

# **Noble Ape Source Log**

**28 April 2002 - 6 September 2002**

## **Noble Ape Open Source License**

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This software and Noble Ape are a continuing work of Tom Barbalet, begun on 13 June 1996. No apes or cats were harmed in the writing of this software.

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### **5 August 2002 - 6 September 2002**

ArcFour, documentation, Nervana 0.656, iON etoy code development, multiple windows working, Ocelot, colour interface, August Mailout, new land format

### **25 June 2002 - 4 August 2002**

Multiple window version, graphics hacked down, draw.c, EFF email on Copyright, July Mailout, new random number format

### **12 June 2002 - 24 June 2002**

Multiple window version, Timed element to control menu, small component layout

### **18 May 2002 - 12 June 2002**

May Mailout, window-features, attempted Windows port, Proof-of-Concept port, HTML version of the Nervana Simulation manual, Craig Ubik, five window format, Carbon port, sashimi encryption, open source licensing

### **28 April 2002 - 18 May 2002**

etoy development, new preview section, Nervana 0.655, Ecosim, eight species model for biological simulation in the Nervana Simulation, Chronoscope, Nik Gaffney

## **Log for 09:45 pm, Friday, 06 September 2002**

The landscape/object rewrite feels a little like the multi-window development all over again! Rewriting the basic components and expanding the structure of the simulation...

In parallel to this, I have been thinking about an iON assembler/disassembler model. The iON has always been the overarching OS-like framework quite separate from the character content. The content is raw binary but from this binary, a simple programming language can be extracted - decompiled for want of a better term.

This is fundamentally a text parsing interface to the existing iON;

iON OS <-> iON memory

iON framework (text) -> iON memory

iON memory -> iON framework (decompiled, text)

More over the weekend - good night!

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## **Log for 09:58 pm, Wednesday, 04 September 2002**

A longer source log tonight - many thoughts about changing the Nervana landscape. The first is that a dynamically scalable and programmable Nervana landscape should be the goal. The ability to program a Nervana landscape for tens of thousands of kilometres or miles would be ideal. The descriptive language for this kind of programming is not as trivial. Selecting the right language model and the right descriptive primitives is only the beginning. To date, the Nervana Simulation has been developed on very simple land form models. These have been powerful - they could describe a detailed ecosystem with little processor overhead - but they have reached their limit.

There are three directions the engine could go. A descriptive approach (where every aspect of the landform is described explicitly), an implicit approach (seed generation) or partial seed generation/partial descriptive. Ideally all three options would be covered. The central theme is layered rendering to allow for the biological simulation to exist at a higher level with a subset of the total landscape information. The current model is to expand the nervio file format to allow for a route to dynamic allocation as well as fixed memory landscape rendering.

The interim I have been wading through is a two layer render system. The first - first layer is double the resolution of the existing simulation grid (256 x 256) from that grid a 4x4 area is taken and this is mapped onto another 256 x 256 grid - the second layer. The current simulation has a simulated area of two miles. Assuming the double resolution, 4 miles (6400 meters) represented down to roughly 0.4m or 1 1/3 feet. The first layer has a height resolution delta of 1 metre (or 3.6 feet). The

second layer has a resolution of 0.0625 metre (6.25 cm) or roughly 2 1/2 inches. This fine resolution is very important for accurate rendering. The simulation engine only requires the top layer.

In addition to this work, I want to make the Nervana Simulation object based rather than whole simulation based. This means the definition of structures initially and also the simulation will be driven by the control layer rather than the simulation layer. This is the first development I am planning on implementing. In addition to this, I am returning to the old monochrome interface for the time being to aid the transition.

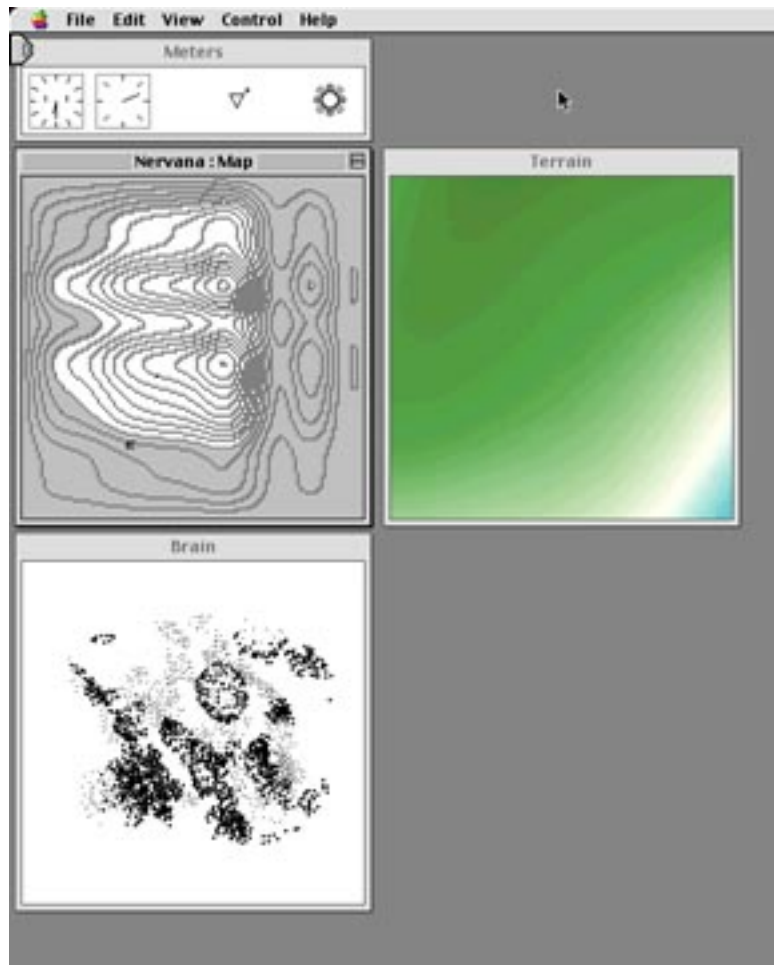
From the object-based simulation, land information can be stripped for the raw information. I want to phase out `get_z` and move `get_op` into the biological simulation layer. This will revive the deceased `biology.c` and make this a run-time compiler option rather than an integral part of the simulation. The second layer landscape grid is based in offsets so only single lines of the grid need to be written at any one time. This will speed up the drawing process considerably. The x/y offset will show the edge of the grid for both the x and y dimensions.

