

INSTRUCTIONS FOR PRODUCING TRACINGS OF POTTERY DRAWINGS EMPLOYING ADOBE ILLUSTRATOR CS2

[UPDATED NOVEMBER 3, 2016]

NB: Some parts of this document (Sections 18 and 19) remain under construction.

GETTING STARTED

Start your work with sherds that represent a more straightforward challenge, leaving until later those that present difficulties due to the presence of decoration and so forth. If some aspect of a sherd (e.g., feather rouletting on the interior) presents an insurmountable challenge, complete those parts of the drawing that you are able to complete, make a notation of the problem, and then move on to the next drawing.

Provide yourself with the original of the sheet on which the pencil drawing that you wish to trace appears as you will need this for reference purposes.

The following instructions assume the tracing of a rim sherd for which it is possible to estimate both the orientation and the vessel rim diameter and that has no decoration. Sections concerned with the tracing of rim sherds for which it is not possible to estimate the orientation and/or rim diameter, base sherds, vessels with handles, body sherds, and decorated sherds appear at the end of the document.

The following is some information about a few basic operations that you will use throughout the tracing process:

In Adobe Illustrator (henceforth AI) a line is defined by a path that extends between two endpoints, often with one or more anchor points in between.

For many of the operations described below you need to activate a line or group of lines. Do this by clicking on the Activate Tool (the black arrow at the upper left-hand corner of the Toolbox.) To **activate two lines/groupings of lines simultaneously** hold down the **Shift key** and click on first one, then the other with the Activate tool.

For many of the operations described below it is necessary to disconnect or connect (group or ungroup) two or more lines. Do this by activating the line or set of lines and clicking on the Object/Group or Object/Ungroup Command. Since lines are sometimes grouped in subsets it may be necessary to click the Ungroup Command as many as 3 or 4 times to insure that each line is separate.

For many of the operations described it is necessary or convenient to **duplicate a line or set of lines**. Do this by activating the line(s), holding down the **Alt key**, using the mouse

to drag the line(s) to a new location, and then releasing first the mouse button and then the Alt key.

For many of the operations described below it is convenient to **zoom in** or **zoom out**. This can be done rapidly and conveniently by repeatedly pressing **Control key and + key** or **Control key and - key**, respectively.

1. Opening File and Importing Scan

Double click on the “**Automated illustration.ait**” shortcut on the desktop. This opens an untitled document containing a set of preset lines below and to the left of the work area (the rectangular frame at the center of the screen) that you will employ to produce certain of the drawing’s elements. Next use the File>Place Command to import the cleaned up scan of the requisite drawing sheet to the work area.

2. Performing Initial Trace

At this point all of the lines on the sheet will be activated and grouped together as a single item.

Click on the black triangle located on toolbar at the top of the screen between the Live Trace button and the Opacity box. This will activate a dropdown menu with several different standard trace options, one or more custom-made preset trace options, and, at the bottom, Tracing Options. Click on Tracing Options so that you can input parameters that are likely to produce a useful tracing. When the window pops open, input a Resample value of 100 px, click in the Strokes box (also make sure that the Fills bubble is unchecked), set the Path Fitting value to 1.0.

After the program has traced your drawing, click the Expand button located to left of Live Paint button. The drawing will then be highlighted in blue.

If this does not yield a tracing of the section profile line of the vessel for which you would like to make a tracing you can try different vales for these settings or others in the window. Ideally, the trace command will yield a tracing of the section profile line that consists of a single unbroken line. If the line is broken or bubbled, it is possible to join the separate lines or delete the bubble and then join the resulting lines (how to do this is explained below).

NB:

Experience has shown that for many of the pencil drawings for which a fill of diagonal lines was provided (in every case drawings executed prior to 2002) the tracing operation – regardless of any tweaking of the settings – generates a set of lines that consists, in

effect, of a series of “bubbled” cells that no reasonable amount of cleaning up can render a useful starting point for producing a finished tracing. For instances of this kind you have two choices:

1. Use tracing paper and a hard pencil to produce a tracing of the section profile line and scan this in, using this as the basis for your tracing.
2. Open the scanned drawing in Photoshop, save the file under some suitable new name, create a new layer, use the Pen tool to trace the section profile line in this layer, delete the original layer, save the file, and employ this file for the initial tracing.

