# AutoCAD Polylines: An introduction to Joined up thinking

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*'Paul Munford began drawing by hand in the Film and TV industry in 1997. Paul took up AutoCAD when he moved into commercial construction in 2004. Since then Paul has become an AutoCAD enthusiast and attended the first ever AUGIuk CAD camp, the first ever Design academy and Autodesk University (twice!). Paul works as a draughtsman for Beck Interiors (Beckinteriors.com), a bespoke hotel and museum interior fit out contractor, where he specialises in joinery setting out'*

**Why use Polylines?**

Polylines are a great way to organise the information in your drawings. They are as effective, in their own way, as groups or blocks and can be created as simply as a standard line. In fact you've created a polyline every time you use the rectangle command!

**What are Polylines?**

Polylines are a collection of joined lines and arcs. They are a really useful way of keeping geometry together so that it can be quickly selected later. For example, polylines are particularly effective when you have a shape with tiny fillets in the corners or when you have a lot of geometry in a small space and it is difficult to make a selection using a crossing window.

You can draw using joined Polyline segments or you can join your segments together later. Polylines have attributes ordinary lines don't have, such as area. Polyline segments must have the same properties, such as layer, linetype, colour etc. Joined Polylines can be exploded to return them back to their original components.

**How do I create a Polyline?**

Polylines can be created with several commands including RECTANG, POLYGON, DONUT, BOUNDARY, and REVCLOUD. For now we are going to concentrate on the PLINE command.

>Pick 'PLINE' from the 'Draw' tool bar

>Select 'Polyline' from the 'Draw' pull down menu

>Type 'PLINE' or 'PL' at the command prompt

**Drawing joined up lines**

The command will prompt you for a start point. You can pick a point on the screen or enter Cartesian coordinates. You can now continue entering points until you are finished; 'Enter' to complete the command (Return key, space bar or right click). You can also type 'C' at the command line and hit return to create a closed Polyline; this will draw a line from your current point to your original point. Your Polyline shape will be one object made up of many joined segments.

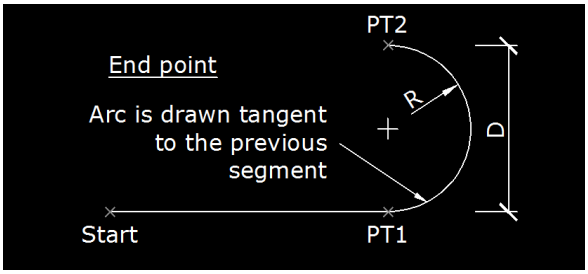
***Tip:*** *Hitting 'Enter' when prompted for your first point will start drawing a Polyline from the last point of the last Polyline you created… it won't join your new Polyline to the old one though…*

**Adding arcs to Polylines**

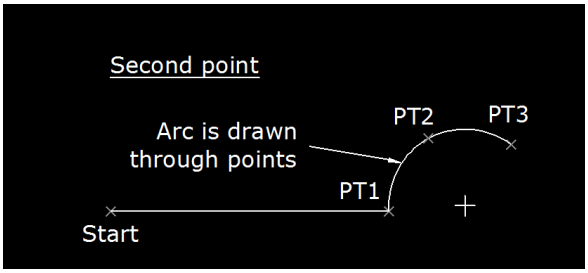
Fire up the Polyline command again. Pick a start point and draw your first Polyline segment. Before you pick your next point type 'A' at the command line and hit return. The Polyline tool will start drawing arcs as a continuation of your original line segment.

The Polyline tool offers a number of ways of drawing arcs; why not experiment with some of the options illustrated below… When you're finished type 'L' at the command line and hit return to continue drawing line segments. Again you can type 'C', to close your Polyline or 'Enter' to complete the command.