The INWATER macro needs to be reinstated. Previously it was a function, but with the increase in resolution single macros will avoid a number of point rewrites.

Enough for one evening! Good night.

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**Log for 11:01 pm, Tuesday, 03 September 2002**

A somewhat disappointing three days of programming behind the scenes. Below is an image of the output - not yet in CVS. As you can see, the terrain window has been Ocelot-ised however it is a bit low key.



Three points spring to mind;

- (1) New land generating engine needed - at high resolution the landscape looks a little bland;
- (2) This must include an image map equivalent for the landscape, potentially with a colour map as well (ie allow for seasons/time of day in the colouration). But also keep a buffered array of the landscape to avoid endless `get_z` calculations. Of course the array would be full 8-bit with some spanning but little compression.
- (3) The Ocelot interface needs to be at a 1:2 x:y ratio minimum. The current output is 4:5 ratio and thus appears almost top down. It is difficult to establish the dimensionality. This also requires a larger land map buffer to read from (see 2).

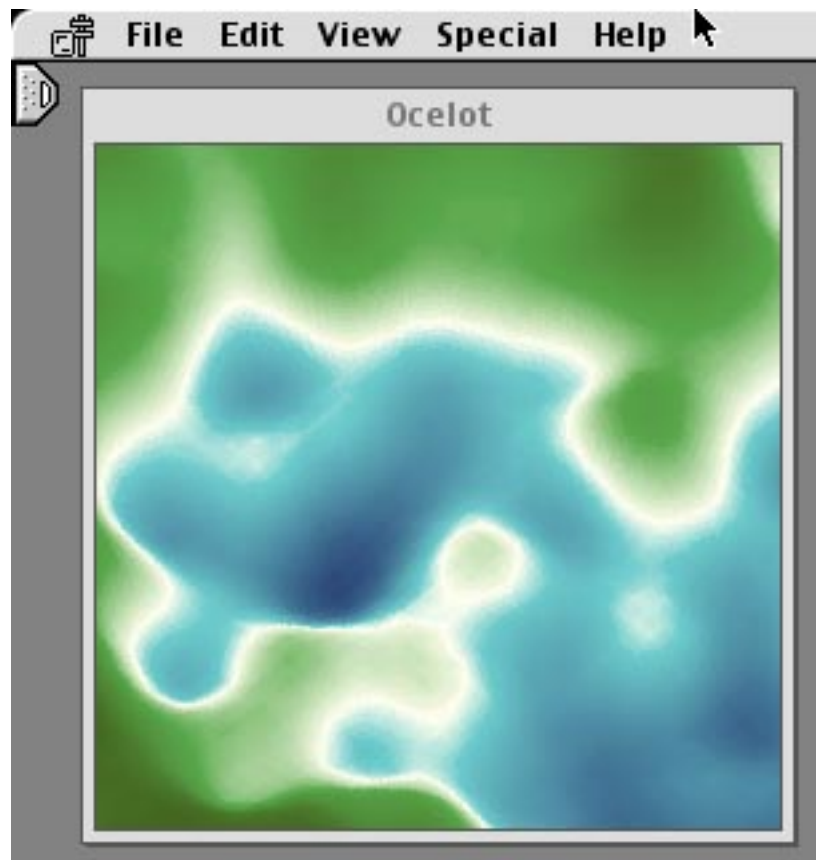
That's about it. What is the next step? Fix the land implementation and the image mapping then ocelot - basically 1 to 3.

Good night!

---

**Log for 10:46 pm, Sunday, 01 September 2002**

Another Ocelot interface screen shot tonight. I have tilted the landscape a little and settled with a 2:3 ratio x:y tilt. More hovering overhead than real-time strategy.



The implementation problem currently is the incompatibility between the B&W window and the colour window description ie CWindowPtr vs WindowPtr. I think some of this was ironed out in Carbon. But it would be nice to have a functioning demo by now!

I have also been working on the technology description doc for the Nervana site. Lots of words - hopefully some pictures and links soon.

Good night.

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**Log for 11:01 pm, Saturday, 31 August 2002**

So much to do with Nervana currently - not just the simulation but the site and getting some organisation for the formal release of Ocelot. I suspect I should hold off the fanfare until I have a Windows version too. Mac-only software doesn't get as much attention.

I have received some email recently about the future of open source and what has happened with open source in the past year. I have written about this a little bit through the source log in the past. My feeling is that commercial open source is pretty well dead. Open source/free source has returned to its roots however there

is still a corporate element.

The nature of the open source license is its legality, it is intended as a legal document. I feel somewhat uncomfortable with that - particularly running an international project and it is the number one reason why Nervana isn't GNU. I don't want a document which binds the project to a US company.

