



This bulletin funnels the first in series of printed code listings, collectively titled THE SOURCE, published by Arcangel Surfware. Each booklet compiles the source code of a specific artwork and is printed on acid-free paper using archival toner inks. If stored properly, it will have a lifetime between 100 and 300 years. ISSUE 1, DESKTOP WIREFORM, 2010, reproduced here, provides the Perl script used to generate a series of twisted metal sculptures.

Cover image: Arcangel Surfware logo, extended version

hello world

H.---	E.---	L.---	L.---	0.---	1.---	W.---	0.---	R.---	L.---	D.---
:/:	(\)	:/:	:/:	:/: (5)	:/:	:/:	:/:	:/:	:/:	:/:
()	:V:	()	()	:V:	(1)	:V:	:V:	()	()	()
'--H	'--E	'--L	'--L	'--0	'--(1)	'--W	'--0	'--R	'--L	'--D

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***          |" |          o' \,=. / \ o  o' \,=. / \ o  # <*_>
(o o)        (o o)        (o o)        (o o)        # (o o)
oo0--(_)--0oo-oo0--(_)--0oo-oo0--(_)--0oo-oo0--(_)--0oo-8---(_)--0oo-

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) | (          # <*_>          ' !!!          ' o' \,=. / \ o  o,*,(o o)
(o o)          # (o o)          - (0X0) -          (o o)          8(o o)(_)0oo
oo0--(_)--0oo-8---(_)--0oo-oo0--(_)--0oo-oo0--(_)--0oo-oo0--(_)--0oo-oo0--(_)--0oo-

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Desktop Wireform¹
 Cory Arcangel, 2010
<http://www.coryarcangel.com>
 Requirements: Perl

A perl² file which generates .dae³ data for a line consisting of random XYZ points in 3d space where the Z dimension is always increasing.⁴

“If my kid couldn’t draw I’d make sure that my kitchen magnets didn’t work” — Mitch Hedberg^{5,6}

Sample output: `./perl desktop-wireform.pl > hello-world.dae`

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```

use Data::Dumper;
use XML::Writer;

```

```

#Set Z variable. This is static, because I want these sculptures to have a "stand"7
$random__number__z__old = 11.111869;

#What is the max number of points the sculpture will have?
$range__points = 7;
$random__number__points = int(rand($range__points)) + 1;

#Generate a string of XYZ points.
for ($i = 0; $i<$random__number__points; $i++)
{
    $range__x = 10;
    $random__number__x = rand($range__x) - 5;
    $range__y = 10;
    $random__number__y = rand($range__y) - 5;
    $range__z = (40/$random__number__points);
    $random__number__z = rand($range__z) + $random__number__z__old;
    $random__number__z__old = $random__number__z;

    $string = $string__old . ' ' . $random__number__x . ' ' . $random__number__y . ' ' . $random__
    number__z;
    $string__old = $string;
}

$string = '0.0 0.000000 -0.013131 0.0 0.000000 11.111869' . $string__old;

$weird__string__old = '0';

#Create weird string needed for file format.
for ($i = 1; $i<$random__number__points+1; $i++)
{

    $weird__string = $weird__string__old . ' ' . $i . ' ' . $i;
    $weird__string__old = $weird__string;

}

$weird__string = $weird__string__old . ' ' . $i . ' ' . $i;

#I copied all this crap from a DAE Sketchup outputted, so I have little idea what most of this does.8,9
my $writer = new XML::Writer( OUTPUT => $output );

$writer->setDataMode(1);
$writer->setDataIndent(2);

$writer->xmlDecl( 'UTF-8' );
$writer->startTag( 'COLLADA', 'xmlns'=>'http://www.collada.org/2005/11/COLLADASchema',
version=>'1.4.1' );
    $writer->startTag( 'asset' );
        $writer->startTag( 'contributor' );
            $writer->startTag( 'authoring__tool' );
                $writer->characters( 'Google SketchUp 7.0.10248' );
            $writer->endTag( );
        $writer->endTag( );

