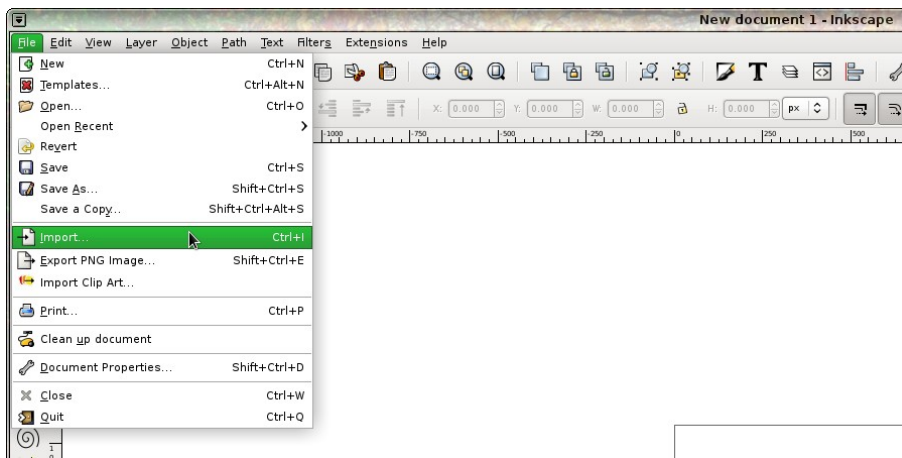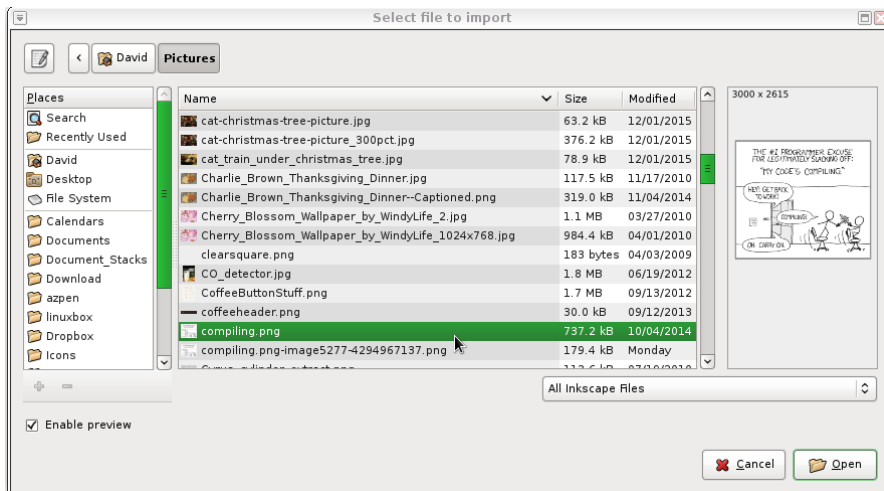# PNG to Gcode
using
Inkscape