Interest in open source is down. I have a friend who says Ericsson's open source language Erlang is doing well but that could be an inner-fold analysis. And a lot of the fun stuff is not being developed or picked up any more. The infrastructure is still operational and sites like sourceforge provide invaluable resources even if open source is in decline. Back to Nervana...

The mailout provides some dot-points for the site development and I am working on getting the ocelot-beta into the simulation by t'row evening. I don't want to do any more coding tonight because my eyes seem to have limited focus! However I have implemented the grid and display code and it is just a matter of importing the colour information into the current simulation windowing interface and creating a colour version of the Nervana map.

It is a wait and see currently. The rest of the simulation interface may be coloured too. I am not sure yet. Too many other things to do. Slow and thoughtful development seems to be working very well with the simulation currently. More potentially exciting news t'row. Good night!

---

**Log for 10:27 am, Saturday, 31 August 2002**

The August Mailout is online. I have been working on this text for the second part of this month, so it was just a matter of dusting it down and putting in the latest on Ocelot. The mailout can be found here;

[Nervana Mailout - August 2002](#)

More tonight, perhaps.

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**Log for 11:45 pm, Thursday, 29 August 2002**

Working on a workable colour window integration for adding the ocelot interface to the view window and terrain window. I have a prototype but more work is needed and I think it is rather verbose. More hacking needed, but not tonight! The mailout too! Must not forget that. Good night!

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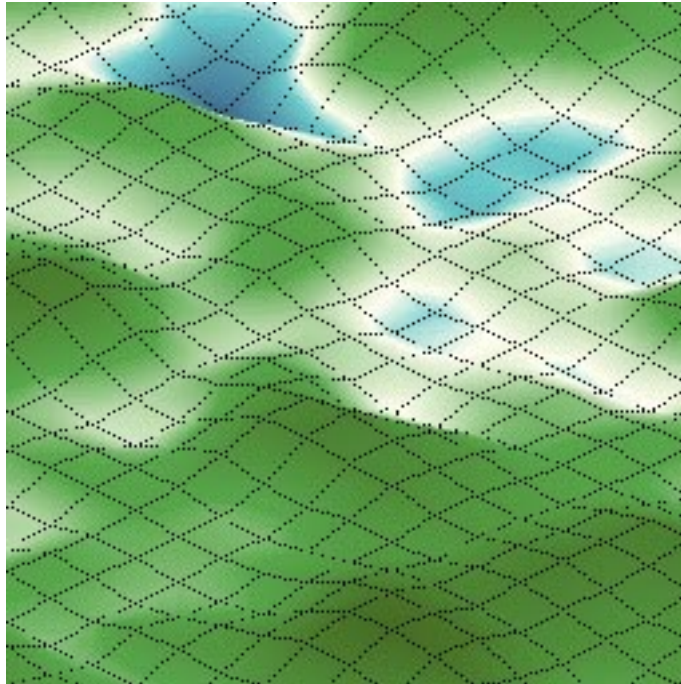
**Log for 10:57 pm, Wednesday, 28 August 2002**

Got ocelot up to 30fps tonight. I am thinking of changing the name on the released source. Any ideas would be greatly received. I have thought about Nervana Looking Glass or NLG. Good night!

**Log for 11:21 pm, Tuesday, 27 August 2002**

Two images for you tonight. One of the Carbon version of the four windows. And the main one, a screen shot of some Ocelot output. I have it calculating 20 fps on my 120Mhz PPC. I should reduce to 10-15 fps when I implement it through the user interface, but still very nice and with some speed improvement - better than OpenGL.





Good night!

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**Log for 10:15 pm, Monday, 26 August 2002**

I have been playing with the new multi-window interface and I think it has opened up the simulation. Some colour in the interface will add something more, but it is on the way. I haven't worked on the mailout today, but I improved the logtrack software (which will go into the next CVS checkin) and hopefully means the source compiles for fickle Windows as well as the already supported Mac OS 9, OS X and CC/GCC Unix flavours. I am thinking of including \*latest\* compiles on the site for the regular followers of the simulation.

The next step is partially colourising the interface on the simulation. I also want to change the core considerably and make all the running of the software occur a layer up. I think this will make the code more modular, but more on that in future logs. Currently there are four windows, in the following order;

Time/Weather (the meter window with all the dials etc)  
Brain (plots the brain function in 3d)  
Terrain (the small landscape display placing the ape in the middle)  
View (the map, or overview or particular species graph)

The latter two lend themselves to colour - perhaps even alpha supported anti-aliased colour. Not wanting to get too far ahead of myself, Ocelot has been developed to deal with the view window and I am working on a simple terrain algorithm as well. Because neither of these views are first person perspective, both are abstract/third person, I am developing new technology with Ocelot. Basically it is a stripped down rendering method similar (in part) to OpenGL.

More soon. Good night!

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**Log for 10:34 am, Monday, 26 August 2002**

I have removed all the known bugs from the multi-window and brought it up to speed. The latest version is now in CVS.

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**Log for 12:23 am, Sunday, 25 August 2002**

Brief edit and update, re-datestamped for about three minutes ago. Good night!

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**Log for 12:22 am, Sunday, 25 August 2002**

A lot to add to tonight's sourcelog. I am debating putting a personal weblog on barbalet.net and hosting the logtrack.c source together with the weblog. The source log here is pretty heavily devoted to the Nervana Simulation and I often feel the four or five lines included here every couple of evenings shows a late night view of me which is not necessarily authentic. I also heavy edit/censor what goes into these source logs. The liberty to free-publish my thoughts has been somewhat censored over the past two-three years.

