, time, and money).

In Israel in recent decades there has been a gradual decline in the scale of individual excavations. The assets available for archaeological activity are now divided among many institutions supporting many small projects rather than a few large ones, and the funding for any one project is usually restricted. The growing sophistication of excavation and analysis has also slowed the pace of excavation considerably. This has led some archaeologists to conclude that the era of large tell excavations is over, and that the future belongs to either short term excavations of small and/or single period sites or focused probes into previously excavated sites designed to address specific problems. Others disagree. Several ambitious projects were initiated in the 1980s with the express purpose of countering this trend (e.g., Dor, Miqne, and Ashkelon).

An argument can be made that the core of the study of an urban civilization will always be the large-scale exposure of towns. The results of excavations conducted fifty years ago cannot be relied on for the data needed today even when rechecked by modern probing. The basic units of which a town is composed, and in which its population exist and act, are buildings. The goal of the excavation of large urban sites is therefore to excavate, as far as possible, complete architectural complexes, and to obtain large exposures of every period of interest.

While it is true that a very short-term project of one or two seasons can give a high return on investment, the same can be said for a very long-term project. The explorative stage on a large tell site can last up to ten seasons and longer. Only after this stage can informed hypotheses about the site be formulated and concrete ways in which they might be checked suggested.

One way of overcoming the financial and organizational obstacles facing large projects is to have several researchers pool their efforts and concentrate on one site. This approach offers the additional bonus that fewer results of the excavation remain “orphans” in the sense that no staff member has immediate interest in them. It does add complexity in that the excavation has to address many different goals simultaneously.

The above goes some way towards explaining why at Dor the choice is for speed and large area clearance – though irresponsible destruction of evidence is never tolerated. The complexity of the site and our goals explains why it sometimes appears that different methods are being used in different areas. Indeed, in some cases even within the same area one unit supervisor will be exhorted to dig faster and not to dawdle over details, while another might be upbraided for going too fast.

It has been argued that it is unethical not to excavate as meticulously as possible, because in doing so irreplaceable evidence is destroyed. This has some truth to it, but invariably the "proper" method of excavation, in the eye of the critic, is the one with which she or he happens to be familiar. For instance, it is true that some evidence is lost when everything is not sifted; but some research goals require wet sieving through a fine mesh, and others might require that every sherd be mapped in three coordinates. When the kind of data posterity is going to need cannot be predicted, it is difficult to know how to collect it effectively.

Public expenditure in archaeology, as well as the time and efforts of volunteers, are also finite resources. An excavation has the moral right to appropriate some of them upon presentation of worthwhile and (if the excavation is not run by con men or charlatans) attainable research objectives. To sacrifice these goals for the sake of some ambiguous posterity would surely be unethical.

In an excavation the size of Dor, it is possible to win a few and lose a few. A calculated risk is taken by pushing the pace along; but this is offset by the fact that even if a mistake occurs and, say, a locus is contaminated by not locating a pit fast enough, other clean loci belonging to the same phase will probably be found. To give another example, some time-consuming chores, such as sifting, are done only on a sample basis. Still, the sample of sifted material may be as big as that of a small excavation in which everything has been sifted, more varied in provenience, and free of any material from disturbed or questionable loci.

B. ARCHITECTURAL VERSUS DEBRIS LAYER STRATIGRAPHY. Architectural stratigraphy, expressed briefly, means that all the loci in the excavation are assigned to groups called strata according to their relation to wall systems. Each stratum represents a single construction-to-destruction cycle, beginning with the beginning of occupation and ending with the construction of the next cycle. For example, in a situation involving two wall systems, an upper one (I) and a lower one (II), all loci from above the (lowest) floor relating to wall system II to just below the floor line of wall system I are designated stratum II deposits. The number of such strata on the tell reveals how many times the town was destroyed and rebuilt. Another system of stratigraphic analysis which has been used in Israel is one in which the stratigrapher's objective is to seriate from the latest to the earliest (rather than group) all of the deposits according to the superpositional relations among them (rather than among them and into an architectural phase).

Since not every wall system is represented in every excavation unit, the stratigraphic scheme is usually established by the field supervisor, the architect, and the stratigrapher on the level of the field or area. At the unit supervisor level it is important to note that some types of deposits (e.g., floors and walls) are more important than others for the determination of the stratigraphy. Of supreme importance are the relations between walls, and between walls and floors, because these are the basic elements of the stratigraphic scheme. Other deposits are usually phased according to their relations to these diagnostic features. This means that it is imperative to take note of the relations of all of the deposits to walls and floors. Thus, for example, if a fill reaches a wall of phase 2 in a unit, then it most probably belongs to phase 2 as well. If however, it is separated from the wall by a foundation trench, it would mean that this fill and any

fill below it are earlier than phase 2. Since phase 2 is defined as all the accumulation between the floor line reaching the phase 2 wall system up to the floor line reaching the phase 1 system, to be sure that a deposit is clean phase 2 it must be directly sealed by a floor of phase 1. Since the phase 1 floor is usually removed in order to excavate the phase 2 deposits (and a number of loci will have been opened to do this), it is important to record exactly which loci are sealed and which are not, and to excavate and assign loci in a manner that keeps clean deposits separate from potentially disturbed ones.

C. VERTICAL OR HORIZONTAL EXPOSURE. The textbook definition of stratigraphic excavation (Rule 1) is the removal of layers from the site in the reverse order in which they were deposited. This should allow the excavator to see what the site looked like at any period of its existence. The other objective of stratigraphic excavation (Rule 2) is to determine the stratigraphic provenience of all finds. (i.e., as an illustration, when a slice of cake is viewed from the side, all of its layers are visible, and it is easy to determine exactly to which of the layers each raisin belongs.) To apply such an excavation method to a tell requires the excavator to take a slice out of the tell first, and then to remove each layer a little at a time. This is in direct contradiction to Rule 1. The reason why the strata are clearly visible from the side has to do with the crucial role of relations or interfaces in stratigraphy. Interfaces are seen clearly when sectioned perpendicularly. The interface between two layers is horizontal, and thus it is best observed in a vertical section. But unlike a layer-cake, a tell also has features like walls or pits which have vertical interfaces. These are often observed best when sectioned horizontally (i.e., in plan view).

All stratigraphical excavation must find a balance between vertical exposure (sectional view) and horizontal exposure (plan view). Horizontal interfaces such as floors are best observed in cross-sectional view, while vertical interfaces such as walls are best observed in plan view.

These demands have resulted in different excavation strategies. Some of these are oriented horizontally. For example, the open area excavation methods, which have been popularized in England and advocated by Baker (1993) and others, clear whole areas of a site without interruptions or balks. Even here the need to create sectional views has resulted in the use of cumulative sections, where with each excavation pass through the area temporary balks are created and drawn. Later these section drawings are combined to produce a sectional view of at least one portion of the area excavated.

Some excavation methods emphasize the sectional view. An extreme version is the use of deep probes or trenches. The balks of the trench are analyzed and all of the features assigned numbers. The balks are then layered back to the edge of the excavation unit. This system offers little horizontal control, and occupation phases must be created at the architect's table.

At Dor, the excavation strategy is closer to the open area method. Balks are utilized for vertical control, but they are quickly dispensed with once a major architectural phase is reached in an area and the area is opened up.

D. SPEED VS. PRECISION. All excavation methods are essentially compromises between two conflicting laws in archaeology. The first is that the more dirt you remove the more information you get, and the second is that the faster you dig, the more you miss. Since these demands are in direct contradiction, no compromise can get the best of both worlds. If one digs fast, details will be missed; if one digs carefully there might be fewer mistakes (though it is certainly possible to dig slowly and badly), but there will be less to show for it. If all excavation methods were graded on a scale of 1 (dental picking the surface for fear of destroying evidence) to 10 (plowing through everything to go for the goodies), Dor would probably rate around 7.

In general, the pace is pushed whenever there is no compelling reason to go slowly. Thus, for instance, some manuals advocate digging with small tools by default, and switching to picks and shovels only for large dirt removal jobs. At Dor excavators are advised to use large tools until a situation arises which necessitates switching to small ones (which does not necessarily mean that some excavators won't spend most of their time with a trowel and a brush).

E. OBSERVATION VS. INTERPRETATION. One of the hotly debated issues in archaeological methodology is whether archaeology is a science or not. Those who wish to see archaeology as an empirical science view the excavation as a scientific experiment. An obvious flaw in this view is the fact that archaeological excavations, unlike experiments, cannot be repeated. The possibility of repeating experiments is central to scientific methodology, because an observation is only objective in as much as any "normal" person, under precisely the same conditions, would make the same observations.

To get around this flaw, scientific archaeology argues that if the archaeologist records his or her field observations completely and objectively, without making any personal judgment or interpretation, and all these records (written, drawn, or photographed) are fully published in the final report, then anyone can access all the facts and draw their own interpretations from them. Accordingly, this school has devoted a great deal of effort to "objectivizing" field observations and separating them from the excavator's subjective interpretations. This has led to the insistence, in recent years, on an increasingly narrow and exact descriptive terminology. The most recent volumes of the Jericho final reports are a good example of this type of approach.

Another school of thought holds that archaeology is inherently incapable of being a science. According to this view, observation and interpretation cannot really be separated. The purpose of the excavation report is not to supply all of the raw data, but to give the most reasonable interpretation of it, and to justify the reasoning which led the excavator to adopt that interpretation.

The Dor excavation inclines towards the interpretational view. This means that the informed opinion of the excavator about what he or she is excavating is valued more than a mechanical description of it. For example, consider the assertion "deposit A is darker in color than deposit B" versus saying "deposit A is XXX on the Munsell color chart, while deposit B is YYY." Note that the second statement gives the reader no more practical information than the first (unless and until someone were to prove conclusively that knowledge of the exact coloration of a deposit is necessary for determining the depositional processes that created it). The difference between the two statements is that the first is an interpretational statement, while the second gives some sort of "hard" data which might (but would not necessarily) support such an interpretation.

III. THE PRESENTATION OF STRATIGRAPHIC ANALYSIS

A. PROBLEMS. The presentation of stratigraphical analysis raises several problems, some general, some specific to Dor:

1. **Orientation**. Should the analysis be presented stratum by stratum or presented unit by unit, area by area? The description of strata is properly done horizontally: all the elements belonging to one stratum are discussed before proceeding to the next. The discussion that supports the adoption of a specific stratigraphic interpretation should be done vertically, showing how specific decisions were made through a presentation of the stratigraphic scheme of a single excavation unit, or a group of units, and working from top to bottom or vice versa. Whichever method is chosen, one of the two discussions will suffer.

2. **Alternative interpretations/choices**. More than one scheme for grouping loci into strata is conceivable because of the complexity of the site. However, pressure to present coherent plans and complete artifact assemblages for each stratum forces the excavator to choose one interpretation of the data, where every effort is made to fit all of the data to that one interpretation. Other possible interpretations are sometimes not stated and arguments for preferring the chosen interpretation over them are often omitted.

3. **Stratigraphy vs. typology**. Stratigraphers often want to see a relative typological chronology from artifact analysts before committing themselves to a particular stratigraphic scheme, while the artifact experts want an established stratigraphic sequence even for their preliminary work.

4. **Learning from experience**. Since the Dor excavations will go on for years, revised analyses and syntheses will certainly be required. A strategy is needed that allows such revisions with a minimum of adjustment.

5. **Debate and disagreements**. Not all members of staff can be expected to agree on every point, and consideration must be taken of divergent views. In the interpretive process followed at Dor the excavator plays an active role. Decisions taken by the excavator during the course of excavation form an inseparable part of the final view of the site. An attempt should be made to explain the reasoning and decision-making that leads to a given interpretation.

6. **Local conservatism**. The town plan of Dor appears to have changed very little from the Persian period to the Roman period. Many walls remained in use for several centuries and have a series of floors, and in some cases partition walls, reaching them on either side. The phases on either side of a wall can be established fairly easily, but correlation of these two sets of phases can be difficult on purely stratigraphical grounds.

7. **Continuity of occupation**. It seems that at Dor there were no major city-wide destructions from the sixth/fifth centuries BCE to the second/third centuries CE. A similar phenomenon has been noted for the transition between the Iron Age and the Persian period. In addition, some structural modifications to the town plan may have been highly localized. This makes the application of the construction-destruction model far less useful for interpreting the stratigraphy of the entire site, and creates problems for correlating stratigraphy among different architectural features.

B. GUIDING PRINCIPLES. An attempt to address these problems has led to the adoption of several guiding principles at the outset of stratigraphical analysis.

1. Stratigraphic analysis is independent of any other considerations. (In particular, it is undertaken without prior knowledge of the absolute or relative chronologies worked out by the artifact analyst.) Once a possible scheme (or schemes) of stratification is/are worked out, it/they can be checked against the artifact analysis. Correlation with the artifact analysis may require modification of the stratigraphy or vice versa.

2. The description of strata is kept separate from the arguments that led to the adoption of a stratigraphic scheme. Plausible alternatives to the adopted scheme are proffered during the discussion of the stratigraphical analysis. This results in a hierarchical presentation: a synthesis of the results of stratigraphical analysis (i.e., the description of the strata) is presented without argumentation. This synthesis is derived from the overview of each area, where the stratigraphical scheme for each area and the reasoning behind the scheme are given. The area overview is constructed from a unit-by-unit analysis.

3. Strict modularity is maintained for the analysis of the units, the areas, and the strata. A revision of the stratigraphy of one unit, subarea, or area will not affect the stratigraphy of another. A change in the correlation among different areas can occur without altering the discussion of each individual area.

IV. STRATIGRAPHIC ANALYSIS AT DOR

Stratigraphic analysis begins in the field during excavation and is ongoing thereafter. The initial analysis begins with the observations and decisions made in each unit: differences in the nature of deposits are noted and new loci are created and excavated separately.

A. LOCUS CARDS. The primary stratigraphic records of the excavation are the locus cards filled out by the unit supervisors. The locus cards contain the field observations of the individual deposits made during excavation, including the reason or reasons behind the decision to create the locus (e.g., type of deposit, its color and composition, and its relations). Since unit supervisors are not solely responsible for creating loci, the information on the locus cards typically represents a consensus resulting from discussions between unit supervisor and area supervisor, as well as input from the area director, site stratigrapher, and site architect. When there is a difference of opinion concerning the nature and relations of the loci, it should be reflected in the locus cards. All subsequent analysis consists primarily of synthesizing what has been recorded on the locus cards.

B. STRATIGRAPHY FORUM. Once a week during the excavation season, an area holds a stratigraphy session. The unit supervisors, area supervisor, group director, site stratigrapher, and site architect meet to discuss the development of excavation in the area. The discussion is a unit-by-unit analysis of the loci opened and closed during the previous week with much of the attention given to important relations (e.g., floors to walls, walls to walls, etc.). During the session floors, walls, and other features are correlated among the units of the area by comparing relations and elevations. Unit supervisors are expected to come to the sessions with updated daybooks, including their daily unit plans and preliminary locus genealogies. They are expected to discuss all of the loci relations in their unit and to support their reasons for opening and closing loci. On the basis of this information, the site architect's plans are consulted and a preliminary assessment of the area's stratigraphic phases is set forth. From these discussions, the site architect will prepare a set of separation plans for the area, which show on separate sheets the major features and loci for each architectural phase of the area. Since each area is excavated for several seasons, this process is ongoing, and all assessments are subject to modification as new information becomes available.

C. POSTEXCAVATION ANALYSIS. Once excavation in an area is near completion, the final stratigraphical analysis will begin. If this final stage of analysis begins while an area is still active there is still the chance that new discoveries will require a fundamental reassessment of the area's stratification. If analysis begins after an area has been shut down, there may be no opportunity for checking uncertainties in the analysis. For these reasons, the final stratigraphical analysis usually begins near the end of excavation in an area.

Because of all the preliminary analysis done each season, by the time that the final stratigraphical analysis is begun a good idea should have emerged of the general features of the area and the criteria on which to base its stratigraphical separations.

