

POSER DEPENDENCIES

This paper covers Poser's dependency system it's also sometimes referred to as Extended Motion Control, EMC or Extended Remote Control pr ERC. This is mostly for historical purposes and as a reference as to how dependencies are coded in the Poser format. New versions of Poser have a built in tool for editing dependencies making hand editing something that's reserved for only the most complex dependency setups.

Cross Talk: The phenomenon of crosstalk in Poser morph was fixed many years ago. It shouldn't be an issue in any modern version of Poser. Shield figures were used to work around the bug until it was fixed. That aspect of this part is here for historical purposes only.

DESCRIPTION:

This tutorial covers setting a parameter dial in Poser to control extra morph targets. This is called Extended Motion Control. The morphs can be controlled from a joint, or another morph target. This tutorial will actually cover 3 techniques, Joint Controlled Morphs (JCM), Partial Body Morphs (PBM), and Conforming Morphs (CM) also known as SuperConforming. With these techniques we can create muscles that bulge when a joint is flexed, Morphs that effect several body parts, and conforming clothing that morphs with the target figure.

Research in this area by Robert Whisenant and myself continues. Rob is calling it ERC (Extended Remote Control) and found that the techniques explained here can be used to link any Poser channels together. I kind of like the way EMC sounds (E=MC?) and I already made a cool logo. But Extended MORPH Control just doesn't say it all. I'll refer to it as Extended Motion Control.

Rob's expansion on EMC / ERC leads to a virtually unlimited array of possible combinations. Through all this the basic technique is unchanged. Add the 5 magic lines to any channel, and watch the magic happen.

Recently the issue of cross-talk between EMC figures has been completely solved see the new info in this at the bottom of the page. Cross-talk happens when EMC figures are loaded into the same Poser scene. I discovered a way to [construct a special CR2](#) file that will shield EMC figures from one another and eliminate cross-talk.

USAGE:

Have you ever wished a particular morph would just apply itself as you moved a joint. For example Biceps that would bulge as the fore arm is flexed. Are you tired of applying morphs to clothing and body parts separately? Are you tired of Poser conformed skirts flying all to pieces when the model sits down? All these problems will be solved using this technique.

WHAT YOU NEED:

- Poser with the latest updates.
- A good text editor, or a CR2 editor.
- A figure with morph targets you wish would apply automatically.

WARNING:

This tutorial is for Poser users who are advanced enough to get into a CR2 file and edit it without breaking it. In the name of mercy, backup your file before you edit it!

THEORY:

There are extra lines that can be added to a morph channel in a CR2 file that allow the channel to be controlled by another channel. This allows a dial in the Poser User Interface to control more than one morph on more than one body part and more than one figure. This uses code similar to a "Full Body Morph" to do some really neat tricks.

TERMS:

- **Conformer:** A figure designed to conform to another figure, like clothing.
- **Super Conformer:** A conforming figure that uses Conforming Morphs.
- **Target:** The figure that a conformed figure is conformed to. (This is different from parenting)
- **Slave:** A morph channel that has had special code added to it to allow another dial to control it.
- **Master:** A morph or joint dial that has slave morph channels.
- **Channel:** A section in a CR2 file that controls movement. It may be a joint or a morph target. In Poser a channel is represented by a dial.
- **Partial Body Morph:** (PBM) When a morph has been modified to control several morph targets at once.
- **Joint Controlled Morph:** (JCM) A morph that is controlled by the movement of a joint.
- **Conforming Morph:** (CM) A morph that is controlled by channel in a separate figure, usually a conforming target figure.
- **Full Body Morph:** (FBM) A morph that effects the entire body of a figure. The Dial is usually in the "Body" section.

LET'S GO:

- Load the morph targets you wish to use and save the figure to the library with a new name.
- Load the CR2 file into your CR2 editor, or a good text editor.
- Look for the morph target that you want to control. This will become the slave channel. If your text editor has a search feature, search for the name of the morph channel. This is what the start of a morph channel looks like.

```
channels|
{
  targetGeom Waves
  {
    name Waves
    initialValue 0
    hidden 0
    forceLimits 4
    min -100000
    max 100000
    trackingScale 0.02
    keys
    {
      static 0
      k 0 0
    }
    interpStyleLocked 0
    indexes 7211
    numbDeltas 7529
    deltas
    {
      d 44 0 0 -0.002142634
```

- Inside the morph channel you're looking for a certain line, something like this?

```

keys
{
    static 0
    k 0 0
}
interpStyleLocked 0
indexes 7211
numbDeltas 7529
deltas
{