Two Nervana Simulation points, before I continue with the monologue. Wrote about 500 words on the Nervana Mailout this evening. I hope to have more done t'row and maybe even get it out. I have also been investigating colour interfaces for moving windows on the Mac. Lots of source code downloaded including the Heretic source which was both informative and very well ported to Mac. Now finished with the nerd stuff onto my thoughts for today.

I constantly stumble over sites on the web of developers creating interesting stuff. I want to start embedding links I find and find interesting. The Heretic port for the Mac by Brad Oliver for example;

<http://home.austin.rr.com/boliver/heretic.html>

Or Artistic Style for the Mac (GNU but uncommonly good) which reformats source code - something very needed when porting or reading other's code;

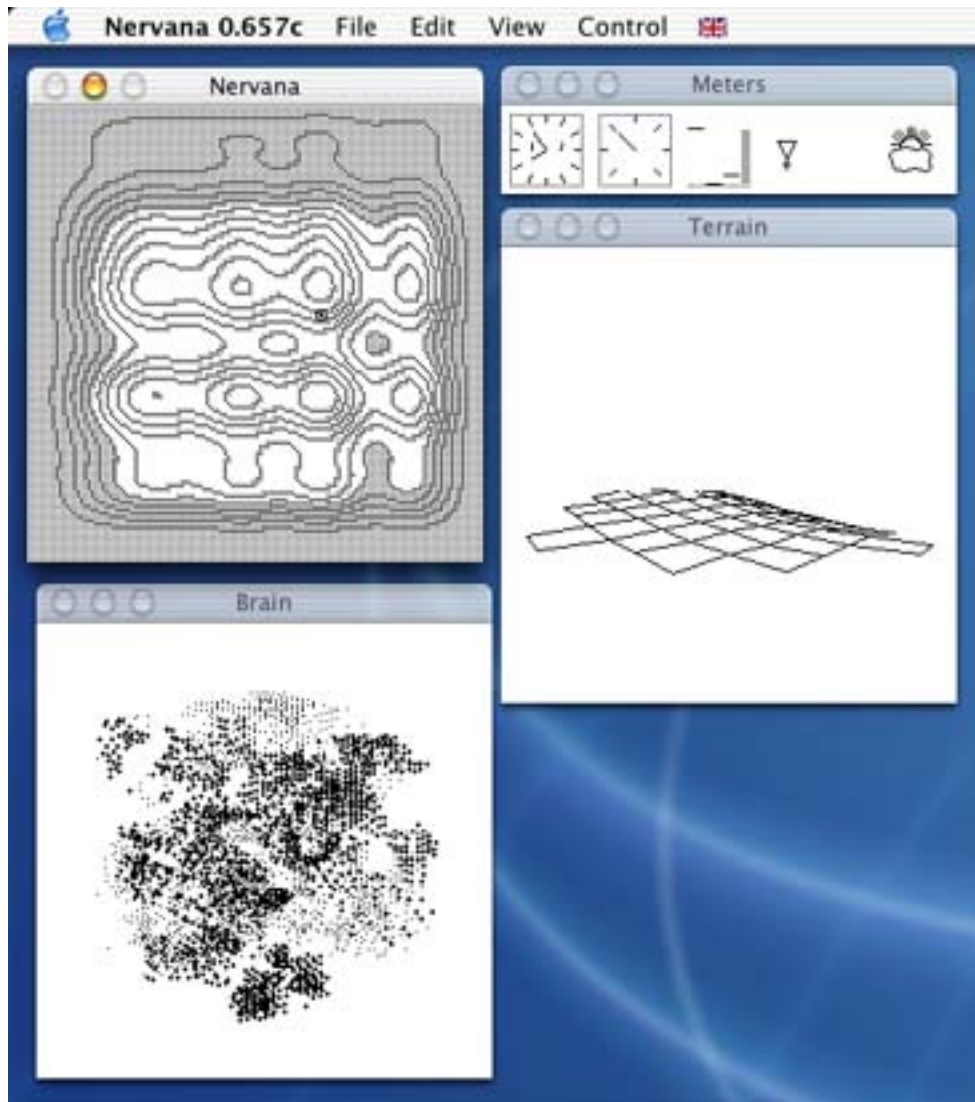
<http://www.bio.ic.ac.uk/evolve/software/astyle/index.html>

Good night!

---

**Log for 09:52 pm, Friday, 23 August 2002**

As promised, the four window Carbon shot. I think the next development MUST be a colour interface. The B&W has gone on too long. Must start on the mailout!