Copyright © 2016 David Yockey
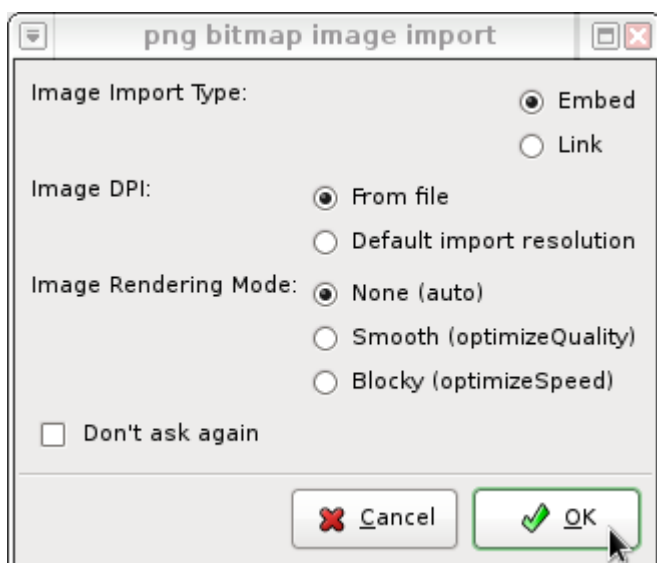
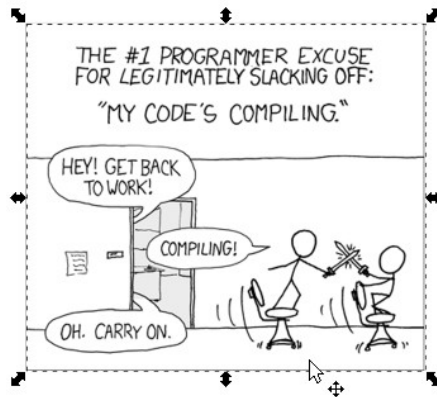Example imported PNG image courtesy of XKCD (http://xkcd.com/303/)

1. Select "Import" from the File menu

2. Select a PNG image to import, and then click "Open"

3. Check that the settings are as shown, and then click "OK"
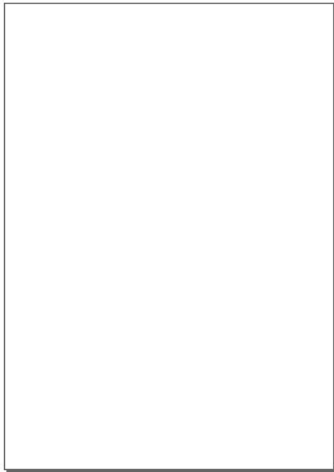
4. Click to select the imported image

