

CandyFactory

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Chapter 1

CandyFactory

1.1 CandyFactoryPPC Documentation

C A N D Y F A C T O R Y P P C

Add shaded bevels, glows, shadows and noisebumps
to a simple B/W mask picture

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T O D A Y ' s T O P I C S

Introduction	Ready for takeoff...
Functionality	Whaduzitdo?
Installation	Shock hazard
Configuration	This is where things go wrong
Usage	How does this stupid thing work ?
Future	Where to go from here
Known bugs	Don't just stand there
Legal	The usual nonsense
Feedback	Feed me, please
Benchmarks	Burn some rubber!
PC Version	Oh well...

1.2 Legal stuff

L E G A L

This program is freeware. It may be freely spread, without changing it's contents and without making a profit. You are allowed to put it on a CD-ROM or coverdisk.

CandyFactory is copyright 1997/98 Milan Pollé.

1.3 Introduction

I N T R O D U C T I O N

About a year ago I saw a plugin for Photoshop on a PC at my work for the first time. It was called 'AlienSkin' and made a bevelled logo out of simple text. It could also make glows and soft dropshadows. When I saw it I wondered how they did the bevel effect. Since then I used it a couple of times at work to make menus for the games we make there.

Some time after that I got my homepage at Geocities and was working a bit on it at home. At a certain point I wanted to make some logo's for it, so I looked around to see what equivalent of AlienSkin there was on the Amiga. I found a program called 'LightWalker' by Michiel den Outer. I tried it out and it indeed had the bevel effect, as well as a dropshadow. I didn't really like the blurry output it gave though. So I started thinking about how I could program such a bevel effect and decided to prototype it in AMOS. This was in July 1997.

Eventually I had indeed succeeded making the desired effect in AMOS, although it was very slow. After succesfully making the AMOS prototype, I moved on to a version programmed in C, with an intuition user-interface and so 'CandyFactory' was born. When I (finally) got my PowerUP board in November 1997, I started porting parts of CandyFactory to it, with some great results. The user-interface, optimizing and bugfixing took up most of the time, unfortunately. You don't have this problem programming Imagine textures :) As instant feedback is very fashionable these days, CandyFactory is biased towards fast feedback, which costs a little more memory. I optimized it 80's style though, using tables, so I optimized it the wrong way around, after reading a bit about caches and pipelines, I was back on track, the 68K part needs some re-optimizing, though.

Contrary to this, 80's style optimizing still seems to pay off on the

030, so now I have to think if I want to do two versions optimized in opposite ways :^(

1.4 Functionality

F U N C T I O N A L I T Y

CandyFactory will take a 320x256 pixel mask image (a normal iff picture) as a source and you can add a lightsource bevel, a normal or diffuse glow, metal reflection, a soft dropshadow and noisebumpmapping to it.

Many things can be changed in realtime, such as color settings, lightsource/reflection position, shadow position/intensity, glow color/intensity etc. Using a PowerUP board gives realtime update of the shadow/lightsource distance and noisebump settings as well. When you are satisfied with the result, you can save it as an IFF picture.

1.5 Configuration

C O N F I G U R A T I O N

- * AGA Machine capable of displaying Hires PAL or Double PAL.
- * 4MB of fastmem.
- * 68030 + fpu recommended as a minimum, a PPC will really speed things up.
- * At the moment CandyFactory seems to be promotable to a CyberGFX screen, a screenmode requester is already in the next version.
- * Harddisk.

CandyFactory only works on a 640x512 256 color PAL screen at the moment, which means you need an AGA machine for it. It could work with graphicscards (I don't have one yet), but I think the IFF library loader won't be compatible with it, so you'll have to wait until I have my own gfx board.

It should work on a machine with 4MB of fastram.
And you need a harddisk as well.

1.6 Installation

I N S T A L L A T I O N

- * Copy iff.library to libs: (if you do not already have it)
The iff library is only used for loading pictures and should be obsolete in the future.
- * Copy NewWPA8 to c: This speeds up chunky to planar conversion with AGA, shouldn't be used with GFX boards, it will have some glitches with overlapping windows, but nothing problematic. It is a lot faster than PatchWPA8.
You can execute NewWPA8 from the shell or your user-startup.
You can turn off mode promotion in the IControl prefs for an interlaced screen, giving an impression of the speed you could get with a gfx card.