1. **Grouping Units into Coherent Complexes:** The first step is the division of an area into coherent complexes according to broad architectural units. A complex is a group of contiguous excavation units that have enough common architectural features to establish a stratigraphic relationship among them all. A complex usually comprises a building or group of buildings situated within the original excavation area or subarea. However, since the complex is dictated largely by

the architectural divisions of the ancient town plan, it may not always correspond with the excavation areas. Once identified, the main features of the complex are then used to correlate the stages of adjacent excavation units into a common stratigraphical scheme.

2. **Analysis of Individual Excavation Units:** Each excavation unit grouped in a complex is analyzed independently from top to bottom. The analysis begins with the identification of the sequence of walls in the unit. Then all of the floors and other features are related to that sequence. An independent relative stratigraphy for each excavation unit is proposed separately, in which each stratigraphic unit (aggregate of loci) is called a stage. Stages are marked with lowercase Roman numerals from the top down. Each locus is assigned to one of the stages in the unit. Where more than one arrangement of loci exists, the more likely possibility is given first (e.g., stage iv), with the less likely possibility marked with a question mark (e.g, stage iii?). Where there is an unlikely, but possible, alternative, it is given two question marks (e.g., stage v??)

3. **Assigning Phases to the Complex:** After the independent analysis of all units in the complex, the resulting relative stratigraphies of the units are correlated with each other. A stratigraphic scheme for the area is then proposed. The stratigraphic units of the complex are called phases and are labeled with Arabic numerals from the top down. Each stage of each excavation unit is correlated with the phases of the complex.

   Sometimes stratigraphical anomalies occur in an excavation unit which are not observed in the other units. For example, a unit may have a series of floors reaching the same wall system that do not appear in the other units of the area; or a wall in one unit may show signs of modification (repair or remodeling) that does not appear on any of the other contemporaneous walls. In these cases, subphases within the area are separated out. Subphases are marked with lowercase letters (e.g., 4a, 4b, etc.). If subphases cannot be separated out in an excavation unit, the deposit is simply assigned to a phase. Subphases within units do not necessarily correspond to time of construction: subphase 4a denotes only that it is late in the lifespan of phase 4. If a subphase 4a could have been followed across the whole area, it would probably have been assigned a different phase number to begin with.

4. **Drafting a Technical Report on the Complex:** After the analysis of a complex is completed, a stratigraphical draft is written. The draft has an introduction that defines the complex and presents a summary of its phases. Attached to this summary is a set of plans in which all of the elements of each phase are drawn on a separate sheet (i.e., separation plans). A section for each excavation unit in the area follows this. The stratigraphic scheme (the sequence of stages) of the excavation unit is discussed along with its relation to the general scheme of the area (the sequence of phases). A list of all loci in the excavation unit, with their proposed phasing (relative to the area), and a locus genealogy connecting each locus of the unit to the loci above and below are appended to the unit discussion.

5. **Comprehensive Site Stratigraphy**: Eventually these independent schemes for the complexes are integrated into a comprehensive stratigraphy for the whole site. The principal criteria for correlating the different complexes into a comprehensive site stratigraphy are artifactual. This is due to the fact that all secure architectural features upon which to build a stratigraphical scheme were used in the phasing of the complexes. If such features existed among areas, the complexes would have been rearranged to include them.

   It is the director's task to collate all of the stratigraphical and artifactual data and to integrate the independent schemes for all of the complexes into a comprehensive stratigraphy for the whole site. The unit of this final scheme is the stratum, and it is numbered with capital Roman numerals from the top down.

Where several phases in one area correlate to a single phase in another, a substratum notation is applied by adding capital letters to the Roman numeral (IVA, IVB, etc.).

6. **Conclusions:** In the stratigraphical analysis practiced at Dor, the stage (unit), the phase (area), and the stratum (site) do not form a real hierarchy. Therefore, the stage is not a subdivision of the phase, and so on. There is a unique correlation between a stage in a unit and a phase or subphase in an area. The same holds true between a phase and a stratum. So, if stages i and ii in unit AZ 22 correspond to phase 1 in area H, which has been designated part of stratum I of the tell, one can say "L 20203 is stage ii (AZ 22) = phase 1b (Area H) = stratum IB. This system allows one to change the attribution of specific loci in an excavation unit to a different stage, while leaving the phasing of the area unchanged; or one can assign a phase in an area to a different stratum without altering the phasing in the area. The scheme of stages in an excavation unit can be adjusted up or down to correlate with different phases in an area, while leaving both the stages in the unit and the phases in the area unaltered; and the scheme of phases in an area can be adjusted up or down to correlate with different strata on the tell without changing the area's phasing or the tell's strata.

D. Semantics and Notation

?	Possible/probable: floor (?) means "a possible floor." Either 4b? or 4b (?) mean "probably in phase 4b (in this area)." 4(b?), means "in phase 4 (in this area), probably should be assigned to subphase b, but other subphases are possible."
??	Improbable. Less likely than above.
/	Or: 4b?/5a?, means "probably either phase 4b or phase 5a."
+	And: 4+5 means "an element existing in both phase 4 and phase 5."
−	Through: 2-5 means "existing from phase 5 through phase 2."
>	Later than (stratigraphically above): W4000>W4500 means "W 4000 is stratigraphically above (floats over, is built on top of, cuts, etc.) W 4500."
≥	Later than and/or contemporary with: e.g. if W 4005 abuts W 4000, one may note "W4005 ≥ W4000."
<	Earlier than (stratigraphically below): used as above.
≤	Earlier than or contemporary with: used as above.
≡	Contemporary, in the same phase as: i W4000 ≡ floor L4002 ≡ W 4005 means "stage i (in unit) consists of the contemporary elements W 4000, floor L 4002, and W 4005."
=	The same as: W 4033 (= W 4050) means "W 4033, which is the same as W 4050" (i.e., the same wall was given two locus numbers).

CHAPTER 9

End of Season Area Supervisor's Report

Contents:

I. History

Near-eastern archaeology traditionally recognizes two types of archaeological site-reports: *preliminary* and *final*.

A *preliminary report* is a short narrative account, typically of each season's work. It is usually a few pages in length (i.e. a paragraph or two per period per area). Such preliminary reports might be found from as early as the beginning of the 20th century in publications such as the *Palestine Exploration Fund's Quarterly Statement* or the *Annual of the British School of Archaeology in Jerusalem's* (in which Garstang's preliminary reports for Dor were published). The *Israel Exploration Journal* devotes a section to short preliminary statements (less than two pages long) in its "Notes and News". There you will find the preliminary reports for the first seasons (1980 – 1986). These 'notes' were usually written by the director of the excavation (or one of his assistants), but were unsigned, and had no real title (other than – in our case – "Tel Dor"). Between 1987 and 1995 the Tel Dor preliminary reports were presented in somewhat widened format (typically about 10 pages long) in the regular article sections of the *IEJ*. Concurrently, as required by the Israel Antiquities Law, we supplied a Hebrew version of [the same] preliminary account to the Israel Antiquities Authority. These were published (in abbreviated form) in the IAA publication *Hadashot Archaeologiot* – a journal dedicated to such short preliminary reports. In the 1990's the ASOR and the IAA started translating back-issues of *Hadashot*, for the benefit of the non-Hebrew-speaking professional community, under the name *Excavations and Surveys in Israel*. This project was finished by the late-90's, and henceforward these two publications were united to one bilingual one. At this point we stopped publishing a separate English version in the *IEJ*, and for 1996 – 1999 you will find the preliminary reports [in both languages] in the *ESI*. 2004 marks another transition – *ESI* is going online and will shortly discontinue altogether the publication of the hardcopy. Longer publications (and lots of color photographs!) are now allowed. The Dor preliminary report for the last field season and the limited operations in the hiatus years (2000 – 2003) will be one of the first e-published preliminary reports.

By contrast, a *final report* is [almost] always in book form – quite often in multiple volumes. Most archaeological institutes have their in-house monograph series for publishing final reports. The one already-published report for Dor came out as two volumes in the *Qedem Report* series of the Hebrew University's Institute of Archaeology. A final report supposedly has all the relevant data from the site / area / period it encompasses. "Supposedly" appears here, because it is patently obvious that not *everything* gets recorded in the field (or analyzed in the lab later), and little of what is actually recorded can be reported in a 200, or even 400 page report. Furthermore, 'data' observed in field-conditions – especially data which cannot be replicated – is bound to be skewed by the excavator's bias and preconception. Yet in a discipline which destroys the evidence which it collects – and collects more evidence than it can possibly analyze or interpret – there is no substitute to a full and honest (or, at least, as-honest as-possible) accounting of the findings in the field.

Thus the exact format of 'final reports' can vary from the 'bed-time story' narrative style – essentially a longer version of a preliminary report, to the 'telephone book' approach – a dry presentation of data. The Dor reports attempt some sort of a 'middle of the road' format. The main difference between our report-style and *both* types described above being that, in addition to 'data' and 'interpretation' we attempt an explicit explanation of *how* we got from the data to our chosen explanation – the precept being that, by manipulating the same data in other ways, one *can* obtain different interpretations.

The first Dor expedition published a final report on two (out of seven) areas it excavated. At the time these lines are being written, one other area is in an advanced state of preparation towards the publication of a final report, and three other areas are being worked on. At the same time, we are testing ways of switching from printed to electronic format. E-publication of archaeological site-reports may solve some of the shortcomings of the printed format – both with regards to the amount of data that may cost-effectively be put in the report, and the number of alternative scenarios that may be presented within the report (up to and including giving the user built-in tools to design and test his/her own scenario on the data base). Indeed, the projection that we shall, sooner or later (and probably sooner rather than later) convert to electronic publishing formats has prompted the switch to all-digital recording. We do not delude ourselves, however, that e-publication is the panacea for the publication dilemma. Final reports in any format are heavy, expensive, and usually take years to finish.

Some intermediate format is increasingly called-for. One that would preserve the actual data gathered during the season, as well as the 'oral tradition' – the excavators' understanding of the area as a whole at the time of excavation. Since the mid-80's projects have been experimenting with various interim report formats. The 'end-of-season booklet' might be a single copy preserved in-house for the use of project staff, as is the case at Hazor, for instance, or they might be an actual publication, distributed to [usually a limited number of] libraries, such as has been done at Tel Miqne, for instance. As of 2000 the demand for a full interim report has percolated into the statutes. The IAA now pre-conditions the excavation permit on having copies of *all* the previous seasons' records (preferably in electronic format) in their archives. They have not yet imposed any clear guidelines as to *how* these records are to be handed in – so there is no guarantee that anyone will be able to locate any of these records – or even read them. The initiative itself, however, is to be lauded, and it is incumbent upon us to give them (and ourselves) a comprehensive text which would encompass all the data and summarize the state of the knowledge gleaned from each area every season. Dor has been late in joining the bandwagon, but we have been talking about it since the late 90's. Unfortunately, this demand was not very explicit as to exactly what needs to be in the report and in what format, and has not been consistently applied. The purpose of this document is to rectify these shortcomings.

II. Overview

The end-of-season report shall be handed in by the *field supervisor / group director* no later than one month after the end of the season, on a CD / other non-erasable digital media. It will be a text document (MS-Word .doc / Rich text format .rtf) encompassing all the records (textual, tabular, graphic) pertaining to the area that season, plus explanatory texts reflecting the supervisors' understanding of the area at the time of writing. The report is aimed at a) general readership (*ESI* format) and b) Dor staff – present and future – who will have occasion to use the data compiled during that season and appended to the report. The reports will be collated by the Jerusalem staff and kept in hard copy form and in several standardized digital formats (.pdf, .rtf, .html/.xml) to ensure readability for a maximum length of time and number of platforms. Copies will be given to the IAA archives, to the authors / senior staff, and to others on a need-to-know basis – i.e. publication to the general public is

not planned at this point (except for the overview section – see below – which will be compiled into the ESI report).

III. Details

The end of season report will contain the following sections:

A. Preliminary Information / Credits Units excavated, dates of excavation, staff, banks. Staff listing will include who-worked-each-unit (if the area is working in unit-supervisor mode), and the initials by which they identified the records they produced (cf. relevant sections). The person[s] who did the field drawings and the photography for the area will also be mentioned. If a significant change in the layout of the area during the season (new units opened, work-crews moved…) the dates of these changes should be mentioned. The banks should include first and last record # for the season for loci, baskets and images. If records for other seasons were changed (e.g. walls left standing from previous seasons were removed) their numbers should appear too.

The purpose of this section is to facilitate the location of all the relevant records in future work as well as to ensure that the proper people get credit for their contribution.

B. Overview / ESI report A short narrative section specifying the objectives of excavation, and main findings (architecture / stratigraphy + outstanding artifactual finds) by phase / period. About one paragraph per phase should be appropriate. A short concluding statements should say how (if…) the understanding of the area changed in relation to the previous years' ESI reports. Several illustrations may be suggested (i.e. reference photo numbers / other images and / or suggest that such images should be produced as e.g. in the case of artifacts which should be studio-photoed etc.) as stated already, this part of the report will be reproduced for the ESI. It is also meant to orientate the reader before delving into the minutiae to follow.

C. Body The main part of the report will have the following sections

The main considerations for the stratigraphic scheme

Why you decided that there are X phases in the area and not Y, and what defines the phases. E.g.:

> "…at least two structural phases are later than the "Phoenician Building" and they were labeled 2 & 3 (with local reconstructions at several spots being labeled 2a an 2b); All elements relating to the "Phoenician building" are labeled phase 4 (raising of floor levels in several rooms designated 4a and 4b); pre-"Phoenician house elements divided to phase 5 and phase 6…."

If these considerations had not changed since last season you may copy this section from last season's report. Note: The phasing you propose at this stage is not necessarily final – and may even be patently incorrect. E.g.:

> "… in phase 4 we put various disconnected features that all share the fact that they neither belong with the 'piazza' pavements above them, nor the 'bakery building' below…"

The phase designation is merely meant to tell the reader in which separation they are expected to find the relevant features. Of course if an established phase-enumeration does exist already for the area, you should follow it if possible. If the very existence of a phase (and/or its main constituents) is in debate, summarize the arguments of this debate briefly.

> "…Ilan doesn't think this is a real phase at all, he says W5872 is a phase X-1 foundation and F5915 is merely wash from the last season – although I showed him time and time again that the tesserae of F5915 clearly reach up to the bottom of the fresco on W5872…"

Use photographs or other illustrations (by reference to image #s) which illustrate your main arguments.

Phase Descriptions

Open a section for each phase in the area (as defined above). If no information was added this year for this particular phase, (e.g. it was excavated through in previous seasons) just say " [– no new data --]". For each phase which *was* excavated the report will minimally list the following:

Features: define features hierarchally (up-to and including structures), name them (i.e. specify which locus number was chosen to name the feature) and specify their constituent loci. E.g:

> " … in the NW room (a.k.a. Aaron's closet – defined by walls W04D3-215, W04D3-217 and the N balk) the phase X floor is F04D3-218 = 04D3-211 =(?) 2289 (exc. In '89 in unit X32); also associated with this floor were tabun 04D3-214 and loci 04D3-225, 04D3-258, 04D3-216 (fills above the floor)." Replace dash w. something else?

Briefly explain why the feature was attributed to this particular phase (if that is not patently obvious or already referred-to in the section above. Refer to photographs and illustrations in the database as needed.

A *Separation plan* for the phase must be appended (it can be in sketch form). All features provisionally attributed to this phase should appear on the plan and vice-versa.

Key loci / contexts: list which loci (or contiguous groups thereof) best characterize the material culture of phase X and should be the ones that post-excavation work should focus on. The definition of a *key context* (cf. relevant section for details) depends on a) cleanliness (at least sealed, preferably primary or *in situ*); b) stratigraphic attribution – only loci which definitely belong with the phase count; and c) enough material to make a representative assemblage. The e-o-s report should list these loci in order of preference (grouping several of them into a single context where warranted, e.g. where several loci landed on the same floor, or where a locus was changed for technical reasons in the middle of a restoration context). If several rooms / structures were excavated in the area one should strive to locate key loci in each. If none were found, say "[-- none found --]". If any loci/groups of loci are crucial for the elucidation of issues such as chronology (e.g., termini post- or ad-quem for certain features), function of architectural units, etc., do state so.