5. Click on the Units drop-down list
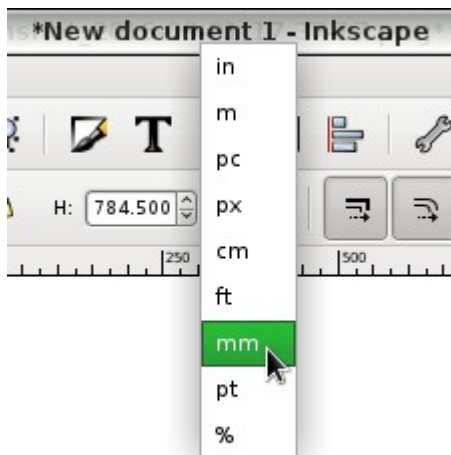
6. Select your desired units from the list
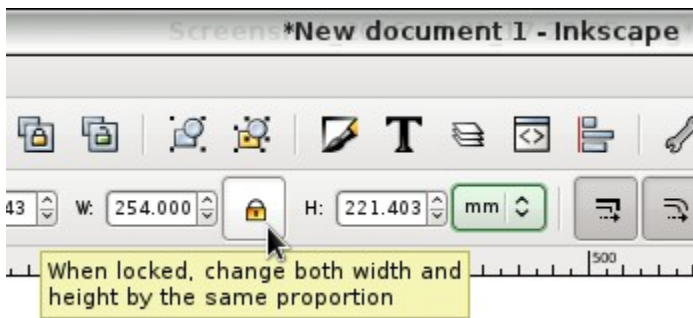
7. Click the Lock icon to lock the image aspect ratio
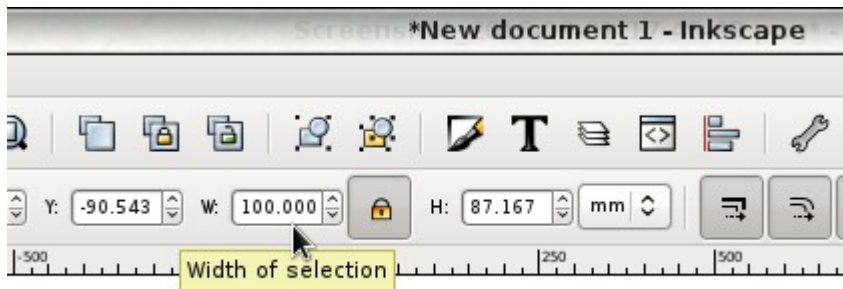
8. Change the Width W or the Height H to the desired image width or height, and hit the Enter key
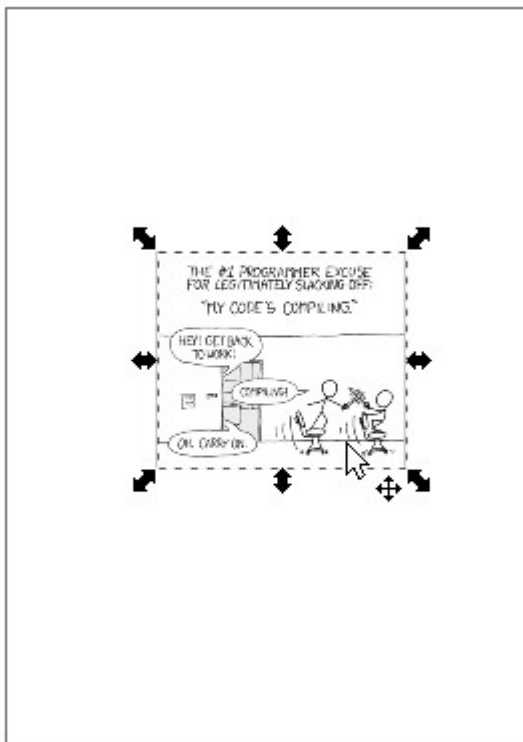
9. If not already there, drag and drop the resized image onto the page outline
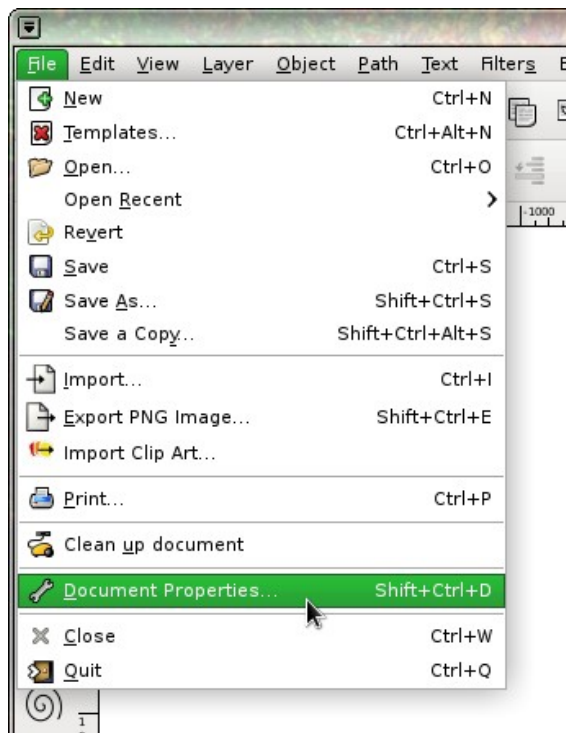
10. Select "Document Properties" from the File menu
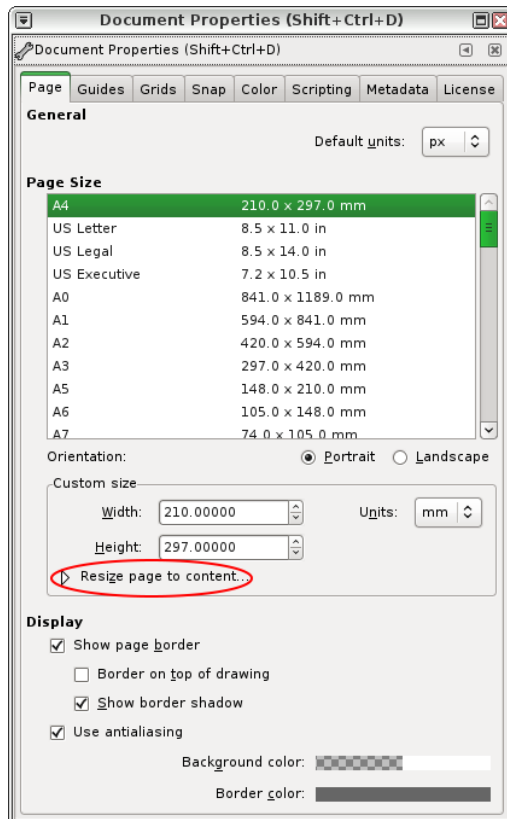
11. Click where indicated to resize the page, and then close the "Document Properties" window