NEWWPA8 OR PATCHWPA8 ARE ESSENTIAL FOR CANDYFACTORY TO WORK RIGHT!!!!

This is because the normal OS WritePixelFormat8 trashes the chunky source. The patches won't start from the WBStartup drawer BTW
(Hi Casey! ;^)

- * The patterns dir holds the reflection/noisebump patterns, which still have a small error in them, this will also be fixed.
 - * If you have a PowerUP board, you should place the .elf files in the same directory as the main program.
-

1.7 Usage

U S A G E

You have to make a picture with your favourite paint package with background color 0. Use the example CandyFactory.iff to see what I mean. It can be anything from 2 to 256 colors, the colors will be totally ignored :^)

CandyFactory will then scan the edges of the picture.

After scanning it will show a shaded version of the picture, you can

already move the lightsource by clicking and moving within the main window.

Now you can apply some effects to it:

Windows Menu:

Material	Change Material settings
Lightsource	Change Lightsource settings
Inner Bevel	Add Bevelled Edge to object
DropShadow	Add Dropshadow to object
Glow	Add Glow around object
Noise Bump	Add Noisebump to object

Image menu:

Invert Mask	Invert Object/Background mask
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Settings menu:

Enable PowerPC	Enable PowerPC CPU
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1.8 Object/Background Material

M A T E R I A L (change the material of the object or background)

- R,G,B: Change the Red, Green and Blue components of the current material element.
 - Color, Specular, Ambient: Select Color, Specular (highlight) or Ambient (color of dark areas) element.
 - Shading: None/Normal/Metal, select no, normal or metallic-reflection shading.
 - Glossiness: Change the highlight's sharpness.
-

1.9 Lightsource

L I G H T S O U R C E (change lightsource settings)

- Distance: Set the distance of the lightsource or reflection
 - X/Y Pos: Horizontal and vertical position of the lightsource. Change it by entering a value here or clicking/moving on the shaded sphere or the main picture.
-

1.10 Inner Bevel

I N N E R B E V E L (add a bevelled edge to your object)

- Bevel width, height: Pretty obvious, I think.
 - Smoothing: from an ugly, to a sharp, to a rounded bevel.
 - Top/Bottom slope: Change the shape of the bevel as previewed in the profile box.
 - Carve: Invert the bevels height, as if it were carved out, a bit hard to see without real shadows.
 - Render: Render the bevel.
-

1.11 Dropshadow

D R O P S H A D O W (add a soft dropshadow, this will set the background to non-shaded)

- Smooth How smooth or sharp the shadow will be, smoother shadows take longer to render.
 - Intensity Intensity of the shadow, you can fade it in and out.
 - Color Change the color of the shadow.
-

- Distance Distance of the shadow to the object.
- Lock2Light Doesn't work yet, at the moment it is always locked to the lightsource, I will add position settings later.
- Render Render the shadow.

You can move the shadow by moving the lightsource or reflection.

1.12 Glow

`G L O W` (add a glow around the object, this will set the background to non-shaded)

-
- Size Size of the glow
 - Intensity Glow intensity
 - Central color Glow color near the object
 - Edge color Glow color as it moves away from the object.
 - Falloff How thick or thin the glow is, doesn't have an effect with diffuse glow. Will ghost it later.
 - Diffuse Different type of glow, normal glow is sharper and faster to render.
 - Render Render the glow.
-

1.13 Noise Bump

`N O I S E B U M P` (add a bumpy look to your object/background)

-
- Select Select object or background bump settings.
 - X/Y Size Size of the bumps.
-

- Bump height Intensity of the bumps.
 - Top/Bottom clip Clip the bumps.
 - Type: Noise type:
 Normal
 Fractal (more complex, different sizes)
 Turbulence (with sharp changes)
 FTurbulence (with different sizes)
 - Apply: Apply the noisebump.
 - Invert Invert the bumps.
-

1.14 Invert Mask

I N V E R T M A S K

Invert the object's mask, creating a cutout effect. Will remove all the object's effects, but you can apply them again by pressing the render buttons.

1.15 Enable PowerPC

E N A B L E P O W E R P C

Enable or disable PowerPC CPU when available. You can use this to test speed differences.