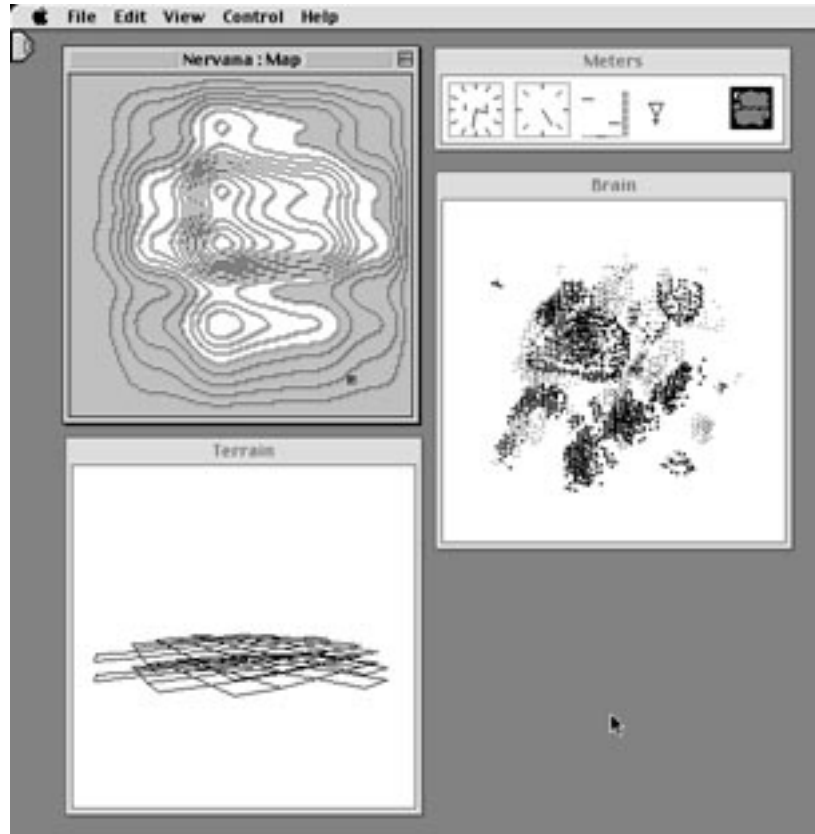
Good night!

---

**Log for 10:29 pm, Thursday, 22 August 2002**

I settled at four windows. Five is too slow with the redraw on my 120Mhz machine. There are still a lot of bugs in this new version, but I am working towards removing them all by release time which still isn't slated. I have to write a Nervana Mailout sometime in the next few days too. I will update the CVS this evening.

Here is a screen shot of the four windows up and running;



Perhaps a Carbon screenshot t'row. Good night!

---

**Log for 09:58 pm, Wednesday, 21 August 2002**

Quite a major update tonight of the past three evenings work on the multi window interface. Still no five window version, but no longer supporting the single window option (perhaps for the time being, I might re-introduce it in the future).

On the platform.c side, everything is supported by arrays now that relate to the windows. No longer naming anything - everything can be transparently called through the OS window selected etc. On the control.c side, a single offscreen buffer which is divided by window usage. The order is based on priority (the most used graphics/windows are at the top). The order will be;

- 0 = time/weather
- 1 = brain
- 2 = terrain
- 3 = map
- 4 = view

Rather than the three or four window sizes, I am sticking with two initially, the time/weather (256 x 50) and the rest (256 x 256). This may change quite soon. I am going to do the initial checkin now and work on multi-windows by the end of this evening (hopefully).

### **Log for 10:56 pm, Sunday, 18 August 2002**

I keep putting off the multi-window version change. Tonight's excuse is that it is too late. I have fixed the profile nexus with two profile functions. The profile counter, just called profile(unsigned char) and draw\_profile() which puts the profile information on the screen. The format for the multi-windows will be numbering;

0 = time/weather  
1 = view  
2 = map  
3 = brain  
4 = terrain

with the potential that 5 = vital signs... It is too late. Good night! PS CVS checkin tonight...

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### **Log for 04:53 pm, Sunday, 18 August 2002**

A new version of the iON etoy developed over the past couple of days. Not as far as I hoped, but maybe something to put in the CVS as a start. Sourceforge has agreed to host this development, but I am a little hesitant currently because it is still going through alpha development. You can find the new code through the preview link (which should be below or on the main site page).

I have been working quite solidly on the Noble Ape parameters in the simulation too. Looking at maintaining health and damage inflicted to limbs, heads, abdomen and even Noble Ape fetuses. The outcome as been: multi windows first - no way to incorporate the level of detail necessary to model/describe injuries in the time/weather window. This is also due to the speed of the simulation. Even with the ape's brain on, the simulations still runs in days per second with timed graphics redraws. Even in the slowest possible mode, the Nervana Simulation runs too fast to allow for a detailed predator/prey analysis to be done visually. Two modes of thought, either slow the simulation down - hardcore colour graphics etc or just create a Utopian environment for the apes to roam around; no predators and minimal injury, just exploring their own cognition. The latter for the time being.

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### **Log for 10:52 pm, Thursday, 15 August 2002**

New iON etoy code in the Preview section for your viewing pleasure.

<http://www.nobleape.com/ion/>

I will strip the Mac resources and put it into CVS in the near future. Good night!

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### **Log for 10:10 pm, Wednesday, 14 August 2002**

The only thing I could find about the recent bug I found in the Carbon version was the menus aren't freed - nor have they ever been freed. This may overwrite the

memory in the one particular case. The window update stuff is solid and nothing would change the window bounds bar a memory leak. Anyway enough of the nerdy stuff.

I have been thinking about totally rewriting ape.c and island.c. They have reached the end-of-the-line for their usefulness in the broader simulation. I would like to re-introduce velocity and energy and move all the ape information into structures that are mirrored in the file format. The data is already mirrored in the file format - bar the brain information. But I think the energy and velocity concepts need to be re-introduced to aid the simulation variance.

Changes also need to be made to island.c to increase the XY resolution and improve the kind of landforms and the size of landforms the simulation can work with. This is all too challenging to describe in a single source log entry. It is early days yet, but the basics should be implemented in the next week or so - initially just noble\_ape and land\_scape structures.

Good night!

---

**Log for 10:22 pm, Monday, 12 August 2002**

Carbon beta of 0.656 online tonight - Nervana 0.656c. I found a minor bug with the window update which shouldn't be noticed by all but the most extreme user. I will put in a fix in the next couple of days and may update it with a 0.656b release.