*New document 1 - Inkscape

Path   Text   Filters   Extensions   Help

Object to Path   Shift+Ctrl+C
Stroke to Path   Ctrl+Alt+C
Trace Bitmap...   Shift+Alt+B
Trace Pixel Art...

Union   Ctrl++
Difference   Ctrl+-
Intersection   Ctrl+*
Exclusion   Ctrl+^
Division   Ctrl+/
Cut Path   Ctrl+Alt+/

Combine   Ctrl+K
Break Apart   Shift+Ctrl+K

Inset   Ctrl+(
Outset   Ctrl+)
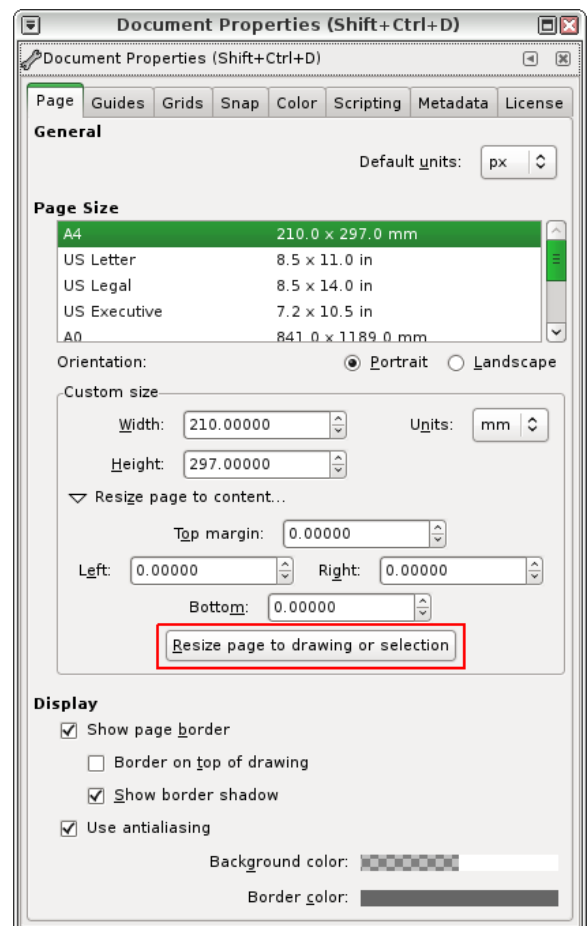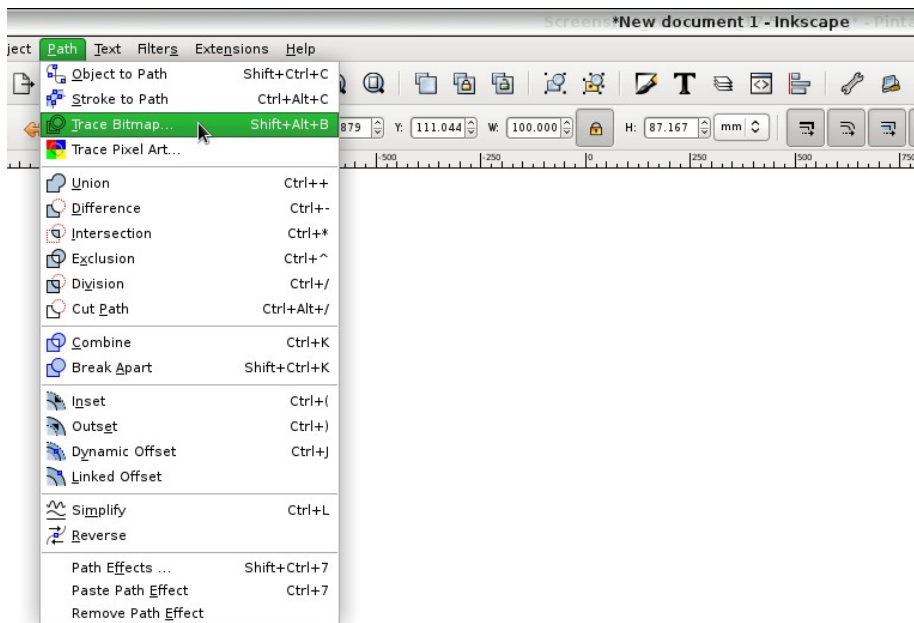Dynamic Offset   Ctrl+J
Linked Offset