3. Deleting Superfluous Lines

Since the only line from the original pencil drawing that you need to produce the tracing is the section profile line you should next delete all other lines produced by the trace command. All of the lines produced by the trace command are grouped together as a single drawing and this drawing is selected. Use the Object>Ungroup Command to ungroup the various lines. (You might need to repeat this operation two or more times to insure that all of the lines have been separated.) Then activate as many lines as you wish to delete and delete them by hitting the Backspace key. You can delete multiple lines by clicking and dragging to form a selection box and then hitting the Backspace key.

NB: To save time you may wish to produce several finished tracings from a single tracing of a sheet. This would involve executing the Trace command for a sheet that has drawings for several sherds for which need to produce a tracing, retaining the section profile lines for all of the sherds in question, completing a tracing for each sherd, and then pasting each of these tracings into its own file. If you do this it is probably a good idea at the outset to determine how many sherds you need to produce a tracing for from the sheet in question and duplicate the set of preset lines as many times as necessary for there to be a set of these for each tracing.

4. Preparing Section Profile Line and Producing Exterior Profile Line

While in many cases the tracing of the section profile line yields a result that requires no modification, this is not always the case. If the section profile line is to be modified it should be done at this juncture.

Zoom in on the section profile line and inspect it to make sure that it is a continuous line (a single path) and that this line is a faithful representation of the section profile on the pencil drawing. If it is not a continuous line you will need to join the two or more lines into a single line. To do this, make sure that the two lines that you want to join have been grouped and are both deactivated, click on the Direct Selection Tool (the open arrow icon in toolbox), click on the anchor point at the end of one of the two lines (Move the cursor

to the end of the line so that a small open box appears), hold down the Control key, click on the anchor point at the end of the other line, and then click on the Object/Path/Join Command. This will cause a line to be drawn connecting the two endpoints and join the two lines into a single line.

Activate the section profile line and give it the appropriate line weight by going to the Stroke box and clicking on 7.5 pt. Inspect the section profile line to see whether it is a faithful representation of the section profile line in the pencil drawing. If it is not, you can modify the line in several ways in order to fix the problem. These measures tend to involve a certain amount of skill, so keep in mind that you can always reverse what you have done by using the Edit/Undo command. Another good idea is to first make a copy of the section profile line so that you can revert to this if you make a mistake. To do this, activate the section profile line, hold down the Alt key, use the mouse to drag the section profile line to a new location, release the mouse button, and then release the Alt key.

If the section profile line is bumpy and/or contains cusps, you can smooth these out. To do this, activate the section profile line, click on the Smooth tool (the striped pencil icon offered as one of the options under the Pencil Tool), then use the mouse to run Smooth tool alongside the relevant part of the line. If the section profile line deviates from the line of the one in the pencil drawing you can use the Pen Tool (the pen icon in the Toolbox) to move it into compliance by inserting or removing anchor points or by moving anchor points. For these somewhat complicated operations, see Pages 110-113 of the AI manual.

When you are satisfied that the section profile line is sufficiently faithful to that of the original (Keep in mind that the drawings will be reproduced at a scale of 1:2, so minor departures will not be visible.), activate it and click on the Object/Transform/Reflect command. This opens a dialogue box. If not already selected, click the bubble for Vertical, then click the Copy button. This produces a mirror image of the section profile line that is superimposed on it. Use the mouse or the Right Arrow key to move the mirror section profile line off to the right until it clears the original section profile line. Zoom in so that you have a clear view of the upper edge of the mirror section profile line, and use the Scissor Tool (CS2) (the scissors icon in the Toolbox) or the Knife Tool (CS5) (the knife icon in the toolbox) to make a cut at the highest point of the line, dividing it into two paths. Activate the path to the interior side of the vessel if this is not already activated and delete this part of the line by pressing the Backspace key. The remaining part of the line is here referred to as the exterior profile line.