Special finds: A list of the outstanding individual artifacts found in loci attributed [provisionally] to this phase. - Not every nail or coin that got 'special finded' need be on this list – just finds which in your opinion merit special attention in post-season studies.

D. Appendices *All* of the various data records accumulated in the season in the area should be appended to the end-of-season report, in the same format as the report (i.e. export them from their native formats / data bases to .doc / .pdf / .htm formats). This is both to facilitate reading the report as one text in one [of several] maximally legible format[s]; so as to have the report serve as an extra backup for the data bases and to have the report serve as a 'snapshot' of the state-of-knowledge at the end of the season. (The databases will continue to be changed during post-season analysis, while the end-of-season report will not.) The easiest way to accumulate this data is to start building the report *during the season* and copy each data record into the report template as it is created on a daily basis (e.g. whenever the area supervisor copies photographs from the photographer's computer to his/her own he/she appends a copy to the report template.) Another possibility is to add all the records from the various data bases at the end of the season, as described in appendix 4.

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Appendix 1
The Tel Dor Computer Data Base

Contents

I. INTRODUCTION

The Tel Dor New Database was built in MS Access-97 (Hebrew Edition) in 1999 and tested during the 2000 season. It replaced the FilePro-16 Database that was in use during almost 10 years of excavations (1991 – 1999).
Each upgrade of the MS Access requires changes in the database structure according to the Visual Access Basic syntax and object library of the new version of the program. The version of the software installed on your computer must be compatible (i.e. same version as the one the database was written in or newer)

The current version of the database is fully functional in MS Access 2003 ® (MS Office XP Professional ®).

II. GENERAL

A. STRUCTURE

The Database consists of four sections:

- Basket Lists,
- Locus Cards,
- Images,
- Find Cards.

Each branch allows the user to add new and to edit existing data. The entry to the specific part of the program is performed by the chain of menus by selecting one of the given options.

B. FOLDER STRUCTURE

There are two types of data entities: **The database itself** which is stored in a single MS Access file, and **external data files**, namely images (but conceptually - and in the near future, in actuality - other types of media such as pdf files, web pages, or 3D models). In order to keep the database within reasonable size, such files are not kept inside it, but rather the database keeps links to the external files. Moreover, the actual folders in which external files are stored may vary from one computer to another. Therefore, in order to be able to view the images in the forms, you must update the **root** (parent) folder of the image files after you have installed a new version of the database on your computer or if you have changed the location of either the database or the image files..

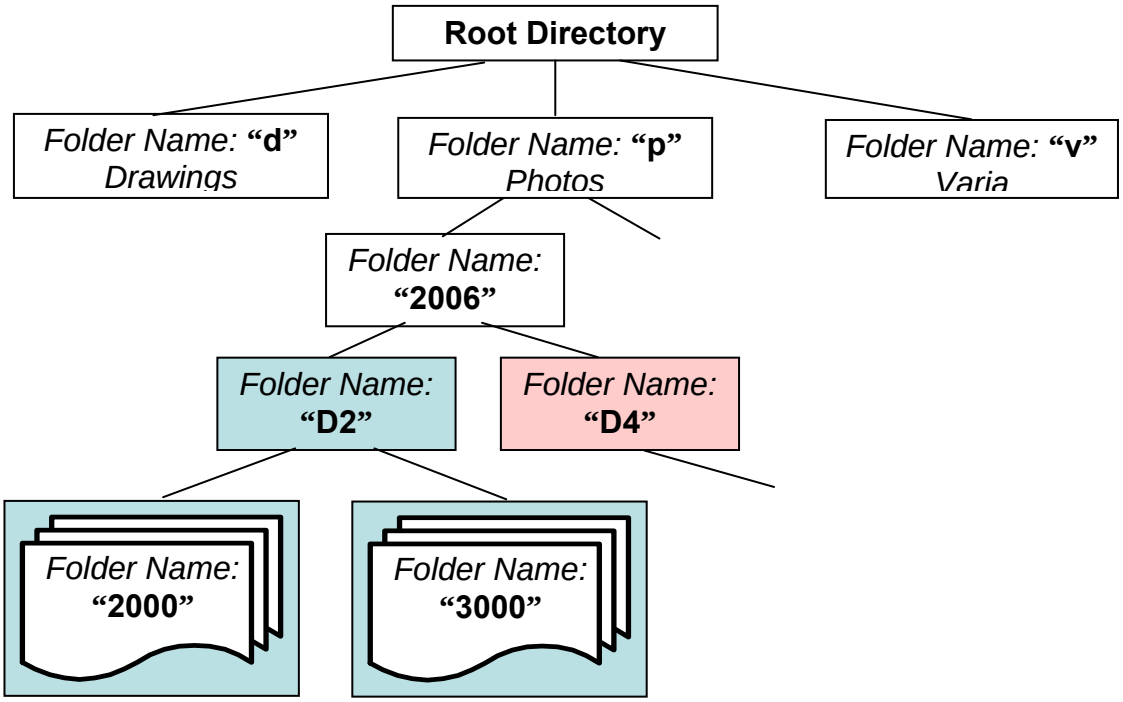
In the main menu click [Browse], select the directory and click OK. Important! When the directory is selected and you can see the path in the bottom of the Main Menu, click [Save] in order to keep the value in the database for more than one work session.

Whereas the location of the root directory for the external files will vary according to the computer you are working on, the structure of subdirectories under the root is constant. This structure must be preserved for the links between the database entities (forms, reports etc.) and the images to work properly.

Creating the folder structure

Decide which folder will serve as image root directory on your computer. It can be put under the "My Documents" folder (if you use to keep your data there) or any subfolder (for example, "My Pictures"), or any other folder in one of the disk partitions where your data is stored. In order to move easily the whole subfolders structure as is, create a new subfolder, for example "Dor_Images" and use it as a root directory.

The hierarchy of the folders consists of four levels: image type, year, image bank name (same as area for the season field images), and number. The complete path to the image files will look like [*Root directory*]/[*prefix*]/[*Year*]/[*Bank*].



This folder structure keeps the logic of the image file naming convention, so that by the image name you can always find out where to store it or where to look for it. For example, file "d05D4-0056" should be stored in [*RootDirectory*]/d/2005/D4/0/.

C. BACKUP

You must backup your data daily and copy the backup file to the server via the local network or through external device (disk-on-key). The daily backup copy will be used to synchronize the main database on the server. Additionally, a weekly backup should be burned on CD.

The backup procedure for all types of data entries (Locus cards, images, Find cards) copies the respective tables into the same "Backup.mdb" file.

Daily Backup. After the backup sessions for all entries made on your computer are completed copy the updated Backup.mdb and external files which were created ince your last backup to an external devise:

- Via network: connect your computer to the local network using either wireless connection or one of the hub plug-ins in the office. Move the file to your backup directory on the server.
- To USB Flash Drive: copy and paste the "Backup.mdb" and external files to your removable drive. Optionally: plug-it into one of the desktops in the office, and upload the files to its hard drive or to the server.

Weekly backup. Create a new folder and call it by current date; copy there the "Backup.mdb". Start the program for CD burning; make sure that the "multi-session" option is turned on. Add this folder to CD and delete it from your computer after the burning process completed.

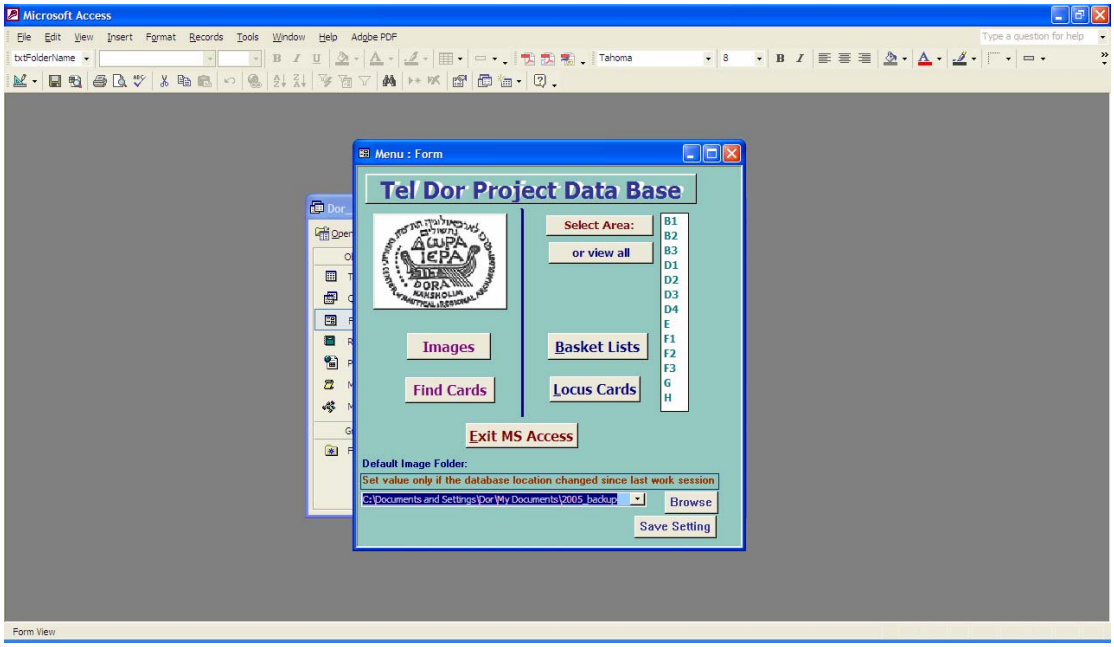
General Hints and tips

- Use Tab or Enter in order to move to the next field in the form.
- Whenever the cursor is in a field in the form, a description of the field appears on the status bar.
- Underlined letters on buttons indicate shortcuts. You may use Ctrl + the underlined letter in instead of clicking the button (e.g. Exit = Ctrl + X).
- [Ctrl + "] means 'ditto' and will enter same value as the same field in the previously entered record (e.g.: When entering a batch of baskets from the same day you can baskets of the same day, from the same locus, etc.).

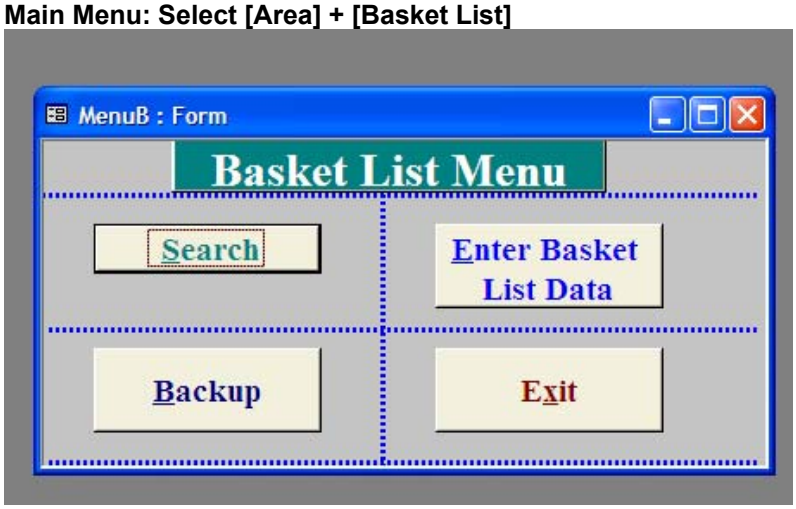
III. BASKET LIST

A. DATA ENTRY

The main menu opens automatically when the database is activated

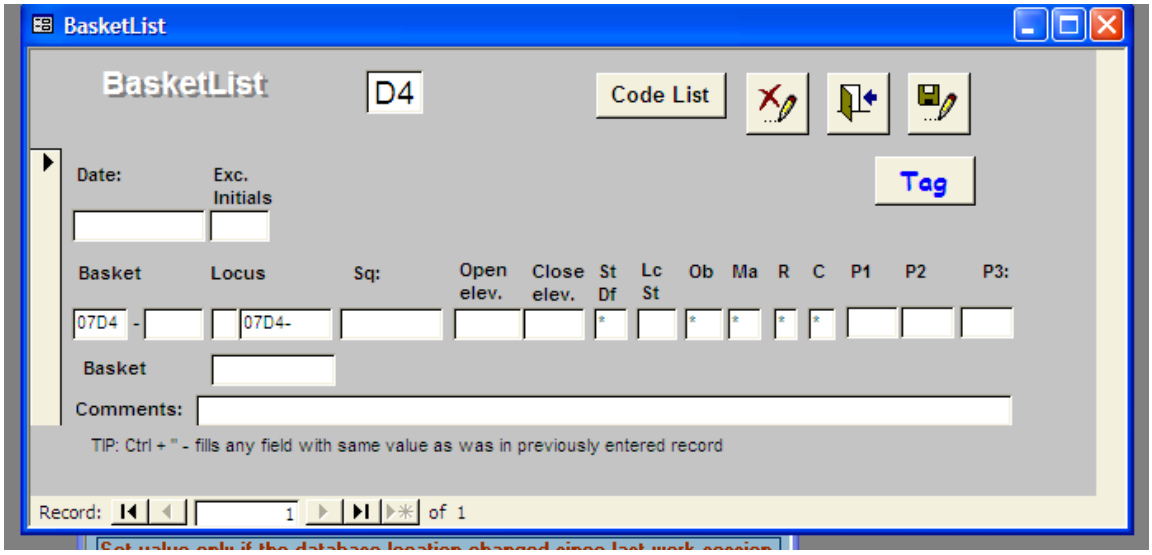


Main Menu: Select [Area] + [Basket List]



Hit the **[Enter Basket List Data]** button.

The form **[Basket List]** shows a single basket record from the Basket List table.

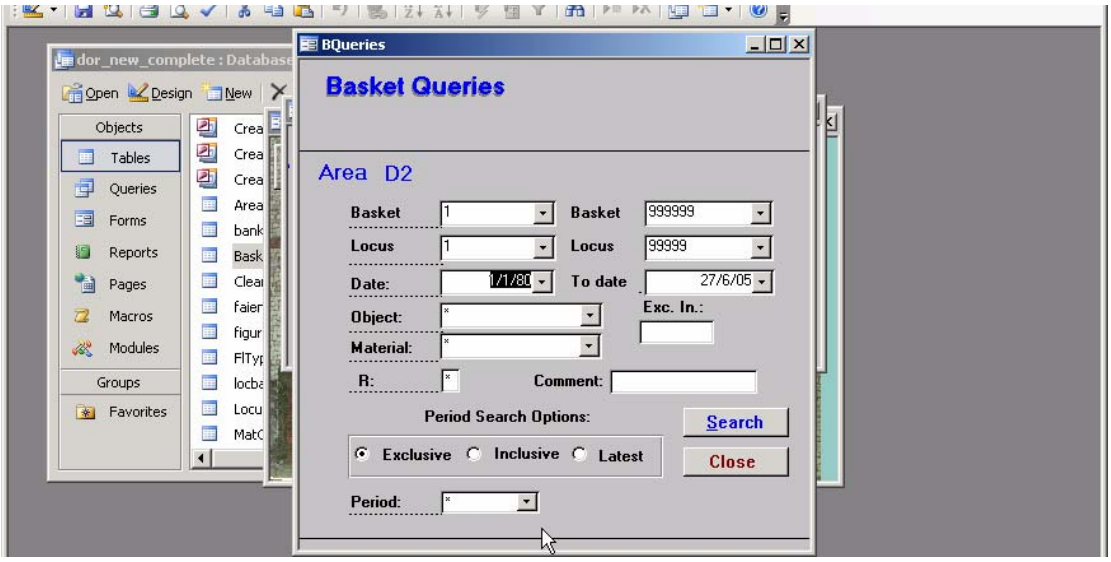


In the form *header* there are three navigation buttons and a **[Code List]** button.
[Code List] - opens the complete code list and serves for consulting and self-check while filling out the form. In the **[Code List]** form there are complete definitions of the code values.
The navigation buttons:
[Delete] – deletes the current record.
[Exit] –closes the form. The entered data will be saved automatically.
[Save] – saves current entry and opens an empty form for the next one.
Button **[Tag]** is for printing basket tags directly from the database entry. It can be used only if you are working with the barcode printer (see part VII for details).

