CandyFactory

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COLLABORATORS

	TITLE : CandyFactory		
ACTION	*NAME*	*DATE*	*SIGNATURE*
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REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

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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

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```

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, unfortunatly. 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 lightsourced 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.

  * CandyFactory should work with a GFX card, as there is now a screenmode
    requester. I cannot check it myself, because I am waiting for the CVPPC.

  * Harddisk.

  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.
    Using AGA you could try 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 WritePixelArray8 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

  Starting CandyFactory will bring up a screenmode requester, which
  defaults to a PAL Highres-laced screen (hi there, Americans :^)
  The minimum resolution available is 326x300, so everything still
  fits on the screen (this will change in the future).

  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 nonshaded version of the picture, you
  can change this to nonshaded by using the materials 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

  Settings menu:

```
                    Enable PowerPC
                     Enable PowerPC CPU
```

When you are happy with your settings, you can save them as a project. Saving a ↩
    project
will bring up a window in which you can select what you want to save:

Checking 'maskpath' will save the path of your mask and automatically load the ↩
    mask when
loading the project.

Initially CandyFactory will check the options you have used for you, but you can ↩
     check
unused effects as well and their settings will be saved, but not applied upon ↩
    loading
the project, although you can ofcourse render them yourself.

Checking 'image settings' will save the settings from the 'Image Settings' menu,
currently only the invert mask option.

When loading a project, you can select which parts you want to load.

1.8   Object/Background Material

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

 - Edit: Select editing object or background material.

 - 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.

 - Load/Save: Load or save the current background or
                            object material.

 - Copy/Swap: Copy selected object or background material
                            to the nonselected background or object
                            material.

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 where
                            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 backgound 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. As there is enough
  interest, you can expect to see:

  - An ARexx port, everything has it these days.
  - Better looking user interface, probably with some patterns and
    bevelboxes.
  - Graphics-card support.
  - Anti-aliasing (first only anti-aliased 24bit save)
  - Animation
  - 24Bit color support (it is all 8bit at the moment)
    (this will enable combinations of effects as well)
  - More effects and surprises, maybe a plugin interface
  - Optimisations.
  - 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.

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.

- 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-qualtity
  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 already tens of 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.

 I already received a lot of positive reactions, which really is a driving
 force for me to continue developing CandyFactory.
 Your reactions are the only reward I get for making CandyFactory, please
 keep them coming.

```
Send any neat pictures,projects or materials you've made to Meni Berman:
  E-Mail: meni@xoom.com (max 5MB)
for display at his CandyFactory gallery page at:
  http://www.xoom.com/members/seed/

Here's my data:

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3434KG Nieuwegein
Netherlands

milan@davilex.nl
milan@geocities.com (goes to above address)

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 collegues 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'

On the serious side, I had a lot of positive response from people around
the world, thanks!
```

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.
```

1.21 History

```
 H I S T O R Y
```

```
V0.5b
  * Load/Save projects
  * Load/Save Materials
  * Copy/Swap object material with background material
  * Loading of variable sized mask picture
  * Added screenmode requester
  * Merged background and foreground materials in one window
  * Object material can be nonshaded

  * Fixed crash with loading complex masks using 68K CPU
```

   * Fixed small C2P bug which trashed maskload image lines
   * ShadowPPC broken and fixed :^)
   * Gadgets of open window where not freed on exit :^o
   * Fixed reset of background to nonshaded with glow/shadow
   * Added more progress bars for 68K mode and busypointers

 V1.54 (temporary version number)
   * Initial release