Simplify   Ctrl+L
Reverse

Path Effects ...   Shift+Ctrl+7
Paste Path Effect   Ctrl+7
Remove Path Effect

12. With the image selected, select "Trace Bitmap" from the Path menu
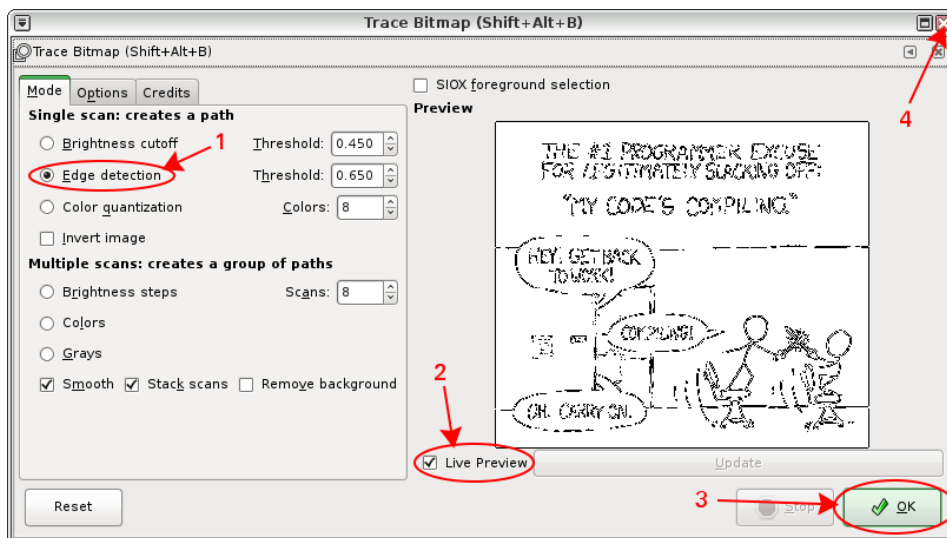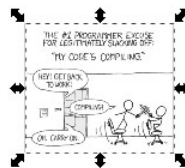
13. Make sure 1 and 2 are set as shown, then click 3, and then 4.

IMPORTANT: After clicking 3, the OK button may be grayed while the Stop button is active. Wait until the OK button is active again before continuing to 4.