Looked at the eToyOS tonight too. Expect some more on that in the next couple of days and maybe even a doc or two. Good night!

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**Log for 09:34 pm, Sunday, 11 August 2002**

Nervana 0.656 out! Fixed the file saving issue. Updated the manual and pushed the electrons onto the site. 9 May - 11 August = 94 days. Never again... Release often! Good night.

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**Log for 03:57 pm, Sunday, 11 August 2002**

I was going to release 0.656 today, but there is a problem with the error handling on the files. This is a platform.c + nervio.c problem I have been avoiding but I decided it needs to be fixed. I will work on it in the next couple of days.

---

**Log for 09:51 am, Sunday, 11 August 2002**

Sorry for the lack of log updates. I think the lack of updates actually indicates the work done rather than the lack of work done. A lot of documentation written in the past couple of days - and as you may see from the front page, we now have a new feedback link and a second front page image. I will add more progressively to give a bit of variety.

The documentation has been on five main topics;  
the core of the simulation,  
the graphics layer,  
how to build/make/compile the Nervana Simulation on various platforms,  
an overview of all the technologies in the Nervana Project, and,  
a year game-plan for the Project from now until August/September 2003.

More to do today, but I thought I would write an update log as a stepping stone.  
Good morning!

---

**Log for 10:41 pm, Wednesday, 07 August 2002**

Good evening. Feeling a little Windows port frizzled this evening. Getting a new port up is quite a lot of work - particularly getting the core code compatible. Prototypes - hate them, but somehow they need to be implemented. Similarly after six years of avoiding typedef struct - particularly for apes and islands - I may adapt the code towards the devil's implementation. Nervana Object Oriented? nervio.c was the begining of the end - an XML version of nervio.c ??? Never say never.

Speaking of standards - found this beautiful example of blatant covert development. The history of this is detailed in;

<http://www.mozilla.org/projects/security/pki/nss/draft-kaukonen-cipher-arcfour-03.txt>

The source is pasted below;

```
/* This code illustrates a sample implementation
 * of the Arcfour algorithm
 * Copyright (c) April 29, 1997 Kalle Kaukonen.
 * All Rights Reserved.
 *
 * Redistribution and use in source and binary forms, with or
 * without modification, are permitted provided that this copyright
 * notice and disclaimer are retained.
 *
 * THIS SOFTWARE IS PROVIDED BY KALLE KAUKONEN AND CONTRIBUTORS
 * ``AS
 * IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
 * LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS
 * FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL KALLE
 * KAUKONEN OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT,
 * INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
 * (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
```

```
* OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS
* INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
* WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
* NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
* THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
*/
```

```
typedef struct
{
    unsigned long x;
    unsigned long y;
    unsigned char state[256];
} ArcfourContext;
```

```
void arcfour_init( ArcfourContext *ctx, const unsigned char *key,
    unsigned long key_len);
unsigned long arcfour_byte(ArcfourContext *ctx);
void arcfour_encrypt(ArcfourContext *ctx, unsigned char *dest,
    const unsigned char *src, unsigned long len);
```

```
void arcfour_init(ArcfourContext *ctx, const unsigned char *key,
    unsigned long key_len)
{
    unsigned long t, u;
    unsigned long keyindex;
    unsigned long stateindex;
    unsigned char *state;
    unsigned long counter;
```

```
    state = ctx->state;
    ctx->x = 0;
    ctx->y = 0;
    for (counter = 0; counter < 256; counter++)
        state[counter] = counter;
    keyindex = 0;
    stateindex = 0;
    for (counter = 0; counter < 256; counter++)
    {
        t = state[counter];
        stateindex = (stateindex + key[keyindex] + t) & 0xff;
        u = state[stateindex];
        state[stateindex] = t;
        state[counter] = u;
        if (++keyindex >= key_len)
            keyindex = 0;
    }
}
```

```

unsigned long arcfour_byte(ArcfourContext *ctx)
{
    unsigned long x;
    unsigned long y;
    unsigned long sx, sy;
    unsigned char *state;

    state = ctx->state;
    x = (ctx->x + 1) & 0xff;
    sx = state[x];
    y = (sx + ctx->y) & 0xff;
    sy = state[y];
    ctx->x = x;
    ctx->y = y;
    state[y] = sx;
    state[x] = sy;
    return state[(sx + sy) & 0xff];
}

void arcfour_encrypt(ArcfourContext *ctx, unsigned char *dest,
const unsigned char *src, unsigned long len)
{
    unsigned long i;
    for (i = 0; i < len; i++)
    dest[i] = src[i] ^ arcfour_byte(ctx);
}

long main(long argc, char **argv)
{
    unsigned char dest[500];
    unsigned char mykey[] = {0x29, 0x04, 0x19, 0x72, 0xfb, 0x42,
0xba, 0x5f, 0xc7, 0x12, 0x77, 0x12,
0xf1, 0x38, 0x29, 0xc9};
    unsigned char src[] = "Know thyself";

    ArcfourContext mycontext;

    /* Initialize the algorithm */
    arcfour_init(&mycontext, mykey, 16);

    /* Encrypt 13 bytes of the src string */

    arcfour_encrypt(&mycontext, dest, src, 13);

    /* Now "dest" contains the encrypted string. Do whatever
you please with it... */

    return 0;
}

```

}

The key size with this version can go up to 2kbits, which the compatible corporate cousin can reach as well. It would be nice to expand state to 64k ramping the encryption to 512kbits. Finding 512kbit keys would be challenging to say the least.