5. Scaling Top Line

The group of preset lines below and to the left of the work area consists of a (horizontal) top line, a (vertical) center line, one horizontal interior detail line to the left of the center line and one horizontal exterior detail line to its right. These can be deleted, duplicated, positioned (moved up/down or left/right), or scaled (lengthened or shortened), or reduplicated as required.

Scale the top line to its correct length. Determine the correct rim diameter for the vessel from the original pencil drawing or from the sherd's catalogue entry. Activate the group of preset lines and click on the Object/Transform/Scale command. This opens a dialogue box. Click on the Non-Uniform bubble, and set the value in the Horizontal box to the requisite figure. This figure is equal to the **rim diameter in centimeters x 10** (e.g., a vessel with a rim diameter of 30 cm should receive a value of 300). Then click on the Copy button. This sets the top line to the correct length. For rim diameters given in the catalogue entry as a range use the figure that corresponds to the middle of this range (e.g., 21-22 cm = 215).

6. Joining Section Profile Line, Preset Lines, and Exterior Profile Line

First position and group the section profile line and the group of preset lines. Activate the set of preset lines, then simultaneously activate the section profile line by holding down the Shift key and clicking on it. Then click on the Window/Align command. This opens an operations box containing three rows of icons. Click on Left Align (the first icon in the top row) to align the section profile line with the left-hand end of the top line, then click on Top Align (the fourth icon in the top row) to align the top of the section profile line with the top line. Group the resulting set of lines.

Then unite the exterior profile line with the combined section profile line/set of preset lines. Hold down the Shift key and activate the exterior profile line, then click on Right Align (the third icon in the top row of the associated operations box) and Top Align.

NB: Once you click on the Window/Align command the operations box will remain open until you close it, allowing you to click directly on the various alignment options.

7. Inserting Detail Lines and Adjusting Line Length and Position

Ungroup the lines.

Look at the pencil drawing in order to determine which of the present lines need to be retained and which duplicated. Produce the requisite set of lines by activating and deleting lines or activating and duplicating lines (by holding the Alt key and dragging) and move these into their approximate positions.

Now zoom in so that you can see clearly enough to scale the center line, position the horizontal lines with precision, and create precise junctures between these and section profile line, exterior profile line, and/or center line. A good way to do this is to start at the right with the section profile line, shift over to the left with the exterior profile line, and finish by moving to the center and the center line.

First set each line to its appropriate weight by activating the line and then either clicking on a default value or typing in the value in the Stroke box. These are the PEPP conventions for line weights:

Artificial cuts (= section profile line and center line): **0.75** (value on the Stroke box drop down list)

Edges of vessel (top line, bottom line, exterior profile line, *also*: lines representing the tip of a rim flange and similar; the outline of a sherd drawn freehand): **0.5** (value on Stroke box drop down list)

Detail lines (angle in vessel rim, wall, floor or foot; groove, incised or impressed decoration, relief decoration, graffito, wheel ridging, etc.): **0.4** (value not on Stroke box drop down list)

NB: In some cases it may enhance the legibility and/or appearance of a tracing if a detail line is rendered at a line weight other than 0.4 falling between 0.25 and 0.5. Those producing traces should exercise their discretion in this regard.

NB: Horizontal detail lines that are part of the basic vessel morphology should be extended to the center line. Horizontal detail lines that are incidental to the vessel morphology – specifically wheel ridging (the more or less sharp ridges incidentally produced by the potter's finders during throwing) – require somewhat different treatment when these occur on the vessel's interior so as to make clear that they are not part of the basic vessel morphology. In cases of this kind, these should not be extended all the way to the center line, but rather given a length of approximately 3 cm (a length equivalent to 33-36 clicks of the Left or Right Arrow key) or a shorter length that appears appropriate when the distance to the center line is less than 3 cm or small enough as to suggest the use of a shorter length. Note that when incidental lines of this kind occur on the exterior of the vessel they should be extended all the way to the center line. (While this last provision represents a point of inconsistency in protocols, considerations of visual harmony [i.e., It would look strange to have exterior lines extending only part way to the center line.] suggest its adoption.)