```

- Now we need to add a few lines of code, after this line, to the channel This will tell it to look for a control from another channel. There are 5 lines we need to add.
1. **"valueOpDeltaAdd"** A key line telling the channel to be a slave. This line may not be necessary.
 2. **"Figure 1"** The name of the controlling figure. It may not be "Figure1" You must be careful here. If you rename the figure target, it breaks the EMC link. There may be a key word we can place here instead of a figure name. If so we have not found it yet. It can be the name of this figure, or the target figure of a conformed clothing figure (Conforming Morphs).
 3. **"lShin:2"** The name of the controlling body part. Look at the CR2 for the name of the body part that will be in control. These names are case sensitive and you must use the internal names for the body parts, like "rThigh", lForeArm", "rShldr". Don't use the friendly names, like "Right Shoulder".
 4. **"xrot"** The name of the controlling channel. Once again, look at the CR2 for the EXACT name of the channel. This can be a joint channel (JCM) or a morph channel (PBM). Most channels have their name listed in the first line. Use this name exactly as it appears.
 5. **"deltaAddDelta 0.025"** The ratio of the control. This can be tricky, this is the amount of morph applied relative to the dial movement. as a guide Joint controlled morphs will be very small numbers like ".01" if it is a conforming morph it will probably be very near "1.00" You will need to use negative numbers to apply morphs to joints that normally move in the negative direction, like the right forearm, when flexed, it will be a negative number.

- This is what the lines will look like

```

interpStyleLocked 0
valueOpDeltaAdd           Required Key word
Figure1                   Name of the Master Figure
lShin:2                   Name of the Master Body Part
xrot                      Name of the Master Channel (Morph or Joint)
deltaAddDelta 0.025      Control Ratio
indexes 2927
numbDeltas 7529
deltas

```

- Repeat this for each morph channel you want to set as a slave.

That's really all there is to basic Extended Morph Control.

Hey, wait you said there were 3 techniques!

- Joint controlled Morphs or JCM : Apply a morph automatically when a joint moves.
 1. The figure name will always be the same as the name of the figure you are working on.
 2. The Body part will be near the controlled morph, (if not the same).
 3. The master channel will always be a joint.
 4. The deltaAddDelta line will be a very small number and will be negative if the controlling joint normally moves in a negative direction.
- Partial Body Morphs or PBM: Control several morphs with one dial.
 1. The figure name will always be the same as the name of the figure you are working on.
 2. The body part will be near the controlled morphs. One the controlled morphs must be in the body part.
 3. The master channel will be a morph
 4. The deltaAddDelta line will most likely be exactly 1.
- Conforming Morphs: Morphs in a conformed figure are controlled by the conforming target.
 1. The figure name will be "conformingTarget" unless you know the exact name the target figure will always be.
 2. The body part will be in the target figure, usually the same as the figure you are working on.
 3. The master can be either a morph or a joint. If you are matching a muscle bulge or breast morph, your target would be the morph you are duplicating on the conforming figure. If you are creating motion dynamics on clothing you will use the related joint on the target figure. For example: wrinkles in a shirt would be tied to the xrot (bend) of the abdomen or chest. A morph to match a pot belly morph would be tied to the pot belly morph on the target.
 4. The deltaAddDelta will vary depending on the type of conformed morph. Motion morphs tied to joints will be very small numbers and may be negative. Conforming Morphs will be 1 or very close.

Here are a few details to mention.

- A morph channel that has been slaved can still be manually controlled. So you can still manually dial in a little more or less morph if needed.
- If the morph is to be controlled by a joint dial you won't use the name of the dial, like "side-side" or "bend." You will use a key word to refer to them.
 1. "xrot" for X axis rotation.
 2. "yrot" for Y axis rotation.
 3. "zrot" for Z axis rotation.
- If you are building a conforming figure you can refer to the target figure two ways. First you can use a fixed name for your target figure. If you do it this way you have to be sure to rename the figure when you load it, before loading the conforming figure. The second way is to use the key word "conformingTarget". If
- In some cases you will get "cross talk" between figures with Extended Morph Control. If this happens, renaming the figures alone will not fix the trouble. The figure name lines will need to be changed in the CR2 on each slaved morph target. This is probably a bug in Poser. Then again I don't think we were supposed to find this little Easter Egg!

Creating an EMC Shield figure.

EDIT: This is something that shouldn't be needed in any modern versions of Poser.