Trace Bitmap (Shift+Alt+B)

Trace Bitmap (Shift+Alt+B)

Mode   Options   Credits

Single scan: creates a path
○ Brightness cutoff   Threshold: 0.450   1
● Edge detection   Threshold: 0.650
○ Color quantization   Colors: 8
☐ Invert image

Multiple scans: creates a group of paths
○ Brightness steps   Scans: 8
○ Colors
○ Grays
☑ Smooth ☑ Stack scans ☐ Remove background

☐ SIOX foreground selection
Preview

THE #1 PROGRAMMER EXCUSE
FOR LEGITIMATELY SLACKING OFF!
"MY CODE'S COMPILING."

HEY! GET BACK
TO WORK!

COMPILING!

OH. CARRY ON.

☑ Live Preview   Update

Reset   3   Stop   ✓ OK

2

14. Select "Gcodetools > Path to Gcode..." from the Extensions menu
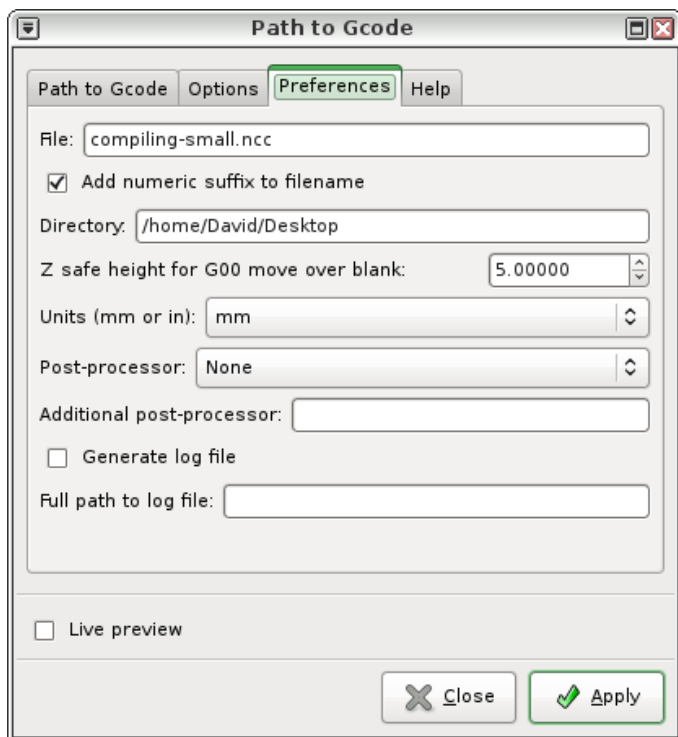
15. On the Preferences tab, type a File name with suitable extension (such as .nc or .ncc) and, if necessary, a Directory where the file will be stored.

Note: The directory shown is in Unix/Linux file format. For Windows, the directory should include the storage drive and backslash separators (e.g. C:\Users\Default\Desktop)