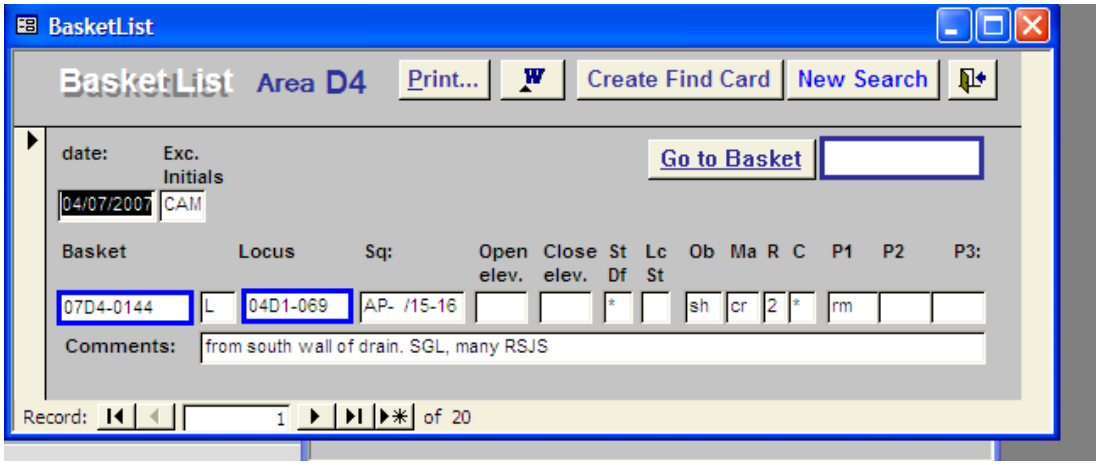
B. EDITING EXISTING BASKETS

Main Menu: Select [Area] + [Basket List] → Basket List Menu: [Search] → Basket Queries

In order to find an existing record for editing, use the **[Search]** option of the **Basket List Menu**.
In the opened **Basket Queries** form you can specify search criteria for all basket list fields.



***Example**:*
Find all baskets which came from your unit during last week:
In the "Basket Queries" form set 01/07/2005 "Date" to 01/07/2005 (Monday). The value of the field "To Date" automatically becomes the same. Change it to the last day of the span 05/07/2005 (Friday). If your area is divided between several supervisors and you need the records of one unit only, enter your supervisor initials in the "Exc.In." field. Click "Search" button (or type Ctrl +S).



You get the basket list form with the baskets which fit the conditions of your query.

You can edit or delete records (but not to add new baskets!). The buttons in the header of the form are:

[Print…] – open **Print Bar** form with several printing and output options. Click the button and select one of the print options (see below).
[W] – exports the selected basket list to MS Word in the RTF format.
[Create Find Card] – open new Find Card and insert into it basic data from current Basket List record. *NEW!*
[New Search] - go back to the **[Basket Queries]** form where you can change or set new query parameters.
["Door"] – close the form and go back to the **Basket List Menu**. Use when finish to use search.
[Go To Basket] - perform direct search on the results of your query (instead of scrolling the whole list if it's too long). Insert a basket number in the text box next to this button and click it.

C. PRINT

Main Menu: Select [Area] + [Basket List] → Basket List Menu: [Search] → Basket List: [Print…] → Print Bar

In order to print out selected records click the **[Print…]** button. In the **[Print Bar]** menu you can select one of the following options:
[Print baskets] – send all the selected baskets to the printer.
[Design New Report] – open the New Report dialog window where (if you are Access-friendly) you can design your own report based on the query results.
[Output to file] – export the query results to an existing Access database or in an external format (MS Word or other text format, MS Excel table, XML, HTML, SQL, Paradox or dBASE database, etc.)

D. BACKUP

Main Menu: Select [Area] + [Basket Lists] → Basket List Menu: [Backup]

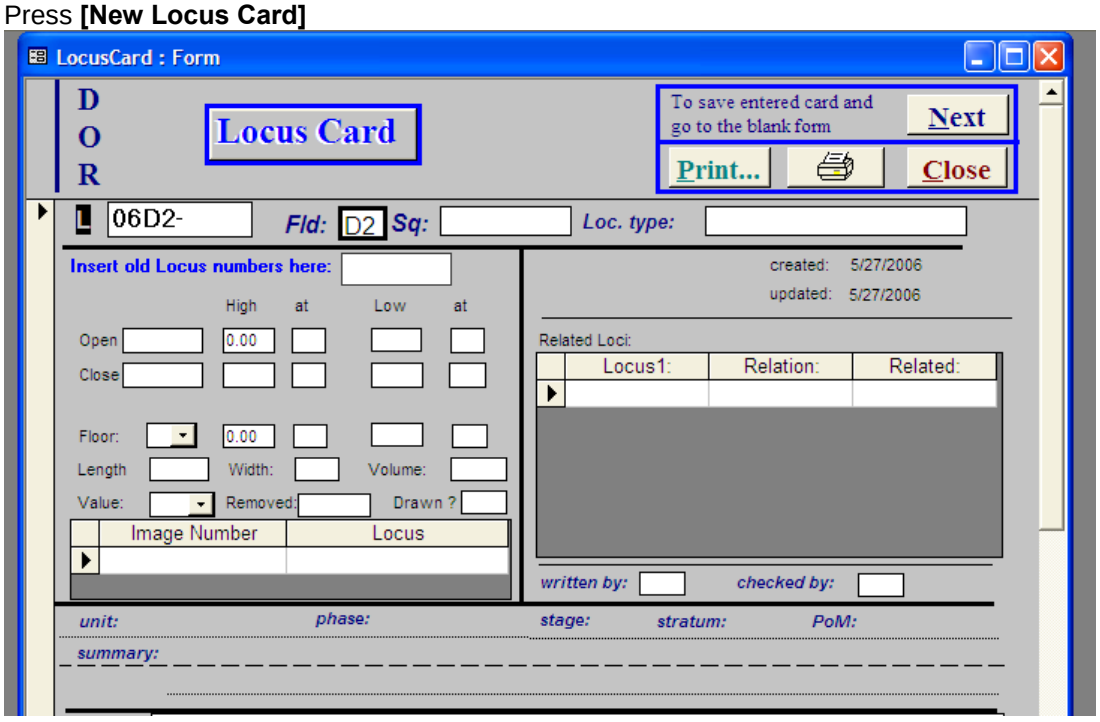
The backup procedure will copy all the baskets of the ongoing season into the **Basket** table in the "Backup.mdb" file in the same folder where your working database is.
Important: Do not move this file to another folder or the procedure may not function properly!

IV. LOCUS CARDS

A. DATA ENTRY

Main Menu: Select [Area] + [Locus Cards]

Press **[New Locus Card]**



In the form header there are 4 buttons:
[Next] – save the current record and opens an empty form.
[Print…] – open the [Print Bar] menu which provides several options for printing out Locus Card entries made in current session.
["Printer"] – print current record.
[Close] – close the form and saves all entries.

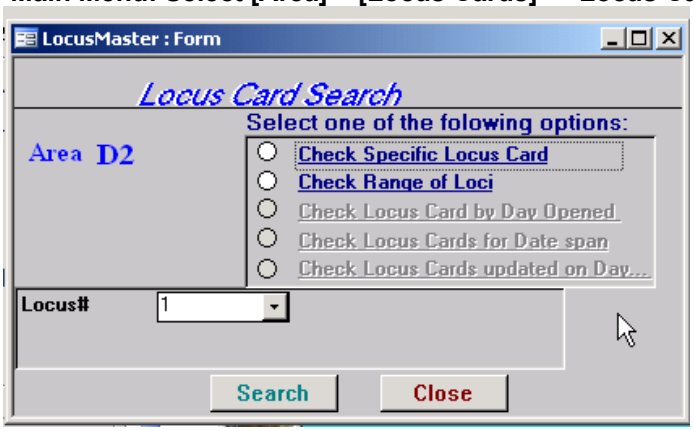
The content of the **Locus Card** form is described in chapter 4 and 7. Follow the instructions there, for the fields with pre-defined entry options (floor type, etc.) use the code lists.
Notes:

- If you are going to open a card for locus/wall with an old-system number (pre-2004 season) please do not use the field with an automatic prefix. Use the field "Insert old locus numbers here:"[Locus] below it.
- In the right side of the form there is a place for the related loci: these found above and below, seals and sealed by the current locus. In the first column of the list the current locus number is inserted automatically. In the second column select type of relation from the drop-down list, and insert the number of the related locus (without "L" or "W") into the last column.
- At the bottom of the main form is a separate sub-form to connect the locus to the various images (photographs, sketches etc.). After the locus ID was added at the top of the form this sub-form will update automatically to include the correct locus. You only need to enter the image number(s).

When the card is completed (in your current entry session) click **[Next]** in order to get an empty form or **[Close]** to finish the entry session.

B. DATA EDITING

Main Menu: Select [Area] + [Locus Cards] → Locus Card Menu: [Find Locus Card…]



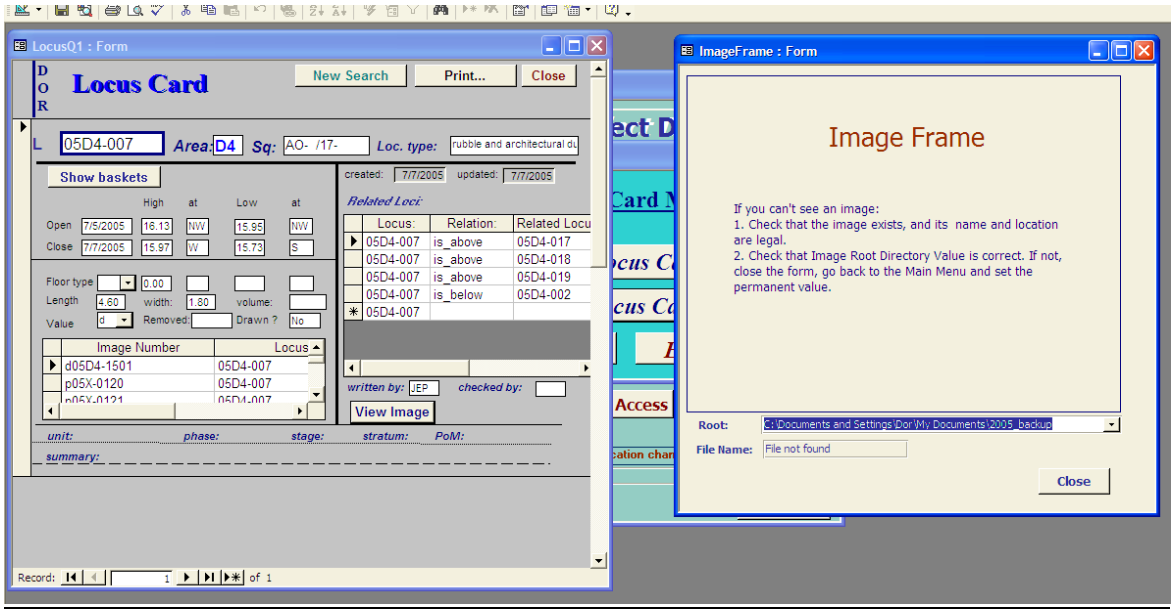
Two search options are provided: to look for a single locus card or to retrieve a range of card numbers. Select one of this options and then Locus card number (or first and last numbers of the range) from the list.
You get the results of your query as a **Locus Card** form similar to the one you used for data entry. This form allows you to view, edit and delete retrieved records.

The Form header:

[New search] – bring you back to the **Locus Card Search** form, where you can define criteria for a new search.
[Print…] – open the **Print Bar** menu with several print options.
[Close] – close the form and go back to **Locus Card Menu**. Use when finished to use search.

Additional options:

- **[Show baskets]** button – will open in the form footer a list of baskets from current locus.
- **[View Image]** button – open **Image Frame** Form. Put the cursor in the row of the image you want to preview and click the button.



C. PRINTING

Main Menu: Select [Area] + [Locus Card] → Locus Card Menu: [Search] → Locus Card: [Print…] → Print Bar

The **Print Bar** menu provides several output options:

[Print all selected locus cards] - print the range of the selected cards - one by one.
[Print list of selected loci] – print the table with the selected fields from the Locus card (Locus #, Area, Dates, Phase, Stage, Locus Type, etc.).
[Build new report] – opens wizard for creating your report based on the fields you select.
[Output the list to RTF] – exports the selected Locus Cards as list which contains the basic information about the loci, to the Reach Text Format (*.rtf) file. Use this option, for example, for extracting index of loci opened in your area during the season or while creating the "Locus Card" appendix for your End-of-season report (see Appendix IV).
[Output the Cards to RTF] – export the selected Cards (in complete card view) to the Reach Text Format (*.rtf) file. Use this option while creating the "Locus Card" appendix for your End-of-season report (see Appendix IV).

D. BACKUP

Main Menu: Select [Area] + [Locus Cards] → Locus Card Menu: [Backup]

The backup procedure will copy all the locus cards of the ongoing season into the **[Locus1]** table in the "Backup.mdb" file in the same folder where your working database is. This folder is temporary defined as a default database directory. Do not move the files to another folder.

In the **Locus Card Menu** click the **[Backup]** button. The program will ask you to confirm the operations: creating the **Locus1** table, deleting the table you created during your previous backup session, copying the records into the new table. Click **[OK]** each time the warning message appears.

V. IMAGES

Click on the **[Images]** button in the Main Menu (without area selection). You'll get the **Image Menu** form with same options of data entry, editing, and backup.

A. DATA ENTRY

[Main Menu]: Select [Area] + [Images] → Image Menu: [New Image]

Select: **Image Type** (**d**rawing / **p**hoto / **v**aria), **Year** (when the records are created), and **Bank** (area name or special character). Click [OK].
The [**New Image**] form opens in the center of the screen, while in the upper right corner you can see the list of the last used numbers for the images of the selected type and bank.

*For example, you are going to add a new top plan of area D1 during 2005 season. Select "d" for **Image Type**, "2005" for **Year**, and "D1" for **Bank.** In the Last Used form you'll see that there are several banks open for the drawings (d) this season: Top plans, Sketches, Pottery Drawings, etc. Find your bank (span of sequential ID numbers of images) in the list and use the next number (value in **Last Used Nr.** field + 1) for your new entry.*
Note: this list **does not** get updates during data entry session; it will close automatically on closing the data entry form.

In the upper row, the area and the season are set automatically, you need to select the prefix according to the image type, insert in the new image number, and click **[Generate]** in order to get the complete image number and the image file name.
Complete further (relevant) information about the image; the table below shows which fields are required for which image type.

	Area photo	Genealogy chart	Top-plan / locus card sketch	Find photo/drawing
Type of image	X	X	X	X
Date the image was created	X	X	X	X
Area supervisor initials	X	X	X	
Squares	X (if there are no locus numbers)	X	X (sketch)	
Comments	X	X	X	X
List of locus numbers	X			
List of find numbers	X (close-ups on finds only)			X

In the lower part of the form you can see two lists: the left one is **image – locus index** - list of depicted loci (for field photos/drawings), and the right one is **image-basket index** - for the list of relevant basket numbers (for artifact images).
If the image depicts an object (artifact), its basket and item number should be inserted into the **image – basket index**.
If you are recording image of context (locus, architectural feature) the locus number(s) will be filled into the **image – locus index**.
The image number appears automatically in both lists. You can add or edit the locus/find numbers in these lists.
Note: Normally images depict either artifacts or loci but not both. (The only exception would be a photograph of finds *in situ*). Thus only *one* of these indices should be used. There is no need to link an image of a find with a locus card. The find < basket < locus hierarchy would create this link by default.

1. The form doesn't accept duplicate image numbers and gives an error message while saving the record.
2. New fields: **Bank** and **Year** will replace **Area** and **Season** (respectively) as parts of the full image number. The values in the new fields refer to the image: the **Bank** of image numbers and **Year** when the record was made. The new Area and Season

fields describe the subject of the image: excavation area of depicted feature or artefact, and season when the feature/artefact was registered.
Fir example: the drawing of the vessel found in 1987 in area G was scanned and catalogued in 2003. The following values should be entered in its Image Form: ***Bank – Z0*** *(Area G pottery drawings),* ***Year – 2003, Area – G, Season – 1987****.*
For the entry of field photos and drawings the default values for Area and Season are set equal to Bank and Season, they can be changed if necessary.