1.16 Future / Limitations

F U T U R E / L I M I T A T I O N S

Where to start...

Aside from bugfixes and optimisations, CandyFactory has a lot of room for improvements. I only have time to work on it a few evenings per week, as I have a daytime job, so be patient. When there is enough interest, you can expect to see:

- A screenmode requester, also for you graphic-card users.
- Loading/Saving of other sizes than 320x256, I'm working on that right now (no, really !)
- An ARexx port, everything has it these days.
- Better looking user interface, probably with some patterns and bevelboxes.
- Graphics-card support.
- Anti-aliasing
- Animation
- 24Bit color support (it is all 8bit at the moment)
- More effects and surprises, maybe a plugin interface
- Optimisations.
- Loading and saving of effect settings. (this is already in the next version, for materials)
- Custom bump and reflection maps.
- Load full-color source / Color texturing.
- High-quality render, for bumpmapping and reflection mapping.
- Setting for boosting diffuse glow intensity.
- Settings file with windows positions.
- Shadow position settings (implement non-lock2light)
- Realtime rotate for bump/reflect
- Add text / graphics from within program.

This ELF modules system might already be obsolete and maybe I should have done a complete compile with SAS/PPC, but I couldn't get it to compile my ELF modules properly. Well, maybe later.

And never mind the version number, it reflects the number of changes since I started recording them, I haven't decided on a version number yet, the next version will be something like 0.5x.

1.17 Known bugs

K N O W N B U G S

- IMPORTANT: USE NEWWPA8 OR PATCHWPA8 WHEN USING CANDYFACTORY WITH AGA ! This is because of a bug in the O/S WritePixelArray8 call.
 - Very complex masks will crash the program with 68K systems, this
-

is already fixed in the next version.

- There need to be some more busy-pointers and progress bars for slower systems.
- The mouse-pointer colors get messed up.
- Pictures are saved with MagicWB colors in their palette.
- Window positions are not remembered yet.
- Reflection maps look blocky when scaled and bumpmaps show repeating patterns when scaled small, this is a limitation of using realtime adjustments, can be fixed by implementing a high-quality render option.
- The noise/reflect patterns have some glitches, because the noise generator isn't what it should be yet.
- Lock2Light checkbutton for shadows doesn't do anything at the moment.

Thanks go to Jeroen Schellekens (of 303emu fame) for testing CandyFactory on his A1200/030@50mhz/nofpu and for suggestions.

Thanks to Casey 'Etherius' R Williams, for testing CandyFactory on his A4000 with brandnew PowerUP@200Mhz/060, across the great pond.

Thanks to the people who have sent me an E-Mail about CandyFactory or put a message in my guestbook.

Thanks to my girlfriend for testing CandyFactory on my own A4000/PPC200/060.

1.18 Feedback

F E E D B A C K

Please do, the future of CandyFactory depends on you. CandyFactory is my gift to the Amiga community, because I think the Amiga is a neat system and I like to go against the flow. But I easily get bored with making documentation and doing bugfixes, so let me know that you're interested in CandyFactory and I will continue improving it.

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For the latest version and Imagine procedural textures and utilities,
info on the VIC-20 emulator and Atari Lynx development with the Amiga:

<http://www.geocities.com/SiliconValley/Way/1038/index.html>

Send me your ideas and bugreports as well !

What other people said about CandyFactory:

My girlfriend:
'Can I play Deluxe Galaga now ?'

My colleagues at work:
'Can we have a PC version ?'

My mother:
'Always computer, computer'

My computer:
'Could you stop bashing my keys please ?'

My cat:
'vbkjyr;ogse,mbv'

1.19 PPC Benchmarks

B E N C H M A R K S (using the CandyFactory example picture)

Please note that some of these routines still have room for optimizations.

Innerbevel (smooth 10, bevel size 30)

060	PPC	Ratio
19.25 sec	4.21 sec	4.5

Dropshadow (smooth 30)

060	PPC	Ratio
55.44 sec	6.11 sec	9.0

Diffuse glow (size 30)

060	PPC	Ratio
31.72 sec	3.68 sec	8.6

Normal glow (size 30)

060	PPC	Ratio
10.75 sec	0.79	13.6

1.20 PC Version

Yeah right.