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$writer->startTag('created');
$writer->characters('2010-02-19T04:34:41Z');10
$writer->endTag( );
$writer->startTag('modified');
$writer->characters('2010-02-19T04:34:41Z');
$writer->endTag( );
$writer->emptyTag('unit', 'name'=>'inches', 'meter'=>'0.0254');
$writer->startTag('up__axis');
$writer->characters('Z__UP');
$writer->endTag( );
$writer->endTag( );
$writer->startTag('library__materials');
  $writer->startTag('material', 'id'=>'material__0__0ID', 'name'=>'material__0__0');

    $writer->emptyTag('instance__effect', 'url'=>'#material__0__0-effect');
    $writer->endTag( );
$writer->endTag( );
$writer->startTag('library__effects');
  $writer->startTag('effect', 'id'=>'material__0__0-effect', name=>'material__0__0-effect');
    $writer->startTag('profile__COMMON');
      $writer->startTag('technique', 'sid'=>'COMMON');
        $writer->startTag('lambert');
          $writer->startTag('emission');
            $writer->startTag('color');
              $writer->characters('0.000000 0.000000 0.000000 1');
              $writer->endTag( );
            $writer->endTag( );
          $writer->startTag('ambient');
            $writer->startTag('color');
              $writer->characters('0.000000 0.000000 0.000000 1');
              $writer->endTag( );
            $writer->endTag( );
          $writer->startTag('diffuse');
            $writer->startTag('color');
              $writer->characters('0.000000 0.000000 0.000000 1');
              $writer->endTag( );
            $writer->endTag( );
          $writer->startTag('transparent');
            $writer->startTag('color');
              $writer->characters('1 1 1 1');
              $writer->endTag( );
            $writer->endTag( );
          $writer->startTag('transparency');
            $writer->startTag('float');
              $writer->characters('0.000000');
              $writer->endTag( );
            $writer->endTag( );
          $writer->endTag( );
        $writer->endTag( );
      $writer->endTag( );
    $writer->endTag( );
  $writer->startTag('extra');
    $writer->startTag('technique', 'profile'=>'GOOGLEEARTH');
      $writer->startTag('double__sided');
        $writer->characters('1');

```

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$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->startTag('library__geometries');
$writer->startTag('geometry', 'id'=>'mesh1-geometry', 'name'=>'mesh1-geometry');
$writer->startTag('mesh');
$writer->startTag('source', 'id'=>'mesh1-geometry-position');
$writer->startTag('float__array', 'id'=>'mesh1-geometry-position-array',
'count'=>($random__number__points + 2)*3);
$writer->characters('$string');
$writer->endTag( );
$writer->startTag('technique__common');
$writer->startTag('accessor', 'source'=>'#mesh1-geometry-position-array',
'count'=>$random__number__points + 2, 'stride'=>'3');
$writer->emptyTag('param', 'name'=>'X', 'type'=>'float');
$writer->emptyTag('param', 'name'=>'Y', 'type'=>'float');
$writer->emptyTag('param', 'name'=>'Z', 'type'=>'float');
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->startTag('vertices', 'id'=>'mesh1-geometry-vertex');
$writer->emptyTag('input', 'semantic'=>'POSITION', 'source'=>'#mesh1-geometry-
position');
$writer->endTag( );
$writer->startTag('lines', 'material'=>'material__0__0', 'count'=>$random__number__
points + 1);
$writer->emptyTag('input', 'semantic'=>'VERTEX', 'source'=>'#mesh1-geometry-
vertex', 'offset'=>'0');
$writer->startTag('p');
$writer->characters($weird__string);
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->startTag('library__visual__scenes');
$writer->startTag('visual__scene', 'id'=>'SketchUpScene', 'name'=>'SketchUpScene');
$writer->startTag('node', 'id'=>'Model', 'name'=>'Model');
$writer->startTag('node', 'id'=>'mesh1', 'name'=>'mesh1');
$writer->startTag('instance__geometry', 'url'=>'#mesh1-geometry');
$writer->startTag('bind__material');
$writer->startTag('technique__common');
$writer->emptyTag('instance__material', 'symbol'=>'material__0__0',
'target'=>'#material__0__0ID');
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );
$writer->endTag( );

```

```
$writer->endTag( );
$writer->startTag('scene');
    $writer->emptyTag('instance__visual__scene', 'url'=>'#SketchUpScene');
    $writer->endTag( );
$writer->endTag( );
$writer->end( );11,12,14

}

--
```



1.