When the form is completed click **[Save]**, the **[Next]** button becomes available. Click it in order to get an empty form. If you want to finish the session, click **[Close]**, the data will be saved automatically.

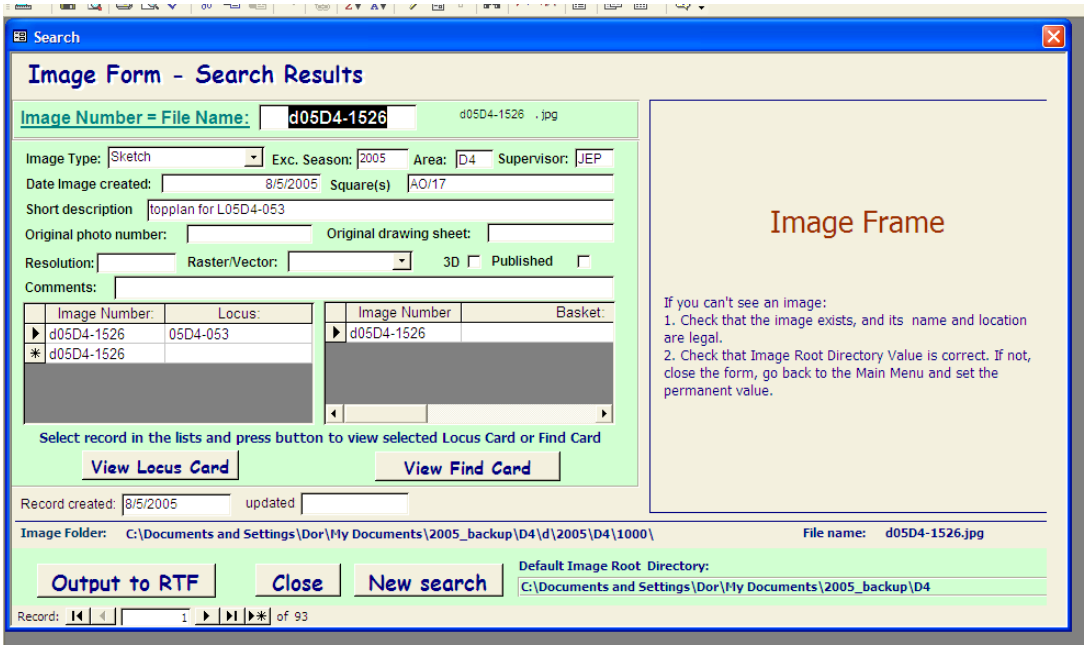
Image Types

Example	Type	prefix
Satellite or balloon photos, Google Earth image	Area Photo	p
Separation plan, line plan, Tzetaleh	ArchitectPlan	d
Pottery, small finds plate	Plate	d
Genealogy charts (Harris matrix) scanned or digitally created	Genealogy Sheet	v
Photo of any object (except of ceramic vessels) that has a basket number	Find Photo	p
Photo of any ceramic vessel or sherd	Pottery Photo	p
Artefact drawings: scanned or digitally created	Find Drawing	d
Pottery drawings: scanned or digitally created	Pottery Drawing	d
isometric drawings of the area, 3D photos of the objects	3D	d/p
	View	
	Logo	d
schematic area drawings illustrating locus cards, season reports, stratigraphy chapters of the final reports.	Sketch	d
Top plan (daily log)	Topplan	d

B. DATA EDITING

Click [**Search**] in the [**Image Menu**] form.

In the opened form select the criteria for your search, leave "*" where you are not going to set criteria; click [Search]. You get the results of your query in the form (similar to the Image Entry form), where the records are enabled for editing.



If there is a value in one of the sub-forms (locus or find indices), you can open and view the [**Locus Card**] or the [**Find Card**] (respectively): put the cursor somewhere in the selected row and click one of the buttons below the sub-forms area.

Click [New search] in order to get the form for new criteria setting, or [Close] to go back to the Image Menu.

Viewing Images

If the image root directory set correctly (see part II.B in this appendix for the folder structure) you can see the reduced image in the Image Frame on the right side of the image form. The quality of the preview depends on the image dimensions, format and size in KB. It might not be perfect if the original image file is too big.

C. PRINT

[Main Menu]: Select [Area] + [Images] → Image Menu: [Search] → Search Form

You can output your query results in two ways:
1. Run the query; click the **[Printer]** button in the MS Access toolbar.

2. In the **[Search]** form select the criteria for your query and click **[Output to Word]**. The results of the query will be exported to the “Image report.rtf” file in the folder that contains your database. If a file with this name already exists you’ll be prompted to confirm the replacement of the file.

D. BACKUP

Main Menu: Select [Area] + [Images] → Image Menu: [Backup]

You must backup your data daily and copy the backup file to the external device at least once a week.
The backup procedure will copy all the entries for the images of the ongoing season into the **[Images]** table in the “Backup.mdb” file in the same folder where your working database is. Don’t move the files to another folder during the season.

In the **[Image Menu]** click the **[Backup]** button. This command copies "MainImage", "Image – basket Index" and the "Image – Locus Index" tables into the "Backup.mdb" file.

VI. FIND CARDS

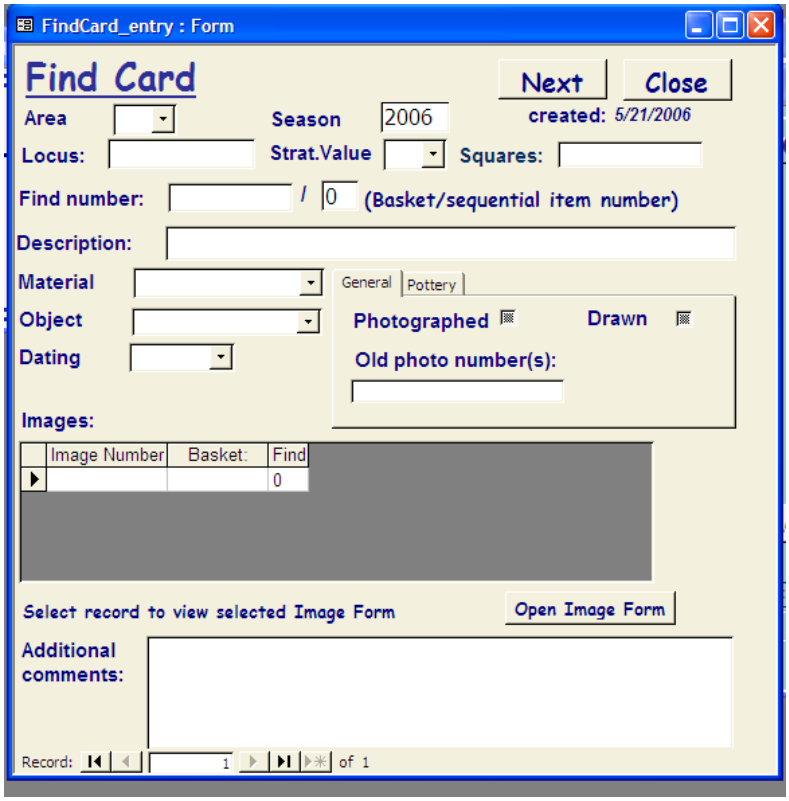
Find table structure

Field	Description	Format	Example
Squares	Squares of the area, fill if the locus nr. is missing	Capital letter/number	AK-AL/12-13
Locus	Locus number	without L or W	04D1-023, 18333
Basket	basket number	without prefix B	04D1-0023
Find	item number in basket	number, by default set to 0	1
Description	short description of the find	2-3 words	clay figurine
Object		select from list	
Material		select from list	
Strat.Value	strat. definition of the locus, same as "StDf" in Basket List	code value from list	pt, ss
Dating	general period	select from list	pr, rm, ir2
Type	for pottery: type designation		BL33a
Phase			9a, 10?/11?
PoM (Phase of material)	strat. definition of the find context		
Fabric description	for pottery only		Red fabric, black core, red slipped, closely wheel burnished.
Photographed		yes/no	
Drawn		yes/no	
Old photo number	number of photograph if not digitized	varia, as written on the negativ	A-44678
Additional comments		free text	check with basket 305694

A. DATA ENTRY

Main Menu: [Find Card] → Find Cards: [New]

Fill in the fields in the [Find Card] form. In some of them you can select the value from the list instead of typing in.
In the list of related images you'll see the numbers of photos and drawings which are already catalogued in the database and "connected" to the find. Add missing image numbers.
Click **[Next]** button in the form header if you want to continue data entry, or **[Close]** if you want to finish the session.
The form doesn't accept duplicate find numbers and gives an error message when you'll try to save the record.



B. DATA EDITING

Main Menu: [Find Card] → Find Cards: [Search] → Search for Finds

Similarly to the basket and image search, select the criteria for your search, leave "*" where you are not going to set criteria; click [Search]. You get the results of your query in the form (identical to the Find Card Entry form), where the records are enabled for editing.

The form for find cards editing contains a sub-form with the list of the images of the find. In order to see the image, select the record (put the cursor somewhere in this row) and click the button **Open Image Form**. If more than one image number appears in the list, you'll need to reopen the image form for every image.

Main Menu: [Find Card] → Find Cards: [View all]

This option allows browsing the Find Cards table.

C. BACKUP

Main Menu: [Find Card] → Find Cards: [Backup]

The backup procedure will copy all the entries for the images of the ongoing season into the **Finds** table in the "Backup.mdb" file in the same folder where your working database is. Don't move the files to another folder or the backup procedure will fail.
In the **Find Cards** form click the **[Backup]** button. The program will ask you to confirm the operations: creating the **Finds** table, deleting the table you created during your previous backup session, copying the records into the new table. Click **[OK]** each time the warning message appears.

VII. WORKING WITH BARCODES

In the current stage the barcode is planned for coding basket numbers only.
If the barcode option is enabled on your machine and the required equipment is connected and installed, you can use the following functions in the database:

A. TAGS

Main Menu: Select [Area] + [Basket List] → Basket List Menu: [Enter Basket List Data] → Basket List: [Tag]

You can print out a tag with a barcode after a new basket entry was made. Click the **[Tag]** button in the **[Basket List]** form.

B. DATA EDITING (DURING POTTERY READING)

You can use barcode scanner to retrieve information about specific basket. It works in the same way as **[Go to Basket]** button in the results of the **Basket Query** (see paragraph III.B).

- Run basket list search as described above.
- Select the range of basket numbers you are going to edit (for example, all baskets of the season).
- The **Master Query** form will open. Put the cursor in the textbox next to the [Go To Basket] button.
- Scan the barcode. The requested basket record will open.
- Update record.

Don't forget to put the cursor in this textbox each time you are going to scan barcode. If, by mistake, the barcode was scanned into another field and the data there was changed, click **[undo]**, place the cursor correctly and repeat the scan.

C. PRINTING TAGS

The tag are printed on special printer with a roll of tags instead of paper. Before printing check that:

- the tag printer is set up as a default printer.
- The printer is connected and calibrated to the type of tag you are using.

APPENDIX 2

GENEOLOGIES

Contents:

I. GRAPHIC CONCEPT

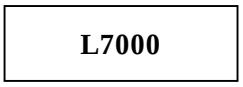
The idea is to make our genealogies understandable and aesthetic at the same time. In drawing them, we need to use enough space so that they are legible; at the same time, they should be small enough to fit into a reasonable page size in the final publication.

II. PROCEDURE

Since the late 90's we have used *Smart Draw* as our genealogy program. This is a very primitive vector program that does not require any specialized expertise from its users. We designed a Template file (*Genealogy template,* in the *Varia* folder) that contains all the needed shapes. So choose whichever shape best fits the type of box you want to create, drag it from the template or just *copy* (Ctrl+C/Edit - copy) into the appropriate space and *paste* (Ctrl+V/Edit – paste) the object. Then, change the numbers and /or other texts as necessary, and connect all boxes (=loci) to the ones above and below. We want genealogies to be as uniform as possible, and the template gives the default forms, so please **do not change boxes size unless you have to** ("have to" will be explained below). Other attributes (e.g. font, font-size, line thicknesses etc.) **should not be changed at all**. If you feel that the information you need to show about a locus cannot conform to any of the pre-programmed shapes in the template, consult the computer graphics director.

A. TYPES OF BOXES

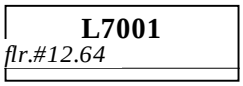
1. **Dirt loci** are the simplest drawing elements in the genealogy and are represented by plain rectangular boxes. The only text in the box is the locus number.



2. **Installations** and other features that are not walls may have the type of feature appear (in *italic*) above the locus number.

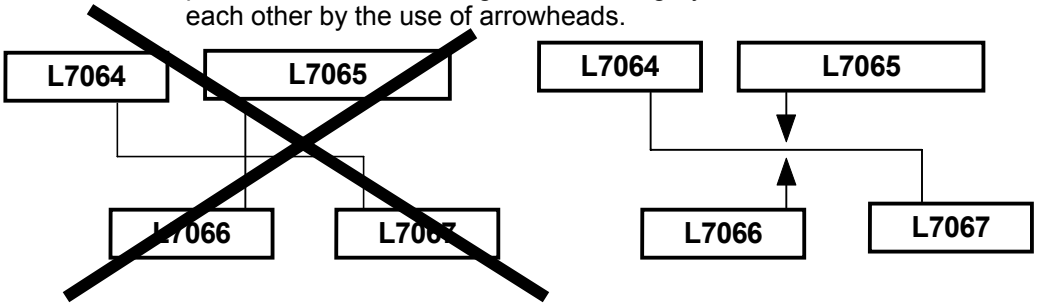
3. **Floors:** If a locus is closed on a floor, a line is added inside its locus box. The type of line used in the box indicates the type of floor (cf. chap. ## for definitions): a solid line for a certain floor and a dashed line for a surface that may or may not be a floor. Both of these types can appear stretched all across the box (for a 'complete' surface, found over the entire area of the locus, and which sealed all the loci below) or only on part of the box (if the floor was partial and was found only in some areas of the locus). The full line ('complete' floor) implies that the floor seals the loci found below it. If it is only a partial line (partial floor) it implies that it sealed only some of the loci bellow but not all of them. In that case the

sealed loci will be connected to the box below the floor line, while unsealed ones will be connected to the un-underlined part of the box. Fragmentary (and hypothetical / ghost floors) are represented by a short tick or check mark near the side of the box (and, naturally, nothing is sealed under them). The text above the line (in *italic*) designates the type of floor and its elevation.



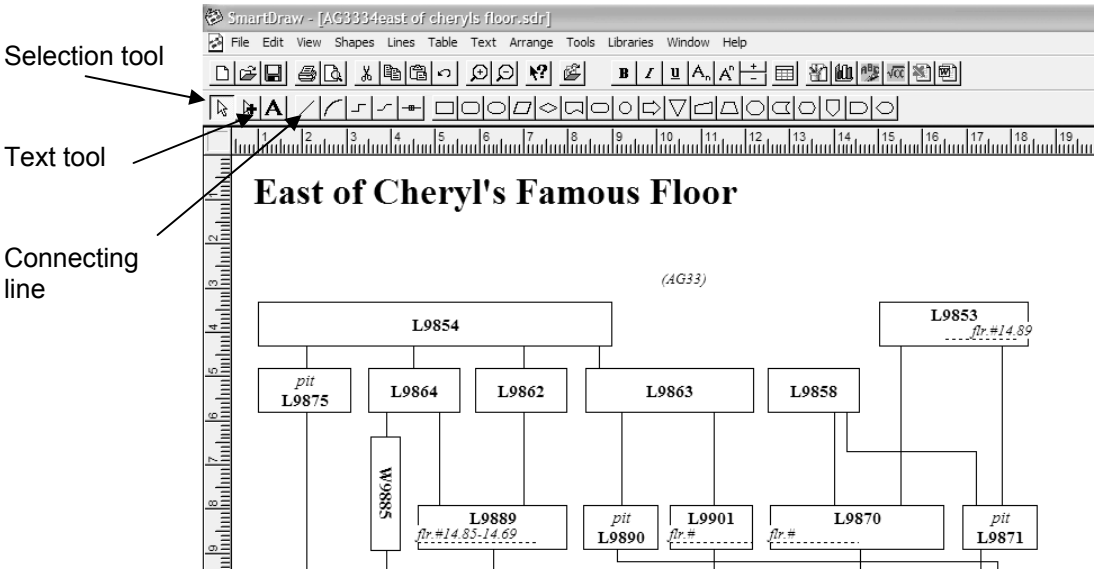
Elongated rectangles are employed for walls and robber trenches, and text is written in them vertically. If a box represents a robber trench, the name will be preceded by RT and not W.