Position a preset line by activating it and then using the Up/Down Arrow key and/or Right/Left Arrow key.

Change the length (scale) of a preset line by activating it and then clicking on and dragging the scaling square (the center of the three squares that appears at the end of its scaling box). (If the end of the line shows just one square [rather than three squares] and moves rather than lengthening or shortening, you need to activate this feature. To do this, go to View/Show Bounding Box and click on it so that it changes to Hide Bounding Box.)

It is sometime difficult to achieve a precise junction between the top line and the section profile line or the top line and exterior profile line due to the fact that the top line can be

positioned only in discreet steps. In such a case you can activate the profile line and use the scaling squares at the corners and middle of its scaling box to distort it the very small amount that is required to obtain a perfect junction (NB: Performing this operation takes some practice.)

The center line should extend downward to a point even with the lowest preserved portion of the section profile line. A useful way to scale the center line to its correct length is to produce a duplicate interior detail line, position and scale this so that it intersects both the exterior profile line at its lowest point and the center line, lengthening or shortening the center line so that it forms a perpendicular with this line, and then deleting the duplicate interior detail line.

Sherds from forms with a drooping flanged rim require two special operations: First, you must provide an edge of vessel line (0.5 weight) representing the lower edge of the flange on the left side of the tracing where this would be visible between the tip of the flange and outer side of the section profile line. Second, you must delete a portion of the exterior profile line (that is, the portion above the lowest point of the flange) where this would be hidden by the flange. To do this, zoom in, use the Scissor Tool (CS2) or Knife Tool (CS5) to cut the exterior profile line at the two points where it is crossed by the exterior detail line representing the tip of the flange, then delete the line segment between these two cuts. (NB: Keep in mind that once this had been done the exterior profile line will consist of two or more separate lines when ungrouped.)

For some sherds it is necessary to make one or more vertical lines projected upwards to depict grooves on the upper surface of the rim or in the vessel floor or certain similar features. Create these by duplicating the center line as many times as required dragging the resulting lines to the correct position. Lines of this kind should be scaled to approximately 1 cm long (a length equivalent to the distance covered by 11-12 clicks of the Up Arrow key) and be positioned so that their lower end lies 5 clicks of the Up Arrow key above the point on the section profile line where they originate (or, if the top line is situated higher than this point, 5 clicks of the Up Arrow key above the vessel top line at a point directly above the point on the section profile line where they originate).

For the rendering of upwardly projecting lines as curves, see below in the section concerning decoration.

8. Inserting Fill in the Section Profile

Section profiles should be given a fill consisting of diagonal lines. To do this, ungroup the lines as required, activate the section profile line, click on the fill box to open the Color Palette, and click on the tile for Sgraafi, a swatch consisting of a pattern of diagonal lines. (This is usually the last tile in the palette. The diagonal lines tend to blend together, giving the tile a medium light gray appearance.)

NB: The fill operation will not operate properly if the section profile line is not a single continuous line (path). This is why it is important to make certain that it is a single continuous line early in the tracing process, as discussed above.

9. Review and Final Grouping

Compare the tracing with the original pencil drawing to evaluate the extent to which it is a faithful reproduction of this and is of satisfactory appearance. Are any lines missing? Are all detail lines positioned correctly? Are all line junctures neat? Did you remember to scale the center line? Are all the lines rendered at the correct line weight? For vessels with a flanged rim, did you neglect to carry out either of the two special operations required for forms of this kind? Is the fill all in the right place?

Make adjustments as required, then group all the lines.

10. Scaling

Since nearly all PEPP pottery drawings will be published at a scale of 1:2 you should save your tracing at this scale. Activate the tracing and click on the Object/Transform/Scale command. When the dialogue box opens click on the bubble for Uniform, insert the value 50 in the box, and then click on the Okay button. Take a final look at the completed tracing to insure that everything appears as it should when it is rendered at 1:2. If any adjustments are required, undo the Scale command and make them.

11. Positioning

Drag the finished tracing to a position near the top-center of the work area.