Those familiar with my cryptanalysis work on PGP and Blowfish, may wait for updates on Arcfour. Good night!

---

**Log for 09:08 pm, Tuesday, 06 August 2002**

The windows port is coming along at great speed. Finally reached some critical mass with a Win32 machine and VC++ installed. I am trying to make the code look a little more like /mac/platform.c and I have an initial compile working. Maybe a screen shot t'row? Good night!

---

**Log for 10:47 pm, Monday, 05 August 2002**

Finally marched the weblog to the archive. Now a fresh! Lots of bits and pieces. Working on a feedback form for those that visit the Nervana Project website and for the next release of Nervana - due out this weekend (perhaps).

Pulled some C source together for a Win port. Stopped the 68000 back port idea for the time being. The 'can only multiply bytes' is driving me a little spare.

I have been thinking about optimisations to ape.c. Will have to save those for another evening. Good night!

---

**Log for 08:27 pm, Sunday, 04 August 2002**

Lots of work in the simulation core over the weekend and began the technical note on the gui layer too. A new random number generator with two unsigned 16-bit seeds, lots of dead code removed. Variables hacked and a better access to the island height and optimised the other operator calls. Now for the CVS check in. Good night!

---

**Log for 11:06 pm, Friday, 02 August 2002**

Today's problem has been the 68000 vs PowerPC incompatibility. It seems to centre on the random number generation. I have been toying with the following algorithm which is currently used in the Nervana Project's own fishyfish;

```
/* A C-program for TT800 : July 8th 1996 Version */
/* by M. Matsumoto, email: matumoto@math.keio.ac.jp */
/* genrand() generate one pseudo random number with double precision */
/* See: ACM Transactions on Modelling and Computer Simulation, */
/* Vol. 4, No. 3, 1994, pages 254-266. */
```

```

unsigned long gr_x[25]={ /* initial 25 seeds, change as you wish */
0x95f24dab, 0x0b685215, 0xe76ccae7, 0xaf3ec239, 0x715fad23,
0x24a590ad, 0x69e4b5ef, 0xbf456141, 0x96bc1b7b, 0xa7bdf825,
0xc1de75b7, 0x8858a9c9, 0x2da87693, 0xb657f9dd, 0xffdc8a9f,
0x8121da71, 0x8b823ecb, 0x885d05f5, 0x4e20cd47, 0x5a9ad5d9,
0x512c0c03, 0xea857ccd, 0x4cc1d30f, 0x8891a8a1, 0xa6b7aadb
};

```

```

unsigned long mg[2]={
0x0, 0x8ebfd028 /* this is magic vector `a', don't change */
};
unsigned short genrand_k = 0;

```

```

unsigned long genrand()
{
unsigned long y;

```

```

if (genrand_k==25) { /* generate 25 words at one time */
gr_x[ 0 ] = gr_x[ 7 ] ^ (gr_x[ 0 ] >> 1) ^ mg[gr_x[ 0 ] & 1];
gr_x[ 1 ] = gr_x[ 8 ] ^ (gr_x[ 1 ] >> 1) ^ mg[gr_x[ 1 ] & 1];
gr_x[ 2 ] = gr_x[ 9 ] ^ (gr_x[ 2 ] >> 1) ^ mg[gr_x[ 2 ] & 1];
gr_x[ 3 ] = gr_x[ 10 ] ^ (gr_x[ 3 ] >> 1) ^ mg[gr_x[ 3 ] & 1];
gr_x[ 4 ] = gr_x[ 11 ] ^ (gr_x[ 4 ] >> 1) ^ mg[gr_x[ 4 ] & 1];
gr_x[ 5 ] = gr_x[ 12 ] ^ (gr_x[ 5 ] >> 1) ^ mg[gr_x[ 5 ] & 1];
gr_x[ 6 ] = gr_x[ 13 ] ^ (gr_x[ 6 ] >> 1) ^ mg[gr_x[ 6 ] & 1];
gr_x[ 7 ] = gr_x[ 14 ] ^ (gr_x[ 7 ] >> 1) ^ mg[gr_x[ 7 ] & 1];
gr_x[ 8 ] = gr_x[ 15 ] ^ (gr_x[ 8 ] >> 1) ^ mg[gr_x[ 8 ] & 1];
gr_x[ 9 ] = gr_x[ 16 ] ^ (gr_x[ 9 ] >> 1) ^ mg[gr_x[ 9 ] & 1];
gr_x[ 10 ] = gr_x[ 17 ] ^ (gr_x[ 10 ] >> 1) ^ mg[gr_x[ 10 ] & 1];
gr_x[ 11 ] = gr_x[ 18 ] ^ (gr_x[ 11 ] >> 1) ^ mg[gr_x[ 11 ] & 1];
gr_x[ 12 ] = gr_x[ 19 ] ^ (gr_x[ 12 ] >> 1) ^ mg[gr_x[ 12 ] & 1];
gr_x[ 13 ] = gr_x[ 20 ] ^ (gr_x[ 13 ] >> 1) ^ mg[gr_x[ 13 ] & 1];
gr_x[ 14 ] = gr_x[ 21 ] ^ (gr_x[ 14 ] >> 1) ^ mg[gr_x[ 14 ] & 1];
gr_x[ 15 ] = gr_x[ 22 ] ^ (gr_x[ 15 ] >> 1) ^ mg[gr_x[ 15 ] & 1];
gr_x[ 16 ] = gr_x[ 23 ] ^ (gr_x[ 16 ] >> 1) ^ mg[gr_x[ 16 ] & 1];
gr_x[ 17 ] = gr_x[ 24 ] ^ (gr_x[ 17 ] >> 1) ^ mg[gr_x[ 17 ] & 1];
gr_x[ 18 ] = gr_x[ 0 ] ^ (gr_x[ 18 ] >> 1) ^ mg[gr_x[ 18 ] & 1];
gr_x[ 19 ] = gr_x[ 1 ] ^ (gr_x[ 19 ] >> 1) ^ mg[gr_x[ 19 ] & 1];
gr_x[ 20 ] = gr_x[ 2 ] ^ (gr_x[ 20 ] >> 1) ^ mg[gr_x[ 20 ] & 1];
gr_x[ 21 ] = gr_x[ 3 ] ^ (gr_x[ 21 ] >> 1) ^ mg[gr_x[ 21 ] & 1];
gr_x[ 22 ] = gr_x[ 4 ] ^ (gr_x[ 22 ] >> 1) ^ mg[gr_x[ 22 ] & 1];
gr_x[ 23 ] = gr_x[ 5 ] ^ (gr_x[ 23 ] >> 1) ^ mg[gr_x[ 23 ] & 1];
gr_x[ 24 ] = gr_x[ 6 ] ^ (gr_x[ 24 ] >> 1) ^ mg[gr_x[ 24 ] & 1];
}
y = gr_x[genrand_k];
y ^= (y << 7) & 0x2b5b2500; /* s and b, magic vectors */
y ^= (y << 15) & 0xdb8b0000; /* t and c, magic vectors */
y ^= (y >> 16); /* added to the 1994 version */