4. **Crossing lines** Lines linking loci blocks should be clearly drawn to show the boxes' relations. Linking lines are drawn as vertical lines or a combination of vertical and horizontal lines; diagonal lines should not be used. In order to prevent misunderstanding of the drawing try to avoid a situation of lines crossing each other by the use of arrowheads.



B. USING SmartDraw.

The program, as mentioned above, is quite simple. First open the template file. Most of the tools appear on the tool bar.



1. **Selection tool.** Anything you see and want to move, copy or change must be selected first using this tool. Just touch one of the boxes or lines you want to select, and once the item has full black squares on its frame, it is selected. To move an object (or a group of objects – see below), select and drag it. To change the size of the box just put the cursor on the left/right black squares on its frame and drag to the left/right. As mentioned above, try not to change the shape of the box unless: A) the box is connected to many boxes below it, in which case you should just make it wider. B) Many boxes have to fit in a small space, so that you should just do the opposite of (A) and make the boxes narrower. Make sure, however, that all text and other elements still fit in the box (you are allowed to move texts left and right but not to change its size or font). Both examples are shown in the illustration above. In any case, modify only the width of the box and not its height. To select more than one object, press <Shift> while you select other objects and they will add up to your selection. Another option for multiple-selection is not to select individual objects but an area that contains the desired objects. If you select the background (be sure not to start in the area of any one object!) and drag the cursor, a rectangle will be drawn. Once you stop holding the mouse-button, the rectangle disappears and all the objects that were inside it are selected.

2. **Text.** Place the cursor over the text you wish to change and press the text button.

3. **Connecting line.** Once you have set up the boxes in their locations, just select the connecting line button and stretch a line connecting the boxes. If the line has a square at one of its edges, the line is not connected to anything, and if it has a circle, it is connected to another object.

4. **Arrange menu.** In this menu you can find options to arrange the different objects you have created.

    a. **Group/ungroup.** A number of objects can be grouped and act as a single object. A locus box, a floor line and the text within it are different objects and grouping them can be more convenient. The ungroup option allows you to control each of the objects individually, after you group them.
    b. **Bring to front/send to back.** This option allows you to arrange the sequence of objects that you choose (i.e. which objects cover which).

APPENDIX 3

DAILY TOP PLAN

Contents:

I. INTRODUCTION

Recorders need to digitize their daily top-plan during the seasonaily. As specified in chapter 5 and 7 this includes updating all features which for any reason do not appear on the master-plan, noting all active loci (including ones closed during the day), all elevations taken at the end of the day, and all special find baskets numbers with their location and elevation.

Recorders may digitize their top-plan either by scanning their hand made top-plan daily (section II) or updating it daily on the computer using Adobe Photoshop (sections III-V).
If you wish to manually update your top-plan you should only read section II.
If you wish to use graphic software to update the daily top-plans skip the second section.
If you do not know Photoshop at all, first move to the Photoshop for dummies (section IV) to get a general introduction to the program and only then read section III.

PLEASE INFORM THE COMPUTER FORUM WHICH OPTION YOU ARE USING AND DO NOT HESITATE TO ASK FOR ASSISTANCE.
WHATEVER OPTION YOU CHOOSE ALL DAILY TOP-PLAN SHOULD BE DIGITALLY STORED AS WELL AS PRINTED ON A DAILY BASIS THROUGHOUT THE SEASON!!!

II. MANUAL PROCEDURE

The daily top-plan should be updated daily as specified in chapter 5. The daily top-plan is the only way of recording daily field activities. It is important to keep it accurate and clean with legible hand-writing.

A. PREPARATIONS

Every afternoon the architect will provide you with two clean copies of the master plan for your area. One is a field copy for the next day and the second a clean copy for the previous workday's daily top-plan (see section C). You should sketch in on the copy you are preparing for the next day all features extant in the area unless they already drawn by the architect and appear in your copy of the area plan. It is also advisable to copy all of the active locus numbers and their borders from the clean copy of yesterday's top-plan (see below).

B. IN THE FIELD

Update the field copy with any new locus/wall/feature numbers given / discovered during the day, along with the borders of all loci under excavation..Any feature that was removed during the day should be crossed out of the top plan. Loci closed during the day should be circled, and the closing elevation noted. Special find baskets should be marked at their find spot specifying their number and elevation.

End-of-day elevations for all active loci should be marked below the locus number. This field copy is only a draft for the top-plan, and therefore can be drawn and written in pencil. BE SURE YOU HAVE ALL LOCUS NUMBERS, ELEVATIONS AND BORDERS ACCURATELY MARKED ON YOUR TOP-PLAN FIELD COPY BEFORE YOU LEAVE THE FIELD.

C. IN THE OFFICE

The data you have jotted in the field should be copied to the second copy of the area plan you received from the architect. This copy will be the same as the field copy, but clean and color coded as specified below. The final top plan should have:

- Date, area, area supervisor name.
- Loci numbers marked in RED. Loci that were closed at the same day will have a square around them, marking they were open only part of the day and replaced with another locus.
- Loci/feature borders marked in pencil.
- Wall numbers marked in GREEN.
- Elevations at their location in the field, in BLACK ink.
- Special find basket numbers marked in BLUE.

D. SCANNING

The completed top-plan should be color scanned with 300 dpi resolution, and saved in the proper folder with its unique name taken from the 'bank' of image names you have received (see appendix I). A reference to it should be inserted to the image data base. At the end of the season submit a CD of all the scanned top-plans saved under their unique data base name.
The originals need to be kept on file during the season. A completed set of the hard-copy daily top-plans, sorted by dates, should be submitted to the office computer forum at the end of the season.

DO NOT SUBMIT DRAFTS CD'S OR PRINTS WITH MORE THAN ONE COPY OF THE TOP- PLAN PER DAY.

III. DIGITAL PROCEDURE:

A. OVERVIEW

The basic idea is to have one active psd file of the daily top plan in which changes are updated throughout the season. A copy of this file is saved in jpeg format each day after changes are completed. When you come down from the field, open your psd file and add features that were discovered that day (and have not yet been drawn by the architect), new locus outlines and numbers, special find basket numbers, and elevations. Once that is done, save the top plan as a jpeg file and prepare the psd file for the next day (see below): If you receive an updated top plan from the architect you simply replace the appropriate layer in the psd file; there is no need to copy any other information. To prepare a clean copy for the next day, you merely need to remove redundant objects (e.g., closed loci, all of yesterday's basket numbers). You then print the base plan as a draft for the next day. The following day, go back to the psd top plan, change the relevant data, and so on. In the following sections the procedure will be explained in more detail.

B. LAYERING.

The top plan data is stored in different layers. Think of your top plan as a paper copy of the architect's master plan, on which you lay successive sheets of tracing paper, with each layer devoted to one type of information. This way you can erase one type of information (e.g., yesterday's elevations, or basket numbers) without the need to worry about accidentally deleting other information (e.g, locus numbers). LAYERS DO NOT EXIST IN JPEG FORMAT; THEREFORE IT IS VERY IMPORTANT TO MAINTAIN THE PSD VERSION OF YOUR DAILY TOP PLAN.

C. BEGINNING OF THE SEASON.

Each recorder will receive a psd file called *"daily top plan template"*. This template contains the examples of lines and texts, in the standard thicknesses, fonts and colors. It is important to use the template to maintain a uniform version of the daily top plan throughout the season and between different recorders.

Before the first excavation day prepare your first top plan as follows:

1. Open both the template file and the first top plan you receive from the architect in Photoshop so that you can see both files on your screen.
2. Drag the first top plan (put the cursor on the layer in the layers window or anywhere in the file you are working on) into the template file. It will appear on the template as a new layer.
3. Define guide lines that will match the grid points of your first top plan by dragging the mouse from the rulers on the left and upper side of the screen. These are needed so that in the future, whenever yo receive a new master plan file from the architect, you will be able to replace the architecture layer exactly in the same placee.
4. Save the new top plan by a **different** name from that of the template file. This is the psd file that will serve you for the rest of the season.
5. Record the date, area and area supervisor in the *daily text* layer. You can move both the title and the new added text to wherever you want in the drawing with the move tool.
6. Your template contains layers with (fictitious) locus, wall and basket numbers. Change the locus number and basket number to the first number on the 'bank' of loci and baskets that you received.
7. Since you have not excavated yet, you cannot add any information at this point. Make all the layers invisible except the *title* layer and the *daily text* layer by pressing on the eye icon and print the file. This will serve as your draft copy for the first day of work.
8. In the field add information (locus numbers, special find basket numbers with its elevations and location in the area and elevations) manually on the printed draft.

D. UPDATING AFTER THE FIRST DAY.

After you get back from the field you should update the computerized top-plan, based on the draft you sketched manually in the field. The following information must be added, with each type of data in its assigned layer.

1. **New features.** If a new feature appeared during the day (e.g. a new wall) and is not yet drawn, you should add it schematically in the *new features* layer. Use the 3 pixels brush in black to draw the feature. Dragging the mouse over the drawing-window will produce a freehand drawing, if you press shift while pressing the mouse in the file, a straight line will be drawn between the points you indicate (though archaeological features in general are irregular and therefore the freeline tool should be preferred for most purposes.

2. **Locus outlines.** Draw locus borders as accurately as you can, representing their location in the field carefully. Add the outlines in the *Locus outline* layer, using 3 pixel brush.
3. **Closed loci** are marked with a red box. You will find one on the template in a layer by the same name. To mark a locus as closed, create a copy of the '*closed locus*' layer on the template by dragging it to the *new layer* icon. Move the square to the correct position around the closed locus number. If the closed locus has an outline/border designator associated with it that is no longer relevant, erase it from the '*locus outline*' layer.
4. **Removed features.** If a feature drawn by the architect was dismantled, but this fact was not yet updated by her on the master top plan, draw in the *erased features* layer a white strip that will cover it. **Do not erase anything from the background layer.**
5. **Add texts.** There are four text folders in the template, each marked by a different color. The colors fit the colors of the text and appear in all the layers within the folder, just to help you remember them. The template already contains (fictitious) drawing numbers (for walls, locus, baskets, elevation etc.) in each folder, with the right color, font and size. So just copy and paste the template text you need by dragging the layer you want to copy to the *new layer* icon. Press T and then on the text you want to change, change the numbers and move them to their new position. The text formats are as follows:
   a. **Wall** - in green, Tahoma, bold, 12 pt.
   b. **Locus #** - in red, Tahoma, regular, 10 pt. There are two symbols for loci in the template file:
   c. **Basket #** - in blue, Arial Narrow, bold, 8 pt.
   d. Elevations – in black, Arial Narrow, bold, 8 pt. There are three types of elevation signs:
      - * before the number marks a specific elevation indicating a find spot of a special find.
      - # marks a general elevation of the locus.
      - An underline below the elevation text (12.31) means that this is a top elevation (e.g. top of preservation of a wall), while an over-line above the elevation marks a bottom elevation (e.g. bottom elevation of a wall). You can mark a top/bottom elevation situation as in $\#\frac{12.30}{11.70}$ by dragging an underlined elevation and placing an ordinary elevation beneath it (or vice-versa with an over-lined elevation symbol).

When you finish updating the plan, save your .psd file, and then save a copy in jpeg format, under a new name which will be identical to its image bank ID, insert a reference to the jpeg file into the data base and print it. Keep the .psd file, though, as it will serve as a starting point to prepare tomorrow's top plan (next section).

E. PREPARING A TOP PLAN FOR TOMORROW (ANY DAY BUT THE FIRST DAY)

1. When you finished editing the last day's top-plan, reopen the .psd file.
2. Ask the architect / computer graphics director if an updated master top-plan is available. If so, delete the previous background layer (drag the layer to the trash icon), and insert the new top plan you received. Move the background drawing so that the grid matches your guide lines. If features that were previously hand-sketched now appear on the master top-plan, erase them from the '*undrawn features*' layer.
3. You should already have most locus numbers in place from the previous day (as well as their limits). You need to delete loci which were closed on the previous

workday (see 'closing loci' above) as well as the baskets and elevations from the previous day. If you need to add any new locus numbers, do so. Change the locus number and basket ID on the template legend to the next available ID's on your bank.

4. When you finish, save your .psd file, and print it. This printout will serve as your draft top plan for the next day.

IV. PHOTOSHOP FOR DUMMIES

Photoshop is a powerful and complex program for creating and editing raster graphics. The next section is not intended to be a Photoshop manual, but merely a short description of the minimal set of features a recorder might need to update his/her top-plan.

The best way to describe *raster graphic* is as an old-fashioned, grainy photograph (or a modern fax, or output from a dot-matrix printer): As you enlarge it you see that it is constructed of a grid of dots (*pixels*), each of which is black or white (or a gray-scale, or a different color). The *resolution* of the drawing is expressed by dpi (*dots per inch*). The size of the file (before compression) depends on the drawing's size, resolution and number of different colors. For the daily top plan we use low resolution drawings of 150 dpi.

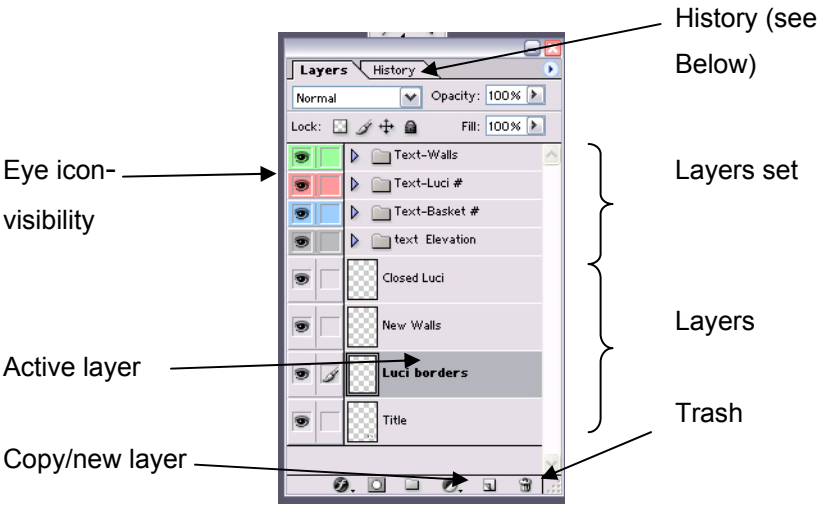
A. LAYERS.

The data in Photoshop is stored in different *Layers*. Each layer can be viewed as a different picture, drawn on a transparent background, and placed right on top the layer[s] below it. Each action can be applied separately to any layer and each layer can be visible or invisible on the screen. A layer can also be *locked* and then it is un-editable. You can also control the *opacity* of the layer (to which extent you can see the things below the layer). These attributes can be changed in the layer menu.

You can add a new drawing element (e.g., a wall line) in the same layer as already-existing drawing elements. However, in editing top-plans we instruct that each new element be placed in a new layer. That way, as new features get drawn by the architect and others are removed, you can update your sketches by simply deleting elements (=layers), rather than laboriously erasing them pixel by pixel.

By default the layer is transparent (marked with gray-white squares) and everything you put in it is added to this transparent background. You can change the arrangement of the layers (what is above what) simply by dragging them up and down in the layer menu. A common example: if the wall number layer is below the drawing of the wall, you may not see the number because the wall is covering it. Dragging the wall number layer above the wall will remedy the situation.