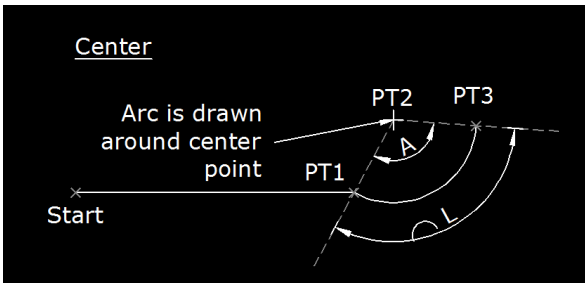
End point



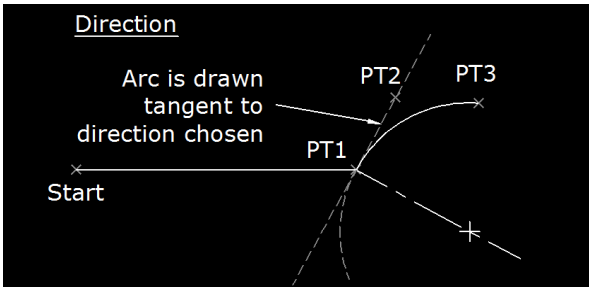

Second point



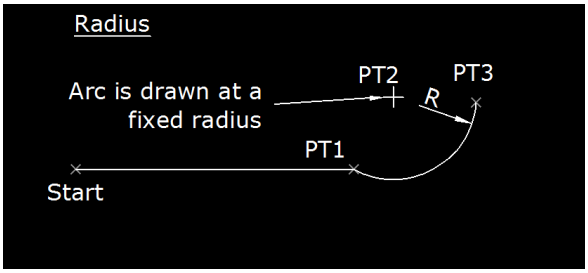

Centre




Direction




Radius




*In each case start point to Point 1 is a straight line segment. Points 2 and 3 define the shape of the arc*

***Tip:*** *Arcs are Polylines by any other name… Ellipses and Splines are not. To convert an Ellipse or Spline into a Polyline, offset it by 1 and then offset it back by one. The result will be a series of Polyline Arcs in the shape of the original object.*

**Editing Polylines**

Confused? Well, OK… Sometimes it's just easier to draw and edit the shape you want and then join them together afterwards. We could join our segments together using the JOIN command, but JOIN will only join lines to lines, Polylines to Polylines and Arcs to Arcs. We are going to join our segments together using the more useful PEDIT command.

>Pick 'PEDIT' from the 'MODIFY II' tool bar 

>Select 'OBJECT>POLYLINE' from the 'MODIFY' pull down menu

>Select a Polyline and right click, choose Polyline edit from the shortcut menu.

>Type 'PEDIT' or 'PE' at the command line

Start up the PEDIT command and type 'M' at the command line to select multiple objects. Select all the objects you want to join together and Return. Now type 'J' to select 'Join'. You will be prompted to enter a 'Fuzz Distance'; this is the distance between the end points of the objects you are joining. If you have used your O-Snaps to make sure that all your lines are accurately drawn you can 'Enter' to accept the default of 0.000. PEDIT will cheerfully report back the number of objects that you have successfully joined together. Hit return once more to exit the command.

You may be prompted…

*'Convert lines and arcs to Polylines [yes/No]? <y>:'*

The answer is yes! If we don't convert it to a Polyline it won't join up! To suppress this prompt, leave the PEDIT command and type 'PEDITACCEPT' at the command line. Set the value to 1. Now when you use the PEDIT command you will not be asked such a silly question.

***Tip:*** *Your line and Arc segments do not need to have the same properties before you join them. AutoCAD will take the properties of the* First *segment you pick and apply them to the rest of the segments*

***Tip:*** *Fillet and Chamfer will join two Polylines (or a standard line and a Polyline) as part of the same operation. Instead of trimming and joining two Polylines, try filleting two polylines with a radius of 0 to trim and join them in one operation.*

**Polyline properties**

Double clicking on your completed Polyline will reveal its unique properties…

**Area**

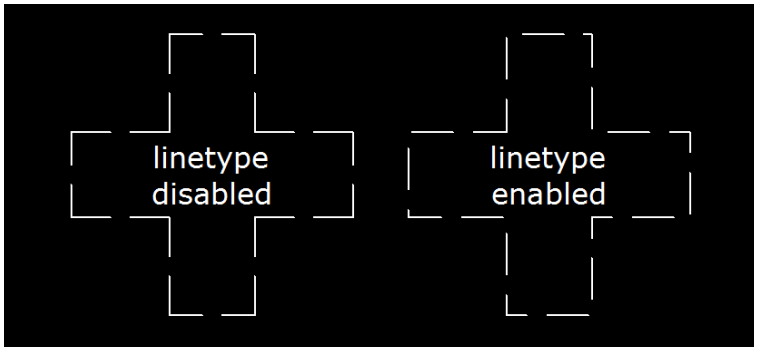
Joined Polylines have an area. Note that they do not need to be closed. This could be extremely useful for calculating areas on a floor plan, or for calculating sheet material.

**Length**

Joined Polylines have a combined length. Note that they do not need to be open for the length to be calculated. This could be extremely useful taking off walls or, for calculating piping runs.

**Linetype Enabling**

Linetype enabling controls the pattern display of line type such as HIDDEN. Linetype Enabled will display a continuous pattern; Linetype Disabled will start the pattern afresh at each junction.




**Closed or open**

Polylines must be closed to be converted to Regions or 3D shapes.

**Bonus**

Is joining your Polylines together to much trouble? Add the following macro to a tool bar button to create you very own Polyline Join command

^C^C^._select;\._pedit;m;previous;;j;;;