2. This code is written in the language Perl—a general purpose UNIX scripting language written in 1987 by Larry Wall. It’s a great language, especially for quick no bullshit text hacks. Also, FYI, it’s my favorite language, the first one I learned, and the one I program in most.

3. .dae is an open standard XML schema for exchanging digital assets aka “Digital Asset Exchange”. In English: basically it’s a file format that was developed in order to allow different 3d programs to exchange digital information between each other. Otherwise, a 3d object composed in, say, the 3d program Bryce could not be opened in another 3d program like Maya. [Note: I don’t expect many people to read both the code AND footnote sections of this text, so it is probably worth explaining again ... the above pages of Perl code generate a 3d file in the .dae file format, which, when loaded into a 3d rendering application, manifests as a line of random points where one dimension is always increasing, aka a “bent line.”] I have chosen to generate this 3d file in .dae format because it is the only language I could get Google Sketchup—the 3d program I use—to both export and import, thus allowing me to reverse engineer the .dae file format.

4. So ... each time this program runs, a new bent line is generated as a 3d file. These 3d files can be imported into a 3d rendering program to be viewed virtually, but when writing this program it was my interest to realize these lines as “Sculpture.” ~~Sculpture—~~with a capital S—has come a bit slow to my output, but from the late ’00s on, I have become more and more comfortable with the idea of creating objects while at the same time becoming less and less

comfortable with creating exclusively screen-based performances and software. My discomfort with the virtual is primarily archival. A digital work, let's say a web page, relies on many systems to exist—the power grid, the Internet, a computer, a browser, etc, etc. Since these systems are constantly changing, and are sometimes simply not available—last week the Internet in my studio went out because someone stole the copper wire from the roof of the building to sell as scrap, LOL—they are therefore best thought of as performance or as temporary realizations. And after a decade of temporary realizations, I have taken lately to swinging in the other direction.

5. To realize these 3d objects in IRL, I have been working with a factory in Illinois that has a “CNC wire-form” machine. This CNC machine is a robot whose sole purpose is to bend metal wire. Generally it is used to make springs and mass produced metal objects. Think “Spaceley’s Sprockets and Cogswell’s Cogs.” To turn the shape produced by the above code into an object really is quite easy: I run this program, email the file to the factory, they “print” this file out as a bent metal wire and snail mail me the sculpture. ~~“Boom, there goes the dynamite!”~~

6. Another good line by Mitch Hedberg, “An escalator can never break: it can only become stairs.” Read more at http://www.brainyquote.com/quotes/authors/m/mitch_hedberg.html#dKvX3b4zYUetVldC.99

7. I kinda lied above when I described the sculpture as being “a line of random points where one dimension is always increasing.” This isn’t exactly true, as the bent line always starts out with only the Z dimension increasing—aka straight. This way, a small plate can be welded onto the bottom thus enabling the sculpture to stand.

8. fasdfasdfads

9. AMETURE

10. <http://www.theboombox.com/2009/12/16/biz-markie-cleans-up-itunes-libraries/>

“Biz Markie has been all about the biz lately. The old school rapper has landed a new gig with TuneUpMedia.com to promote the company’s new software that cleans up digital music libraries. In TuneUp’s first major commercial, Biz plays the role of Captain Tune Up showing how the software works along side co-star Andy Milonakis. TuneUp’s software allows iTunes users to add information to mislabeled tracks, find missing cover art and present useful, fun, and contextual information. In other news, Biz Markie keeps the checks rolling in from his popular 1989 hit “Just A Friend.” RadioShack licensed the song for a series of their 2009 holiday commercials. Last year Heineken also enlisted the Biz and the famed track for a national campaign ad.”