The layer menu looks as follows:



1. **Layer set:** A group of layers can be stored in a *layer set.* Layer sets are marked on the menu with folder icons. If you press the small diagonal next to the folder icon you will see the layers within the folder. The eye icon on the left means the layer is visible. If you press it, the icon disappears and the layer becomes invisible.

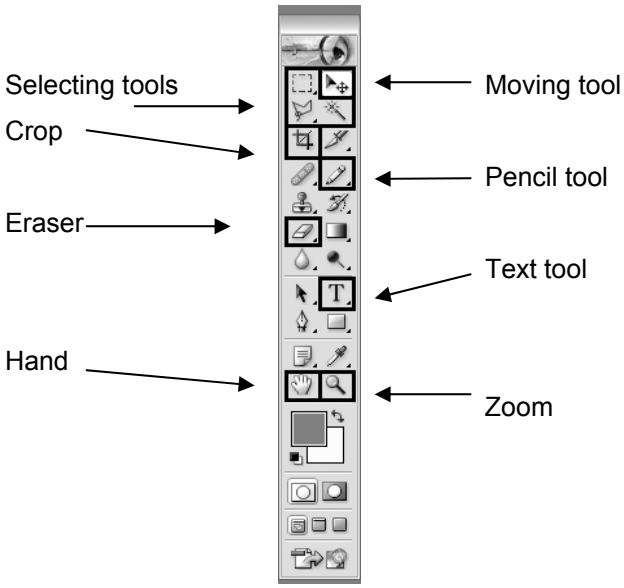
2. **Active layer** is the layer you are currently working in and it is marked with gray. To make a layer active simply press on the layer itself: the layer will turn gray and all your actions will be stored in this layer. The default colors for the folders are explained in the *procedure* section above.

3. **Trash bin:** The lower bar of the menu contains a trash icon. To delete a layer, just drag it to the trash bin. Pressing the trash icon will delete the active layer.

4. **Copy/new layer:** The icon next to the trash bin is used to make a new layer. Clicking on it will create an empty [active] layer. Dragging a layer to the 'make new layer' icon will create a copy of the dragged layer [and make it the active layer]. This is particularly useful for creating new drawing elements based on pre-existing templates (e.g. a new locus ID designation): Simply drag an existing locus number to the 'make new layer' icon, and then change its text (the actual ID) and drag it to its new position.

B. THE TOOLS MENU

To select a tool press the icon on the tool bar. This tool will affect only the active layer. **Always recheck what layer you are currently in. If you are in the wrong layer you are either erasing the wrong thing or drawing on something you may need!!!**



1. **Brush:** Draws freely in your file. Pressing shift while you click two spots will draw a straight line between the two. You can choose the width of your brush in pixels: after you select the brush tool, press the right button of your mouse and select one of the brushes. The brushes we use have either 5 or 9 pixels; depending on the feature you want to draw.
2. **Eraser:** Erases pixels you do not want. Works similar to the brush; you can select the width of eraser by right clicking your mouse, after the eraser tool is selected.
3. **Hand:** Moving the file on the screen.
4. **Zoom:** zoom in and out.
5. **Text:** just write. Text will automatically open a new layer. If you want to change a text, just press the layer you want to rewrite (making it the active layer), press T tool and change the text like a regular word-processing program.
6. **Moving:** Click the left button of the mouse and drag the curser. The entire content of the layer you are in will move unless you select only part of the layer (see below).
7. **Selecting:** If you want to perform any action (e.g. move, delete, etc.) only on part of a layer you need to select that part. The *rectangular marquee tool* makes rectangular selections. You use it by dragging the mouse from one corner of the rectangle you want to select to the opposite corner. The *lasso tool* makes polygonal selections between points you specify by clicking the

mouse – e.g. to select a triangular area you will need to click the mouse on three points on your drawing. When an area is selected you will see a dashed moving light border marking the area you have selected. After a selection has been made you can apply specific tools only to that area in your active layer.

8. **Crop:** if your image is too big, you can crop it. Click the crop tool and draw a square outlining the area you want to crop (just as the rectangular marquee is used). After you leave the mouse you will see a rectangular dashed moving line (as in the selection tool). You can modify the outline you have marked as you wish by dragging the square handles that appear on the selection border. When you have marked exactly the corners of the rectangle you wish to retain, press enter to approve and your image is cropped.

C. OTHER USEFUL COMMANDS

1. **Copy/paste** works in Photoshop like as any other Windows/Mac program. Pasted objects will always open a new layer. If you drag an existing layer to the *new layer* icon (next to the trash bin) you will duplicate this layer (see above).
2. **History**: Photoshop remembers your last 20 actions (or so). Certain actions (e.g. saving the file) will erase the 'history' buffer and start it afresh. In the history menu you will see a different line for each action you made. Pressing a line on the history menu will undo all the last actions up to and including the action you clicked on.

   You can define a "bench-mark" that will stay put the entire time you work and not only for the 20 last actions. Pressing the camera icon (at the bottom of the history menu) will create a new *snapshot*. Snapshots will not disappear until you close the file, no matter how many actions were taken after the snapshot. Clicking on a snapshot line in the menu will restore the file to exactly the same state as it was when the snapshot was taken. You can have as many snapshots as you wish, and it is highly recommended that you use them often (they frequently save a lot of work).

3. **Rotating, resizing, moving:** If you press [Ctrl+t] or *free transform* in the edit menu, you will see a box around the selected objects (or all objects of the active layer). Dragging the corner-handles of this box will scale the object[s]. Dragging the handles in the middle of the horizontal / vertical border will stretch the object in that particular direction. If you move the cursor (unpressed) outside the box's edges it will become a curved arrow. Press and twist this arrow up-down/left-right and your object will be rotated. You can also move the object to its desired location while doing that. Once you have scaled / stretched / moved / rotated your object to the position you want, press 'enter' to confirm the transformation and return to normal working mode. Note that this is *not* the preferred way to transform objects which need to be scaled with precision (e.g. master plans). You may use the menu to specify exact transformations (e.g. 200% scaling of the entire object, or a 45^0 rotation) or consult the 'rectify' and 'register' procedures in this manual for more complex transformations using other software.

4. **Saving: ALWAYS REMEMBER TO SAVE YOUR WORK EVERY NOW AND THEN (preferably more 'now' than 'then').** Photoshop recognizes many formats. We mostly use two:
   - Psd is Photoshop's native format. It saves your image with all the layers you have defined (but not the history). ALWAYS SAVE YOUR

WORKING TOP-PLAN IN .PSD. Complex files with many layers on them can take up a lot of space, and complex manipulation of them may take a lot of computing effort.

- Jpeg files are ‘flat’ (i.e. have no layers – all the [currently visible] layers are ‘flattened’ into a single picture) and compressed (i.e. they are small files). Once you have turned your drawing into a jpeg you can no longer manipulate the drawing elements (except to paint over them) – so make sure not to jpeg your top-plan before you finished revising it. Also, .jpeg uses a ‘lossy’ compression – i.e. the compressed file may be a lower-quality picture than the original. This should not be a concern in the case of top-plans, as it is not a print-quality picture anyway, but merely a working copy. So you should choose ‘small file, low quality’ when given the option.

APPENDIX 4

End of Season Area Supervisor's Report

Contents:

I. History

Near-eastern archaeology traditionally recognizes two types of archaeological site-reports: *preliminary* and *final*.

A *preliminary report* is a short narrative account, typically of each season's work. It is usually a few pages in length (i.e. a paragraph or two per period per area). Such preliminary reports might be found from as early as the beginning of the 20th century in publications such as the *Palestine Exploration Fund's Quarterly Statement* or the *Annual of the British School of Archaeology in Jerusalem's* (in which Garstang's preliminary reports for Dor were published). The *Israel Exploration Journal* devotes a section to short preliminary statements (less than two pages long) in its "Notes and News". There you will find the preliminary reports for the first seasons (1980 – 1986). These 'notes' were usually written by the director of the excavation (or one of his assistants), but were unsigned, and had no real title (other than – in our case – "Tel Dor"). Between 1987 and 1995 the Tel Dor preliminary reports were presented in somewhat widened format (typically about 10 pages long) in the regular article sections of the *IEJ*. Concurrently, as required by the Israel Antiquities Law, we supplied a Hebrew version of [the same] preliminary account to the Israel Antiquities Authority. These were published (in abbreviated form) in the IAA publication *Hadashot Archaeologiot* – a journal dedicated to such short preliminary reports. In the 1990's the ASOR and the IAA started translating back-issues of *Hadashot*, for the benefit of the non-Hebrew-speaking professional community, under the name *Excavations and Surveys in Israel*. This project was finished by the late-90's, and henceforward these two publications were united to one bilingual one. At this point we stopped publishing a separate English version in the *IEJ*, and for 1996 – 1999 you will find the preliminary reports [in both languages] in the *ESI*. 2004 marks another transition – *ESI* is going online and will shortly discontinue altogether the publication of the hardcopy. Longer publications (and lots of color photographs!) are now allowed. The Dor preliminary report for the last field season and the limited operations in the hiatus years (2000 – 2003) will be one of the first e-published preliminary reports.

By contrast, a *final report* is [almost] always in book form – quite often in multiple volumes. Most archaeological institutes have their in-house monograph series for publishing final reports. The one already-published report for Dor came out as two volumes in the *Qedem Report* series of the Hebrew University's Institute of Archaeology. A final report supposedly has all the relevant data from the site / area / period it encompasses. "Supposedly" appears here, because it is patently obvious that not *everything* gets recorded in the field (or analyzed in the lab later), and little of what is actually recorded can be reported in a 200, or even 400 page report. Furthermore, 'data' observed in field-conditions – especially data which cannot be replicated – is bound to be skewed by the excavator's bias and preconception. Yet in a discipline which destroys the evidence which it collects – and collects more evidence than it can possibly analyze or interpret – there is no substitute to a full and honest (or, at least, as-honest as-possible) accounting of the findings in the field.

Thus the exact format of 'final reports' can vary from the 'bed-time story' narrative style – essentially a longer version of a preliminary report, to the 'telephone book' approach – a dry presentation of data. The Dor reports attempt some sort of a 'middle of the road' format. The main difference between our report-style and *both* types described above being that, in addition to 'data' and 'interpretation' we attempt an explicit explanation of *how* we got from the data to our chosen explanation – the precept being that, by manipulating the same data in other ways, one *can* obtain different interpretations.

The first Dor expedition published a final report on two (out of seven) areas it excavated. At the time these lines are being written, one other area is in an advanced state of preparation towards the publication of a final report, and three other areas are being worked on. At the same time, we are testing ways of switching from printed to electronic format. E-publication of archaeological site-reports may solve some of the shortcomings of the printed format – both with regards to the amount of data that may cost-effectively be put in the report, and the number of alternative scenarios that may be presented within the report (up to and including giving the user built-in tools to design and test his/her own scenario on the data base). Indeed, the projection that we shall, sooner or later (and probably sooner rather than later) convert to electronic publishing formats has prompted the switch to all-digital recording. We do not delude ourselves, however, that e-publication is the panacea for the publication dilemma. Final reports in any format are heavy, expensive, and usually take years to finish.

Some intermediate format is increasingly called-for. One that would preserve the actual data gathered during the season, as well as the 'oral tradition' – the excavators' understanding of the area as a whole at the time of excavation. Since the mid-80's projects have been experimenting with various interim report formats. The 'end-of-season booklet' might be a single copy preserved in-house for the use of project staff, as is the case at Hazor, for instance, or they might be an actual publication, distributed to [usually a limited number of] libraries, such as has been done at Tel Miqne, for instance. As of 2000 the demand for a full interim report has percolated into the statutes. The IAA now pre-conditions the excavation permit on having copies of *all* the previous seasons' records (preferably in electronic format) in their archives. They have not yet imposed any clear guidelines as to *how* these records are to be handed in – so there is no guarantee that anyone will be able to locate any of these records – or even read them. The initiative itself, however, is to be lauded, and it is incumbent upon us to give them (and ourselves) a comprehensive text which would encompass all the data and summarize the state of the knowledge gleaned from each area every season. Dor has been late in joining the bandwagon, but we have been talking about it since the late 90's. Unfortunately, this demand was not very explicit as to exactly what needs to be in the report and in what format, and has not been consistently applied. The purpose of this document is to rectify these shortcomings.

II. Overview

The end-of-season report shall be handed in by the *field supervisor / group director* no later than one month after the end of the season, on a CD / other non-erasable digital media. It will be a text document (MS-Word .doc / Rich text format .rtf) encompassing all the records (textual, tabular, graphic) pertaining to the area that season, plus explanatory texts reflecting the supervisors' understanding of the area at the time of writing. The report is aimed at a) general readership (*ESI* format) and b) Dor staff – present and future – who will have occasion to use the data compiled during that season and appended to the report. The reports will be collated by the Jerusalem staff and kept in hard copy form and in several standardized digital formats (.pdf, .rtf, .html/.xml) to ensure readability for a maximum length of time and number of platforms. Copies will be given to the IAA archives, to the authors / senior staff, and to others on a need-to-know basis – i.e. publication to the general public is

not planned at this point (except for the overview section – see below – which will be compiled into the ESI report).

III. Details

The end of season report will contain the following sections:

A. Preliminary Information / Credits Units excavated, dates of excavation, staff, banks. Staff listing will include who-worked-each-unit (if the area is working in unit-supervisor mode), and the initials by which they identified the records they produced (cf. relevant sections). The person[s] who did the field drawings and the photography for the area will also be mentioned. If a significant change in the layout of the area during the season (new units opened, work-crews moved…) the dates of these changes should be mentioned. The banks should include first and last record # for the season for loci, baskets and images. If records for other seasons were changed (e.g. walls left standing from previous seasons were removed) their numbers should appear too.

The purpose of this section is to facilitate the location of all the relevant records in future work as well as to ensure that the proper people get credit for their contribution.

B. Overview / ESI report A short narrative section specifying the objectives of excavation, and main findings (architecture / stratigraphy + outstanding artifactual finds) by phase / period. About one paragraph per phase should be appropriate. A short concluding statement should say how (if…) the understanding of the area changed in relation to the previous years' ESI reports. Several illustrations may be suggested (i.e. reference photo numbers / other images and / or suggest that such images should be produced as e.g. in the case of artifacts which should be studio-photographed etc.) as stated already, this part of the report will be reproduced for the ESI. It is also meant to orientate the reader before delving into the minutiae to follow.

C. Body The main part of the report will have the following sections

The main considerations for the stratigraphic scheme

Why you decided that there are X phases in the area and not Y, and what defines the phases. E.g.:

> "…at least two structural phases are later than the "Phoenician Building" and they were labeled 2 & 3 (with local reconstructions at several spots being labeled 2a an 2b); All elements relating to the "Phoenician building" are labeled phase 4 (raising of floor levels in several rooms designated 4a and 4b); pre-"Phoenician house elements divided to phase 5 and phase 6…."

If these considerations had not changed since last season you may copy this section from last season's report. Note: The phasing you propose at this stage is not necessarily final – and may even be patently incorrect. E.g.:

> "… in phase 4 we put various disconnected features that all share the fact that they neither belong with the 'piazza' pavements above them, nor the 'bakery building' below…"

The phase designation is merely meant to tell the reader in which separation they are expected to find the relevant features. Of course if an established phase-enumeration does exist already for the area, you should follow it if possible. If the very existence of a phase (and/or its main constituents) is in debate, summarize the arguments of this debate briefly.

> "…Ilan doesn't think this is a real phase at all, he says W5872 is a phase X-1 foundation and F5915 is merely wash from the last season – although I showed him time and time again that the tesserae of F5915 clearly reach up to the bottom of the fresco on W5872…"

Use photographs or other illustrations (by reference to image #s) which illustrate your main arguments.

Phase Descriptions

Open a section for each phase in the area (as defined above). If no information was added this year for this particular phase, (e.g. it was excavated through in previous seasons) just say " [– no new data --]". For each phase which *was* excavated the report will minimally list the following:

Features: define features hierarchally (up-to and including structures), name them (i.e. specify which locus number was chosen to name the feature) and specify their constituent loci. E.g:

> "… in the NW room (a.k.a. Aaron's closet – defined by walls W04D3-215, W04D3-217 and the N balk) the phase X floor is F04D3-218 = 04D3-211 = (?) 2289 (exc. in '89 in unit X32); also associated with this floor were tabun 04D3-214 and loci 04D3-225, 04D3-258, 04D3-216 (fills above the floor)." Replace dash w. something else?