A Shield is needed when two EMC figures, most commonly figures with Full Body Morphs, are loaded. The shield prevents the figures EMC channels from hooking to the wrong figure. This is not needed for SuperConforming clothing, it is supposed to hook onto the existing figure. A ready made shield is available on the [EMC Figures](#) page

- Create a copy of the CR2 file for the figure to be shielded.
- In the "Geometry section delete all the references to the geometry. This will include the OBJ file reference.

```
{
version
  {
    number 4.01
  }
figureResFile Runtime/Geometries/P4NudeWoman/P4NudeWom.obj
actor BODY:1
  {
  }
actor hip:1
  {
storageOffset 0 0 0
geomHandlerGeom 13 hip
  }
actor abdomen:1
  {
storageOffset 0 0 0
geomHandlerGeom 13 abdomen
  }
actor chest:1
```

This is a good way to wear out your delete key ;-)

- The second Geometry reference needs to be deleted too.
- Delete every thing from the second geometry line to the "Figure" line. Leave the "Figure" line. (This could be thousands of lines.)

```

}
figureResFile Runtime\Geometries\ZygotePeople\blMilWom.obj
actor BODY:2
{
  name GetStringRes(1024,1)
  off
  bend 1
  dynamicsLock 1
  hidden 0
  addToMenu 1
  castsShadow 1
  includeInRender 1
  parent
  chest
  {
    valueParm Set
    {
      orientation 0.276691 13.6372 -0.026
      displayOrigin 0
      displayMode USEPARENT
      customMaterial 0
      locked 0
    }
  }
}
figure
{
  name Figure 1
  root BODY:2
  addChild hip:2
  addChild abdomen:2
  addChild chest:2
  addChild neck:2
}

```

- Delete all the "Weld" lines (No geometry, nothing to weld)
- Delete all the Texture section except "Preview" Poser will just add it back any way.
- Save this as your new Shield Figure.

Now to create an EMC figure that loads its own shield!

Now we will merge the new shield figure and an EMC figure that needs protecting. The result will be a CR2 file that automatically loads and selects a shield before each EMC figure.

- Open the EMC Figure and The shield in a Text editor.
- Copy the entire Shield figure except for the very first and last lines, the opening and closing curly braces {}
- Paste the Shield just inside the opening Curly brace of the EMC Figure.
- Save your shielded EMC Character with a new file name.
- **NOTE:** If you re-save this figure to the library inside poser it will strip the shield out, ruining your work here.
- When you load this figure 2 figures will be listed in the "Figures" list, the Shield and the real figure. The Shield will be completely invisible and will have no dials. This in normal. Because the shield was stripped to the bare essentials it has a very small memory foot print.

Now you have a figure that is compounded with a Shield figure. When the figures are put together in this way Poser will load and select the shield first, then the new EMC figure will be protected form any EMC figure already in the scene and the new figures EMC channels will lock on to the correct figure.

New Discoveries...

- If you save a CM conforming figure back to the library while it is conformed to a target figure it will

change the Figure Name line to the name of the current target figure. This will prevent the conforming morphs from working on any figure except those with the exact same name as the name of the original target figure. This is a two way street. If you are having a cross-talk problem you could save a copy of the CM conformer (under a new name) then load this new figure and it should solve the cross talk, as the conforming figure's CM morphs will now refer to a fixed name.

- If you replace a figure in a scene (Using the single check mark button), NO EMC morphs will work, not even the built in "Super Hero" full body morphs. This seems to be a Poser bug. Fixed in Poser 7
- Conformed Morphs will cascade control from a Joint Controlled Morph, (Huh? What does that mean.) If you have a muscle bulge morph controlled by a joint, and have a conforming morph on a shirt (slaved to the muscle morph), the Conformed morph will "cascade" control to the joint. The shirt morph will move with the muscle, through the joint. This means that moving the joint controls the muscle morph and the shirt morph, with no extra code. (This is VERY cool)
- A CM figure must NOT be loaded before the target figure is loaded. It will cause Poser to crash. Load the intended target figure, then load the CM conformer. This is probably not really a bug, since I don't think Poser was really supposed to do this stuff. We're just really pushing the envelope with this stuff. Fixed in Poser 7
- When you load more than one figure with EMC control there is sometimes a problem of "Cross Talk" between the figures. This can be prevented by loading a Non-EMC figure first. (The figure can't have any Full body morphs either) Select this figure before loading a figure containing FBM, JCM or PBM morphs. For CM figures you will still select the target figure before loading the clothing.
- EMC can be used on any channel in any Poser figure, even a prop or light! The 5 Magic lines can be inserted into the code for any "Channel" and can refer to any other channel on any other Poser figure. Any joint, any morph, any figure.
- Cross talk has always been an issue between EMC figures. No more! A [shield figure](#) can be created. A shield figure is a special Poser figure that has no geometry and no channels. It is a figure stripped to its most basic form. This figure can be loaded between any two EMC figures. If it is selected before the second figure is loaded it will prevent cross-talk between EMC channels. This even works on the "Super Hero" morphs on stock Poser 4 figures"
- It is possible to Build a cross-talk proof figure that automatically loads the shield before the main figure. This technique is employed on my new Fog Tool. The CR2 file must be hacked manually to create this very special compound figure.

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