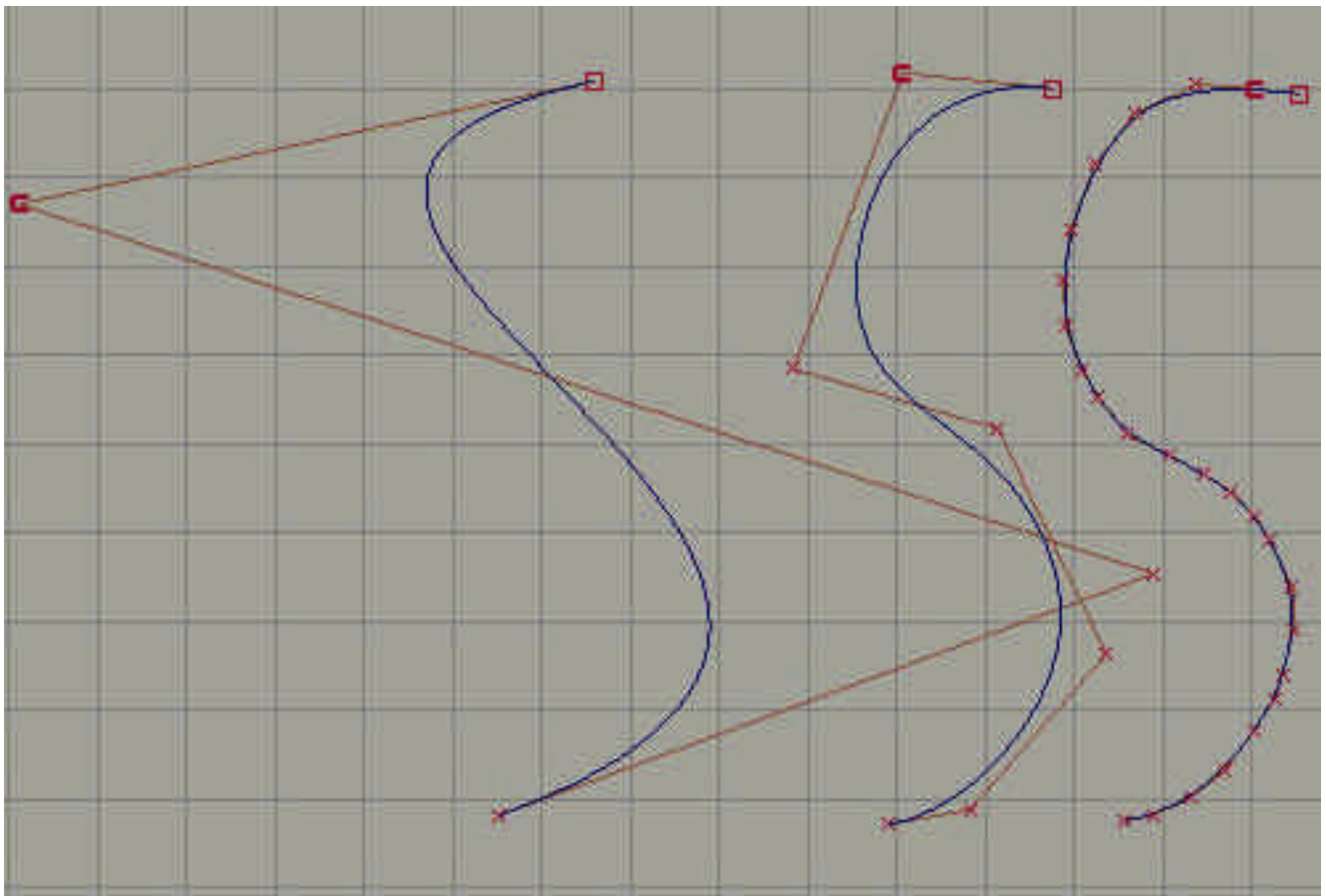


# About Computer Graphics

## *General modelling points (for beginners)*

Always economize with cv's - try never to use a single cv more than you need for your modelling purposes (the deciding factors are: how visible and prominent is the object at most, the amount of realism you want, movement, motion blur etc). Sometimes you don't need degree 3 curves (NURB-splines) in BOTH the U and V directions - so don't use a default cylinder (8 x 4 cv splines) if you need a straight one, since then you can get away with skinning 2 NURBS circles using degree 1, nor use a default degree 3 box from "create" if a degree 1 rectangle extruded or skinned with degree 3 will do. Figure out the MINIMUM amount of cv's you need before you start - remember that a sinus-like curve can be described by using only one cv at each peak and troth (for a more accurate sinus-shape, one extra cv is required at each "halfway" point), and a cylinder need only have 5 cv's to seem perfectly round, and 4 or even 3 if that doesn't matter.



*Look at these 3 curves in the screenshot above and study them. The one on the left is probably to simple for most uses, and the one on the right is definitely way too complex. The one in the middle could be a good optimization.*

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**Warning:** remember to raise the default rendering subdivisions of the surface, if you use very few cv's - experiment and quickrender until you find the minimum you can get away with.

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## Some helpful modelling tips...

I mostly use "skin" (loft), sometimes "revolve", "extrude", "planar" and "bi-rail", and very rarely "swept". "Skin" sometimes works better, more predictably, than "bi-rail", depending on the surface.

Don't change the cv's weight unless you know you won't animate or CAM the surface, and never change the multiplicity, insert cv's instead.

Careful with "attach" - it will sometimes add twice the isoparms in the direction of the attach if two surfaces don't have a perfect isoparm fit. In such a case you can try "rebuild surface", but its functionality is very limited, so you'll probably still have to rebuild the object "by hand" (building a new one using the old one as a template). Don't be afraid to rebuild by hand -- it results in an optimised parameterisation.

Use white board markers on your screen for sketching, marking etc.

Use the clipping planes in your modelling windows to view narrow cross sections, or to reduce clutter, especially when the model starts to become complex.

Use a neutral-colored Blinn with a very muted and wide highlight as default shader, to easier see small errors in your surface when quickrendering.

Picking a carefully selected bunch of cv's, moving their pivot-point and using "scale", "np-scale" or "rotate", then unpicking some, scaling the remainder again, unpicking some, scaling the remainder and so on can sometimes save you enormous amounts of time, as opposed to using only "move", and picking/unpicking by 1's or 2's, in a more disorganized way. You shouldn't have to use "proportional modification" on a face (if you do you probably have to many isoparms in it), which is good, since it is a very frustrating tool. Also be very careful with "smooth", save your model before you use it (and again, if you have to use it you probably have to many isoparms in your surface, or an uneven parameterisation). You can also use the pick-walker function (press Control with at least one cv picked and move through the surface's cv's with the arrow-keys, translating as you go).

Unless an edge or a corner is meant to be razor sharp or is too far away to be noticed always have some roundness or at least a bevel. It is also often more realistic, and shows the objects shape clearer - see what I've written about edges, in the chapter entitled: **"Visual Perception and Composition"**, and in the shading chapter entitled: **"The 9 Points for Beginners"**. The truth is that there are no real shortcuts. Good

modelling takes time, and what takes most of the time is the editing, the movement of cv's the push-pull translating, this way or that, left one day, the next day you see it should have been right... But there's one thing that can make this process much easier, and that's what we will discuss next...