Briefly explain why the feature was attributed to this particular phase (if that is not patently obvious or already referred-to in the section above. Refer to photographs and illustrations in the database as needed.

A *Separation plan* for the phase must be appended (it can be in sketch form). All features provisionally attributed to this phase should appear on the plan and vice-versa.

To insert a picture file to an MS-Word document choose on the menu "insert" > "picture" > "from file…" browse to your image folder, click on the image and then press "insert".

Key loci / contexts: list which loci (or contiguous groups thereof) best characterize the material culture of phase X and should be the ones that post-excavation work should focus on. The definition of a *key context* (cf. relevant section for details) depends on a) cleanliness (at least sealed, preferably primary or *in situ*); b) stratigraphic attribution – only loci which definitely belong with the phase count; and c) enough material to make a representative assemblage. The e-o-s report should list these loci in order of preference (grouping several of them into a single context where warranted, e.g. where several loci landed on the same floor, or where a locus was changed for technical reasons in the middle of a restoration context). If several rooms / structures were excavated in the area one should strive to

locate key loci in each. If none were found, say “[-- none found --]”. If any loci/groups of loci are crucial for the elucidation of issues such as chronology (e.g., termini post- or ad-quem for certain features), function of architectural units, etc., do state so.

Special finds: A list of the outstanding individual artifacts found in loci attributed [provisionally] to this phase. - Not every nail or coin that got ‘special finded’ need be on this list – just finds which in your opinion merit special attention in post-season studies.

D. Appendices *All* of the various data records accumulated in the season in the area should be appended to the end-of-season report, in the same format as the report (i.e. export them from their native formats / data bases to .doc / .pdf / .htm formats). This is both to facilitate reading the report as one text in one [of several] maximally legible format[s]; so as to have the report serve as an extra backup for the data bases and to have the report serve as a ‘snapshot’ of the state-of-knowledge at the end of the season. (The databases will continue to be changed during post-season analysis, while the end-of-season report will not.) The easiest way to accumulate this data is to start building the report *during the season* and copy each data record into the report template as it is created on a daily basis (e.g. whenever the area supervisor copies photographs from the photographer’s computer to his/her own he/she appends a copy to the report template.) Another possibility is to add all the records from the various data bases at the end of the season, as described below.

Create two folders with names “RTF” and “HTML”.

Appendix I: Top-plans

Copies of all the top-plans for the season, by day and a list of the files. The caption for each picture is its database ID (same as filename for the image).

These data is recorded on your recorders computer. Please perform following operations on her/his database version.

I. To locate all the top-plan images in the drawings ("d") folder run the following query on the database:

1. In Image Menu click “Search” button.
2. In the opened form select the conditions for your query (Area, type of image – top-plan, and season).
3. Click on “Run Query” button to see the results in the MS Access table view or click “Output to RTF” button to export the results of the query to a text file. Save the file as “Topplan_report.rtf” in the folder that contains your database.

Copy the document “Topplan report.rtf” and the top-plan files to the season folder on your machine.

II. To insert [multiple] images into an MS-Word document (“Topplan_report.rtf”):

- Open the document in MS Word;

- Choose from the upper menu “insert” > “picture” > “from file…";

- Browse to your image folder, click on the image[s]. For multiple selection use: "ctrl+A" – for all, "shift+click" for sequence, or “ctrl+click” for individual files) and then press “insert”;

III. Save the file as “Appendix1.rtf” in the “RTF” folder. Save the file in html format: go to “File” > “Save as Web page” and save it with the same name in the “HTML” folder.

Appendix II: Basket lists

Copies of all your baskets for the season. Get from your recorder final version of the “Basket List.rtf” – format he/she uses for printing out Basket List hardcopies. Or:

I. To output Basket List to MS Word document in .rtf format (from recorders database version):
1. Run the Basket query (select by date),
2. In the form that shows results of the query click on a button with "W" icon on it (“Output to RTF”). The Basket List report will be shown in the Print Preview, automatically exported to MS Word and saved as “Basket List.rtf” document in the folder that contains your database. If the file with this name already exists you’ll be prompted to confirm its replacement.

II. Save the file as “Appendix2.rtf” in the “RTF” folder. Save the file in html format: go to “File” > “Save as Web page” and save it with the same name in the “HTML” folder.

Appendix III: Locus Cards

Copies of all locus cards created and edited during the season.

I. To export Locus Cards to a text file (RTF format):
1. Run the Locus Card query (select range of loci by current season bank numbers).
2. Click on "Print…" button in the header of the Locus Card form showing the results of your query.
3. In the Print Bar form click on the “Output the ***cards*** to RTF” button.
The copies of your locus cards will be exported to a text file and saved (by default) as “Locus1.rtf” in the folder that contains your database. Don't close the Locus Card form with the query results, you'll need it for the next step.

II. To export the list of your loci to MS Word (.rtf format):
1. Use results of the query performed under point I or perform step I.1 again.
2. Click again the "Print…" button to get the Print Bar menu.
3. Click the “Output the ***list*** to RTF” button.
A list of your locus cards will be automatically exported to Word document, saved as “List of Loci.rtf” in the folder that contains your database and opened.

III. Remember to output all locus cards you edited during the season!
1. If any old locus cards should be added to your report perform all steps under point I for each individual locus number.
2. Save these additional documents as "Locus2, 3… etc." or by their locus numbers.
3. The easiest way to add the numbers of these additional loci is manually:

in the bottom of the list add locus number and other basic fields with tab gaps, starting each new locus from a new row.

III. To put all the locus card-related documents together:
1. Open “Locus1.rtf”.
2. In the “List of Loci.rtf” click “Ctrl +A” and then “Ctrl+C or Edit > Select All, and then Edit > Copy (or "Copy" button on the toolbar).
3. Go back to the "Locus1.rtf", put the cursor in the first text position (Ctrl+ Home), and click Ctrl+V or select from the menu Edit > Paste (or "Paste" button).

4. Close "List of Loci.rtf". If these are the only files you need for Appendix III skip to the next step. If you have additional files with the locus cards open them one by one and perform step 2 for each file, adding the cards to the end of "Locus1.rtf".

IV. Save the file as “Appendix3.rtf” in the “RTF” folder. Save the file in html format: go to “File” > “Save as Web page” and save it with the same name in the “HTML” folder.

Appendix IV: Genealogies

Copies of genealogies for each unit of the area.

To transfer a genealogy to a Word document, use one of the options:
1. Open the genealogy in “SmartDraw”; choose “edit” > “select all” from the menu, and then > “copy”. Now switch back to your Word document, choose “edit” > “paste special” > “picture”.
2. By the end of the season your genealogy files need to be saved in .jpg format. To insert .jpg files into Word document use same method as you did for the top-plan appendix.

Save the file as “Appendix4.rtf” in the “RTF” folder. Save the file in html format: go to “File” > “Save as Web page” and save it with the same name in the “HTML” folder.

Appendix V: Photos

Contains copies of all the photos taken in the area during the season. The caption for each picture is its image database record.

See Appendix I (“Top plans”) above and follow the steps there in order to locate all the photo records in the database, output them to a Word document, and insert into it the image files. Save the file as “Appendix5.rtf” in the “RTF” folder. Save the file in html format: go to “File” > “Save as Web page” and save it with the same name in the “HTML” folder.

Appendix VI: Restoration / Labwork request reports

This appendix includes copies of your restoration forms.

I. If they were produced digitally, create one document for all forms (see Appendix III step III).

II. If you filled printed restoration forms:
   1. Scan them, save in JPG format.
   2. Create new Word file.
   3. Perform step II of Appendix I in order to add the scans to the Word document.
   4. Save the file as Äppendix6.rtf".

As a result of all these operations you'll get your report (text + appendices) in .rtf format in the "RTF" folder and in .htm(l) format in the "HTML" folder.

Erase all the temporary files.

If any PDF editor is installed on your computer, save the text of the report and all the appendices in .pdf format into the "PDF" folder.

E. Formats:

To ensure that different reports look the same, Please use the fonts and formats defined below. For your convenience, the style-sheet of the present document (if you are reading it in Word or Html format) is the one to be used in the report.

The main heading for the report should look like:

End of Season Area Supervisor's Report

Style "Heading 2": Times New Roman 14 pt.; bold; centered; Double spaced; 60 pt. space before.

For section headings ("preliminary information" / "Overview" / "Appendices" Use:

Heading 3

Times New Roman 12 pt.; bold; 36 pt. space before heading.

For secondary headings (*Phase X*, *Appendix Y*) etc. use :

Heading 5

Times New Roman 12 pt.; italic; 24 pt. space before heading.

If an additional heading level is needed, use:

<u>Heading 6</u>

Times New Roman 12 pt.;underlined; 12 pt. space before heading.

For text: use the "Normal" style: Times New Roman 12 pt.; No indentation; 12 pt. space before paragraph.

Appendix 5:

WET SIFTING PROCESS

Contents:

I. INTRODUCTION

Since 2005, systematic sifting of selected loci has been undertaken during the Dor field season. The purpose of sifting chosen loci is to collect small zooarchaeological remains, especially small animal remains including fish, small mammals, birds, reptiles and amphibian bone fragments. Systematic sifting is aimed to carry out full retrieval of all faunal remains in the site and thus to increase significantly species richness and diversity and skeleton completeness. In 2006 we added sub-sampling of botanical remains from these same contexts as well as taking a control-sample of soil. Complementary to the zoo-archaeological importance of sample-sifting, these same samples provide for full retrieval of other small finds (coins, beads etc.) and thus provide a check on what we may be missing when artifacts and eco-facts are hand-picked only.

Large-scale excavations, in which complex stratigraphy from various time periods and contexts is uncovered, such as is the case at Dor, call for a flexible method which would allow sampling loci for high-resolution sifting on a daily basis while taking into account other excavation requirements and feasibilities. The working hypothesis of our study is that where total recovery is unfeasible, a well-controlled high resolution sample is better than a half-hearted attempt to screen a lot - albeit at low resolution of sieving, picking and analysis. The methods defined below are aimed at implementing such a strategy.

II. CHOOSING LOCI FOR SIFTING

The archaeozoologist will choose the loci for sifting in co-ordination with the area supervisor. The location, contextual quality and chronological affiliation of the locus in question should be considered, in order to have a reasonably valid sample of sifted loci from all over the excavation as well as from the different strata and contexts represented. This information will direct the sampling strategy to ensure that all types of relevant contexts are adequately sampled. As a rule, “low quality” loci (e.g. ones known to be mixed) should not be sifted; and all prime contexts should be at least partially sifted. At least some loci of ‘intermediate’ quality (e.g. sealed fills which are not primary) should be sifted as well. The amount of buckets to be sifted depends on the on-site decision of the archaeozoologist and the area supervisor, and is liable to change according to available time, labor, and locus size. One should keep in mind that the amount of sifted material per locus should be in proportion to locus size. We need pair-wise comparisons of sifted vs. un-

sifted samples, and therefore this proportion should not normally exceed 50%. This too is subject to reasoned decision. There may be loci that are so important that the supervisor or zooarchaeologist would be loath to loose anything – and they would be 100% sifted (and not used for comparative purposes). On the other hand there might be primary contexts of such magnitude that sampling more than a tiny proportion may prove impractical (we should be so lucky…)

III. EXCAVATING AND SIFTING PROCEDURE OF A CHOSEN LOCUS

When a locus or part of it is designated to be sifted, all the baskets excavated prior to the designation should be closed, and new ones opened. All the loose dirt from the locus should be scooped and the dirt-buckets removed from the area prior to beginning the procedure.

Dirt-buckets destined for sifting should be lined with one mm mesh. Please note that the mesh should not be folded, and should overlap the edges of the bucket so that it can be easily lifted out with the bucket's contents, without spilling any. Buckets should be uniformly filled to about ¾ of their capacity. All of the excavated material (except stones) from the locus should be moved as is into the bucket, without removing bones, pottery, or any other finds into separate baskets. If a 'special' find (that you feel cannot risk a dunking in sea-water) is made, it can be tagged separately (in the usual manner for special finds) but the tag should still carry an (***S***) designation (see below). The entire sifting bucket should be tagged (see below) and then sent to the sifting point at the beach.

Should a sifting locus remain opened after it was sampled, all sifting baskets should be closed and new containers and tags issue for pottery, bones etc. in the normal procedures.

The buckets will be sifted in seawater by simply grabbing the net securely closed and vigorously swishing it in the surf. Be sure to put the bucket's tag in the net before it is sent to the glasshouse.

When the sifted buckets arrive at the "glass-house" (still in the nets and each with its tag in it!) they will be soaked in fresh water and left to dry in the shade – preferably still on the mesh or (if we are short of mesh) on clean paper. The tag should be left visible on the sifted material (held down so it won't blow away).

IV. THE RECORDING OF SIFTING SAMPLES

When a sifting sample is taken, two types of tags should be prepared by the area recorder: (A) 'identity tags' for the actual buckets – each of the buckets should be marked by a tag containing the date, area and locus number from which it was taken. These should follow the sediment throughout the entire process described above – but their only purpose is to identify the sample – they are not recorded in the basket lists or database, and have no fixed format.

(B) Finds-tags for the objects in the sifted buckets. These should conform to the usual formats of basket tags at Dor, except that they should be marked by the "***S"*** sign for "sifting". An "S" should also be put in the "comments" field of the basket list for each tag issued, and the total number of buckets sent to be sifted noted. At the time the sample is sent down to the beach (and then to the glasshouse), the recorder / area supervisor on the tell do not know what will be found in the sifting process (but they can make a good guess…) Five tags should be prepared for each batch of sifting buckets sent down:
1. macro fauna. 2. micro fauna. 3. pottery. 4. botanical sample. 5. sediment sample. Depending on period and type of sediment, the recorder might decide to also issue tags for flint, slags and

shells. If additional finds are made while picking (e.g. beads, coins etc.) the pickers will return them to the recorder who will issue additional tags.

V. PICKING PROCESS

The entire batch of sifted material should be sort once it dried. During the field work only rough picking will take place, and the remaining material will be saved (in a cloth bag, tied with the "micro fauna" tag) for fine picking in the lab.

The rough picking process consists of the separation of pottery (only diagnostic and fairly big sherds should be picked, unless the locus was defined as a "restoration locus", and then every single sherd should be saved); bones; shells and (heavy) botanical remains. If other artifacts (such as flint, beads, coins, slag etc.) are found, they should be separated and handed back to the area-recorder to be listed and labeled. Each of the different sorted materials should be packed and tagged with the appropriate tag prepared beforehand (see above) -- including the sediment sample and the light-botanical remains that were collected in the beginning of the process. Use a suitable pack (micro fauna should be packed in cloth bag, delicate artifacts in "zip lock" bags or small boxes, pottery in a bucket for further washing in purpose to be ready for pottery reading).

Appendix 6
Bone Washing

All bones from good loci are washed according to the following procedure:
Bones from each basket are put in separate plastic (fruit) container. They are filled with water to cover the bones, and left to soak for a few minutes. Following that, every bone is brushed gently with tooth brush, except for fragile bones, and put to another clean empty container, with the basket tag, to dry. Small bones can't be seen while the container is filled with dirty water, and so the water left in the container is rinsed through a 1mm mesh (a piece of the same netting used for the wet-sieving bags) to catch all the bones and these are put to dry with the rest from the same basket.
After drying for about two days in half-shade, the bones are re-packed in a plastic bag, with holes (punched by dental-pick), and in a specific box for each area.
Proposition for next season: washing bones at the end of each day, during pottery-washing. They needn't be soaked in water with the pottery at noon, but to be kept in the original plastic bag (preferably with holes) until after noon, and then be washed in the procedure described above. In order not to wash bones from bad loci, it is proposed that during the day, at the excavation itself, or at the end of day, bones from "junk" or disturbed loci will be kept in a different bucket.