Path to Gcode

Path to Gcode | Options | Preferences | Help

Biarc interpolation tolerance: `1.00000`

Maximum splitting depth: `4`

Cutting order: `Subpath by subpath`

Depth function: `d`

☐ Sort paths to reduse rapid distance

Biarc interpolation tolerance is the maximum distance between path and its approximation.
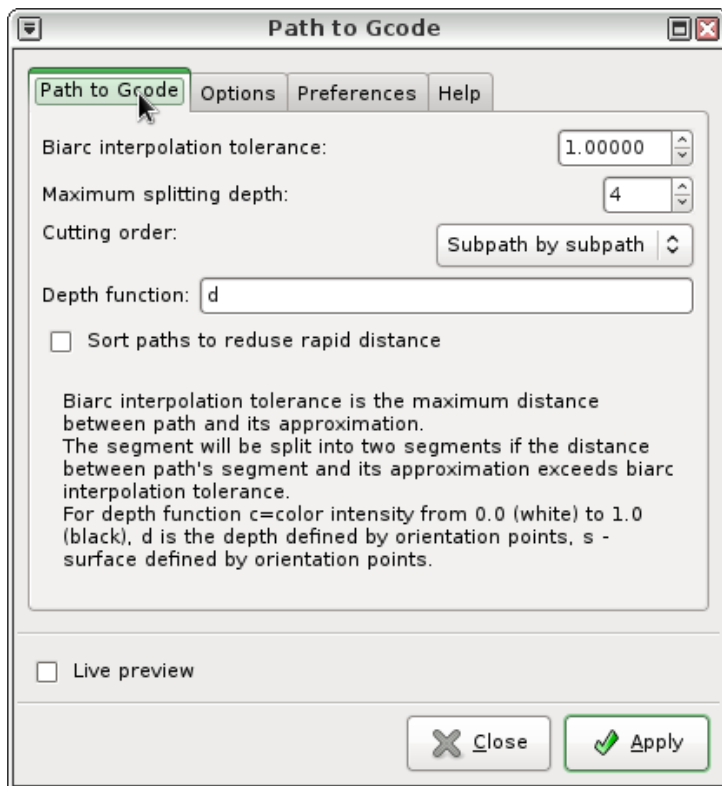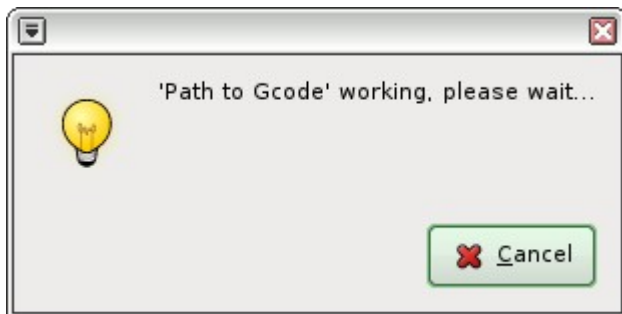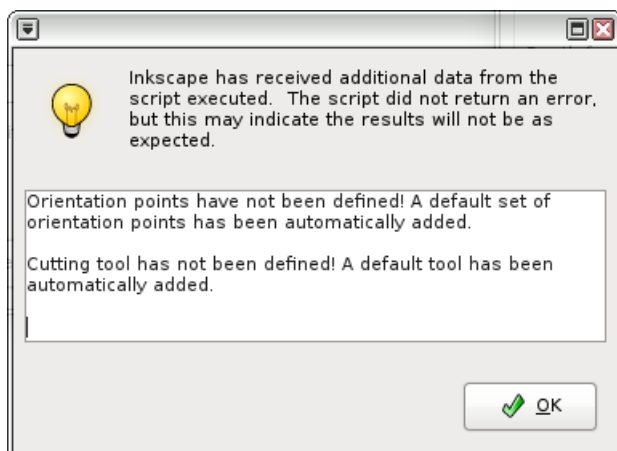The segment will be split into two segments if the distance between path's segment and its approximation exceeds biarc interpolation tolerance.
For depth function c=color intensity from 0.0 (white) to 1.0 (black), d is the depth defined by orientation points, s - surface defined by orientation points.

☐ Live preview

✖ **Close**   ✔ **Apply**

16. Click to the "Path to Gcode" tab, and then click "Apply"

'Path to Gcode' working, please wait...

✖ **Cancel**

17. Wait. It can take a while for it to compile the Path into Gcode, so you can legitimately slack off while you wait.

Inkscape has received additional data from the script executed. The script did not return an error, but this may indicate the results will not be as expected.

Orientation points have not been defined! A default set of orientation points has been automatically added.

Cutting tool has not been defined! A default tool has been automatically added.

✔ **OK**

18. During the wait, a messagebox may pop up with additional information. If no error information is included, then all is well. Click OK to dismiss the box.

