Subject: Re: Z-Buffer question
Posted by davidf on Wed, 19 Feb 1997 08:00:00 GMT
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Astrid Kuhr writes:

> I have a question during using the Z-Buffer:
> I read all the articles about the z-buffer contest, but I understand nothing... :(((((

Well, you are in good company here, Astrid. I am still trying to puzzle out that solution George sent in. :-)

> This is an example, what I do. But the result is :((, because I get the surface-
> lines not all very clean, at some places, they are gone away.
> Want I want to get is a picture, same as without using the z-buffer. There I can
> see all the lines from the surface very clear, without broken parts.

> IDL> shade_surf, dist(20)
> IDL> surface, dist(20), /noerase
> IDL> a=tvrd()
> IDL> set_plot, 'x'
> IDL> tv, a
> IDL>

Well, let me say upfront that I don't believe there *is* a real solution to this. I think the problem really has to do with "round-off" error in how the Z-buffer calculates what is in front of something else, when the two objects have the same value.

I say this because I don't want to get a ton of e-mail about my proposed solution to your problem. I *know* it is not a perfect solution. I *know* it sometimes makes the situation worse and not better. Etc. etc. (I'm open ears for a *better* solution, however!)

So what I have done in the past in similar situations is incorporate a "fudge factor" into my code. (Physicists will understand this.) What I try to do is "raise" the second surface just ever so slightly off the first.

I will admit that this doesn't always work, but it has worked often enough for me in the past that I remember it when someone asks the question. So here is how I would try to solve your example problem:

```
thisDevice = !D.Name
colors = !D.N_Colors
SET_PLOT, 'Z'
DEVICE, Set_Resolution=[300,300], Set_Colors=colors
SHADE_SURF, DIST(20)
SURFACE, DIST(20)+0.1, /NoErase
picture = TVRD()
SET_PLOT, thisDevice
WINDOW, XSize=300, YSize=300
TV, picture
```

Even this simple example introduces artifacts that may be undesirable. For example, now I don't see any surface lines drawn on the "under" surface of the shaded plot. (I might be able to correct this by *subtracting* a fudge factor and drawing still another surface.)

Anyway, here is a *suggestion*, not a *solution*. :-)

Cheers,

David

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