12. Labeling

Label the tracing by clicking on the Type Tool (the T icon in the Toolbox), and then inserting text consisting of the sherd's accession number (e.g., 6678). The PEPP conventions for font and point for these labels are **Roman** and **12 point**, respectively. The label should be positioned with the left edge of the text box even with the left-most point of the tracing and the top edge of the text box **10 clicks** of the Down Arrow key below the lowest point of the tracing. Position the text box by activating the tracing and then using the cursor or arrow keys to move it. For vessels with two or more accession numbers use the lowest of the numbers as the label.

13. Saving

Save the completed tracing to the appropriate folder, giving it a name the same as that of the label.

14. Vessels of Unknown Rim Diameter

For many rim sherds it is not possible to estimate the vessel's rim diameter with a satisfactory degree of precision. For these the PEPP convention is to dispense with the drawing of the exterior wall profile. It is thus necessary to produce a tracing that includes only the section profile line and the top line and any interior and/or exterior detail lines as might be required. The top line and interior detail lines should be continued as far to the right as the farthest right point of the section profile line or for a length of 3 cm, whichever is longer. You can produce a horizontal line 3 cm long by activating the group of preset lines and scaling the top line to this length by entering a value of 30 in the non-uniform scaling horizontal box.

Exterior detail lines should be shown projected to the left of the section profile line, separated from it by a space equal to five clicks of the Left Arrow key and be about 1 cm in length (a length equivalent to the distance covered by 11-12 clicks of the Left Arrow key).

15. Vessels of Unknown Rim Diameter and Unknown Orientation

For some rim sherds it is not only impossible to estimate the rim diameter and impossible to establish the correct orientation. For these the PEPP convention is to provide the section profile line with an orientation that seems most likely to be the correct one, omit the top line (since implicit in the inclusion of the top line is that it is possible to establish the sherd's orientation), and render interior detail lines and exterior detail lines as for vessels of unknown diameter.

16. Tracing Base Sherds

The method for tracing base sherds departs from that for tracing rim sherds in several regards. While most of these simply reflect that fact that the latter represent a different part of the vessel from the former, the fact that the section profile line usually consists of two unconnected lines renders the inserting of fill a more complicated and time-consuming operation.

Producing exterior profile line: The section profile line will probably consist of two separate lines (one for the vessel exterior, one for its interior). It is necessary to perform the Reflect command for just the exterior line. Once done, there is no need to segment and delete inner part of the reflected section profile line to obtain the exterior profile line.

Scaling bottom line: Perform the scaling operation for the preset lines using the figure for the diameter of the vessel's base. Once the top line has been scaled, ungroup the preset lines, reposition the top line at the bottom of the center line, then regroup the preset lines.

Joining section profile line, preset lines, and exterior profile line: Different bases require different approaches to this operation, and you should feel free use whichever one appears likely to work best. In general, however, use the Bottom Align operation rather than the Top Align operation to align the section profile line and the exterior profile line vertically with the bottom line. Position the section profile line and the exterior profile line horizontally using the Left Align and Right Align operations, then adjust their positioning using the Left Arrow and Right Arrow keys. Finish by rescaling the bottom line as the situation requires.

Inserting Fill: Make certain that both sides of the section profile are deactivated, use the Direct Selection tool (the Open Arrow icon in the Toolbox) to select either the upper endpoint of both lines or the lower endpoint of both lines (press and hold the Shift key when activating the second of the two endpoints). Click the Object/Path/Join command. This will draw a short line between the two endpoints, joining the two sides of the section profile into a single line (path). [NB: Executing this operation requires a degree of expertise in properly activating the endpoints of the two lines and can at times be difficult.) You can now insert fill as with a rim sherd. [NB: If you are using CS5 the Path/Join operation involves a different set of commands. Rather than activating the endpoints of the two lines to draw one uses the cursor to drag create a box that encloses them. Consult help or Google this on line for the details of how this is done.]