Continue waiting until the box from Step 17 disappears. Once again, this may take a while.

name	Default tool
id	default tool
diameter	10.0
feed	400.0
shape	10
penetration angle	90.0
penetration feed	100.0
passing feed	800
depth step	1.0
in trajectotry	(None)
out trajectotry	(None)
gcode before path	(None)
gcode after path	(None)
sog	(None)
spindle rpm	(None)
CW or CCW	(None)
tool change gcode	(None)
4th axis meaning	(None)
4th axis offset	0.0
4th axis scale	1.0
fine feed	800

(0.0; 0.0; 0.0)   (100.0; 0.0; -0.125)
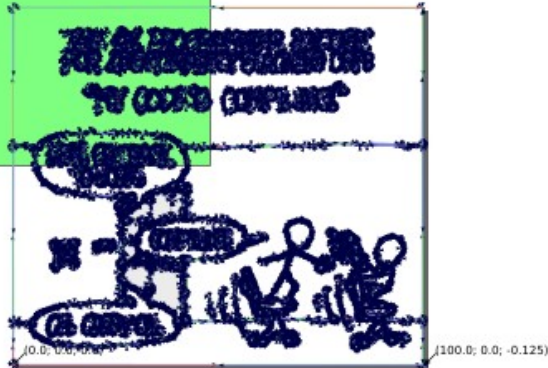
19. When all is done, there should be the image with added orientation points and a descriptive box.

If the "Path to Gcode" box is still open, it can now be closed.

---

compiling-small_0002.ncc

File   Edit   Search   Options   Help

```
%
(Header)
(Generated by gcodetools from Inkscape.)
(Using default header. To add your own header create file "header" in the output
dir.)
M3
(Header end.)
G21 (All units in mm)

(Start cutting path id: path3420)
(Change tool to Default tool)

G00 Z5.000000
G00 X0.199576 Y0.200425

G01 Z-0.125000 F100.0(Penetrate)
G02 X0.165583 Y0.281188 Z-0.125000 I0.082092 J0.082088 F400.000000
G02 X0.141244 Y5.311972 Z-0.125000 I382.633484 J4.366644
G02 X0.172527 Y10.348276 Z-0.125000 I562.343201 J-0.974718
G02 X0.195749 Y10.411549 Z-0.125000 I0.100745 J-0.001077
G02 X0.816729 Y10.664904 Z-0.125000 I0.547611 J-0.454513
G02 X0.981340 Y10.330111 Z-0.125000 I-0.022702 J-0.219026
G01 X0.948597 Y10.310667 Z-0.125000
G02 X0.699905 Y10.314674 Z-0.125000 I-0.096160 J1.751239
G03 X0.450777 Y10.312878 Z-0.125000 I-0.115067 J-1.318787
G03 X0.387629 Y10.282884 Z-0.125000 I0.010555 J-0.103692
G03 X0.360125 Y10.217487 Z-0.125000 I0.066428 J-0.066420
G03 X0.333333 Y5.296808 Z-0.125000 I451.850448 J-4.920679
G01 X0.333333 Y0.365031 Z-0.125000
G01 X0.418925 Y0.332488 Z-0.125000
G03 X0.507497 Y0.316191 Z-0.125000 I0.088736 J0.233429
G03 X50.035658 Y0.300046 Z-0.125000 I49.382358 J75523.901272
G03 X99.553080 Y0.333360 Z-0.125000 I0.000001 J36801.671096
G03 X99.633281 Y0.366623 Z-0.125000 I-0.000153 J0.113689
G03 X99.667037 Y0.446648 Z-0.125000 I-0.081522 J0.081518
G03 X99.699135 Y5.450633 Z-0.125000 I-382.676996 J4.956814
G03 X99.665998 Y10.454702 Z-0.125000 I-384.455991 J-0.043771
G03 X99.632435 Y10.534351 Z-0.125000 I-0.114631 J-0.001505
```

20. The Gcode file should be in the directory specified on the "Path to Gcode" Preferences tab. If desired, this file can be opened in a text editor (such as Notepad) to verify that the Gcode has been generated.