11. Corys-Computer:wireforms-generated-for-show coryarcangel\$ ls -l
total 800

```
-rw-r--r--@ 1 coryarcangel coryarcangel 53103 Mar 3 2011 Whitney-Pro-Tools-Wireforms.skp
-rw-r--r--@ 1 coryarcangel coryarcangel 100965 Mar 2 2011 Wireform-Gallery-Whitney.skp
-rw-r--r-- 1 coryarcangel coryarcangel 3208 Feb 27 2011 desktop-1.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3094 Feb 27 2011 desktop-10.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3267 Feb 27 2011 desktop-11.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3374 Feb 27 2011 desktop-12.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3209 Feb 27 2011 desktop-13.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3265 Feb 27 2011 desktop-14.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3262 Feb 27 2011 desktop-15.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3318 Feb 27 2011 desktop-16.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3430 Feb 27 2011 desktop-17.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3378 Feb 27 2011 desktop-18.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3324 Feb 27 2011 desktop-19.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3433 Feb 27 2011 desktop-2.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3268 Feb 27 2011 desktop-20.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3265 Feb 27 2011 desktop-21.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3376 Feb 27 2011 desktop-22.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3210 Feb 27 2011 desktop-23.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3094 Feb 27 2011 desktop-24.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3208 Feb 27 2011 desktop-25.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3378 Feb 27 2011 desktop-26.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3431 Feb 27 2011 desktop-27.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3263 Feb 27 2011 desktop-28.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3152 Feb 27 2011 desktop-29.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3095 Feb 27 2011 desktop-3.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3262 Feb 27 2011 desktop-30.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3096 Feb 27 2011 desktop-4.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3372 Feb 27 2011 desktop-5.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3377 Feb 27 2011 desktop-6.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3315 Feb 27 2011 desktop-7.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3319 Feb 27 2011 desktop-8.dae
-rw-r--r-- 1 coryarcangel coryarcangel 3265 Feb 27 2011 desktop-9.dae
Corys-Computer:wireforms-generated-for-show coryarcangel$
```

12. So, I suppose it is I guess this work which I imagine will that which is archived, as the sculptures will rust and disappear, blah blah blah blah. So it is my hope, that this code will live as a representative of the sculpture. These sculptures are part of a series of stuff I have been making for a few years called "Hello World." WIKIPEDIA: "A 'Hello world' program is a computer program that outputs 'Hello, world' on a display device. Because it is typically one of the simplest programs possible in most programming languages, it is by tradition often used to illustrate to beginners the most basic syntax of a programming language, or to verify that a language or system is operating correctly."

14. Arcangel, from the magazine *Fader* 74:

"With these abstract, computer-generated wire-form sculptures, one thing I considered is that they're just going to look like weird sculptures. You don't have to know anything about how they're made."

It's kind of funny to me that someone will walk in and see them and think that I'm just some kind of sculptor. I press a button, they take me less than a second to make. They look like a lot of sculptures from the '50s, and they're kind of a play on that. If people don't understand that, that's kind of funny."

SCHNIPPER: So are you kind of an asshole then?

ARCANGEL: ~~I like this interview a lot. Put that in bold. Directly after that question, "Are you an asshole?" put, "I like this interview a lot. This is fun."~~ I think one of the ways to make art is to cut down the past, or to invalidate what came before, or to play on it, or to comment on it. It's a more polite way to say part of what I'm doing is making fake versions of art, but that doesn't necessarily translate into me doing something negative. In fact, this process has to happen in order for art to move forward. I'm doing this in good spirit because I think it's cool, but there's an element of criticality to it. Criticality, that's the word art people use for being an asshole.

SCHNIPPER: Why are you so attracted to decrepit things?

ARCANGEL: I think that everything becomes useless, especially in terms of fashion and style and culture and technology. So the question is, Why am I attracted to that transition? I'm either attracted to things that currently have no value, or making work about things that will very shortly have no value. There are these loops in life, and fashion and technology traverse through them, but everyone is just doing the same shit every day over and over again, so none of it really matters.

SCHNIPPER: Do you ever look at something you made afterwards and think it wasn't right?

ARCANGEL: Yeah, totally.

SCHNIPPER: That stinks.

ARCANGEL: But it happens. Sometimes you have to cut your losses and move on. I'm curious which of these will end up in that bin. Certainly some of them have to. It's the law of averages.

SCHNIPPER: Isn't it cool then that it becomes its own unwanted thing?

ARCANGEL: Yeah, totally. ~~Oh, there's the end. That's the perfect end of the interview.~~

*