Deleting the small connecting line produced by the Object/Path/Join Command will cause the fill to occupy areas that it would occupy had the two sides of the section profile not been joined into a single line. It is thus necessary to mask this line by painting over it with white. Use the Paintbrush tool (the paintbrush icon in the Toolbox) to do this. Click on the tool and set the color to white by clicking on the Stroke box and then on the white tile. Zoom in on the small line and very carefully use the tool to paint over it. This requires some skill and you will likely need to experiment with the brush shape in order to achieve a suitable procedure. You should probably practice off to the side of the tracing with the color set to black so that you can develop a suitable method, deleting the results of your practice. When finished, remember to activate the painted area and group it with the section profile line, as otherwise the painted area will not move with the section profile line if you reposition it.

18. Rendering Decoration

[UNDER CONSTRUCTION]

Execute trace of freehand drawings using special parameters as necessary (shorter minimum stroke length, lower pixel values?) Create a duplicate of decorated area as a backup in case of mistakes.

Adjust line weights:

Sherd outline: 0.5

Decoration: 0.4

Use Object/Path/Join command as required to knit together sherd outline, etc.

Delete decoration lines and drag to reshape these as necessary. Duplicate and reuse elements as appropriate. Creating your own lines or compound elements (chattering gouges) from scratch and then duplicating these may be faster and produce a better result than modifying elements produced by the Trace command.

Some vessels have decoration (painted, relief, rouletted, stamped, chattered, or otherwise incised) on the upper surface of the rim or on the floor that is complex enough to warrant rendering as a curved upward projection. (Do not show curved upward projection for simple grooves and the like.) This should be done by using the Arc tool (an option offered under the Line tool in the Toolbox) to construct an arc or several concentric arcs projecting upward up from a point directly above the relevant part of the decoration. These arcs may be retained as part of the tracing or simply be used as guidelines for laying out the elements of the tracing and then removed. In the case of decoration on the upper surface of a rim this should begin 5 spaces above the top line, while in the case of decoration on the vessel floor this should begin 5 spaces above the section profile line.

To construct an arc using the Arc tool click on the icon, then double click on the work area. This will open a dialogue box with various settings that determine the size, orientation, and nature of the arc. To produce a quarter arc from the upper left-hand quadrant of a circle click the lower left of the four corner boxes in the square that appears at the top center of the dialogue box. The values in the Length X-Axis and Length Y-Axis boxes determine the size of the arc and, for a circular arc, should be identical. The default values of 100 pt yield an arc with a radius of about 4 cm (and a diameter of about 8 cm). You will need to experiment to find the values that correspond with an arc(s) of the diameter(s) that you need. For Type and Base Along you want the defaults of Open and X axis. Click on the Okay button to generate the arc corresponding to the values that you have input. If you need to generate multiple arcs begin by generating one of a diameter suitable for the outermost circular element (or guideline), then move this into a position on the top line above the correct location. This will allow you to more easily determine the diameter figure the next smaller arc, and so forth.

[NB: Modification: It is, in fact, possible to create an arc and then expand/compress this by clicking and dragging until it has a radius equal to the distance from its origin to the center line of the vessel. This approach greatly simplifies the construction of constructing decorative elements of the kind in question.]

You can then generate whatever other elements the decoration requires. Execute these elements over the shortest arc that will allow you to represent the overall decorative

scheme in a satisfactory manner. Once you have completed these elements use the Scissor Tool to delete the portions of the arc or arcs that extend above the point where they end. As an aid in this, draw a guideline extending from the intersection of the center line and the top line to the highest and outermost point of the decoration. Cut the arc or arcs at the point where they are intersected by this line and then delete the line, itself. When done, group the various elements of the decoration and move the whole into position 5 clicks above the top line or section profile line.

In some cases it may be necessary to extend decoration in the vessel floor above the level of the top line. In cases of this kind rescale the top line so that it ends before intersecting the decoration.

Show maker's stamps impressed in center of floor projected upward.

Show graffiti/dipinti in perspective view (and then separately in straight down view elsewhere).

19. Rendering Handle Sections (added 5/7/2014)

Render lines showing position of handle section as straight horizontal lines 1 cm (11 clicks) long at line weight of 0.7 spaced 5 clicks to either side of edge of handle.