```

```
genrand_k++;
return( y );
}
```

I am working on a modified 16-bit version. I am going away for the weekend - so the usual weekend updates may be a little thin! Good night and have a great weekend!

---

**Log for 10:48 pm, Thursday, 01 August 2002**

I was working on the first technical note this evening on the simulation core and it reminded me of some optimisation that was needed. So I pulled all the signed char and char values from the simulation core. Fixed a couple of the unsigned longs and did more general optimisation (heaps of OR instead of ADD). Next stage is fixing the evil file handling in platform.c. A check in to the CVS and then good night!

---

**Log for 08:44 pm, Wednesday, 31 July 2002**

I have been away for the past couple of days in the south of England. Before I left, I began work on a technical note/bug track generator. Similar to the source/web log, similar kind of interface, but with auto linking and indexing for reference purposes. I should have it online and operational next week some time.

The source log (ie this) has been a reasonable success. The development of the Nervana Simulation has been tracked through the log - but it doesn't provide a good reference guide and it isn't technically oriented. So I hope the new tool will create fast and interlinking technical documentation on the Nervana Simulation.

From there I also want to include this development tool for the etoyOS and sashimi. More soon, and it is good to be home!

---

**Log for 05:03 pm, Saturday, 27 July 2002**

New Nervana Mailout online - nothing as exciting as these logs, but still something to recap for the month. I am trying a shorter format;

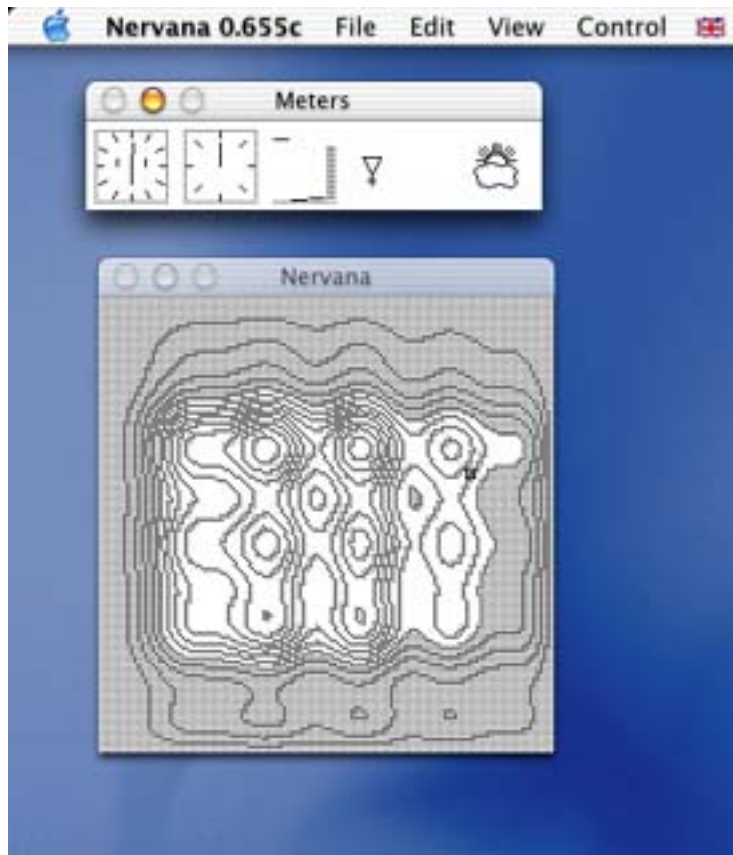
[Nervana Mailout, July 2002](#)

Please let me know what you think. The extended version is chronicled in the logs.

---

**Log for 06:49 am, Friday, 26 July 2002**

An AM update for a change. Checked in some type checking post Windows compile. Still a couple more fixes in nervio.c. Wrote the Nervana Mailout last night. Should have that out this weekend - have to HTMLise it etc. Have been meaning to put this image online for a while;

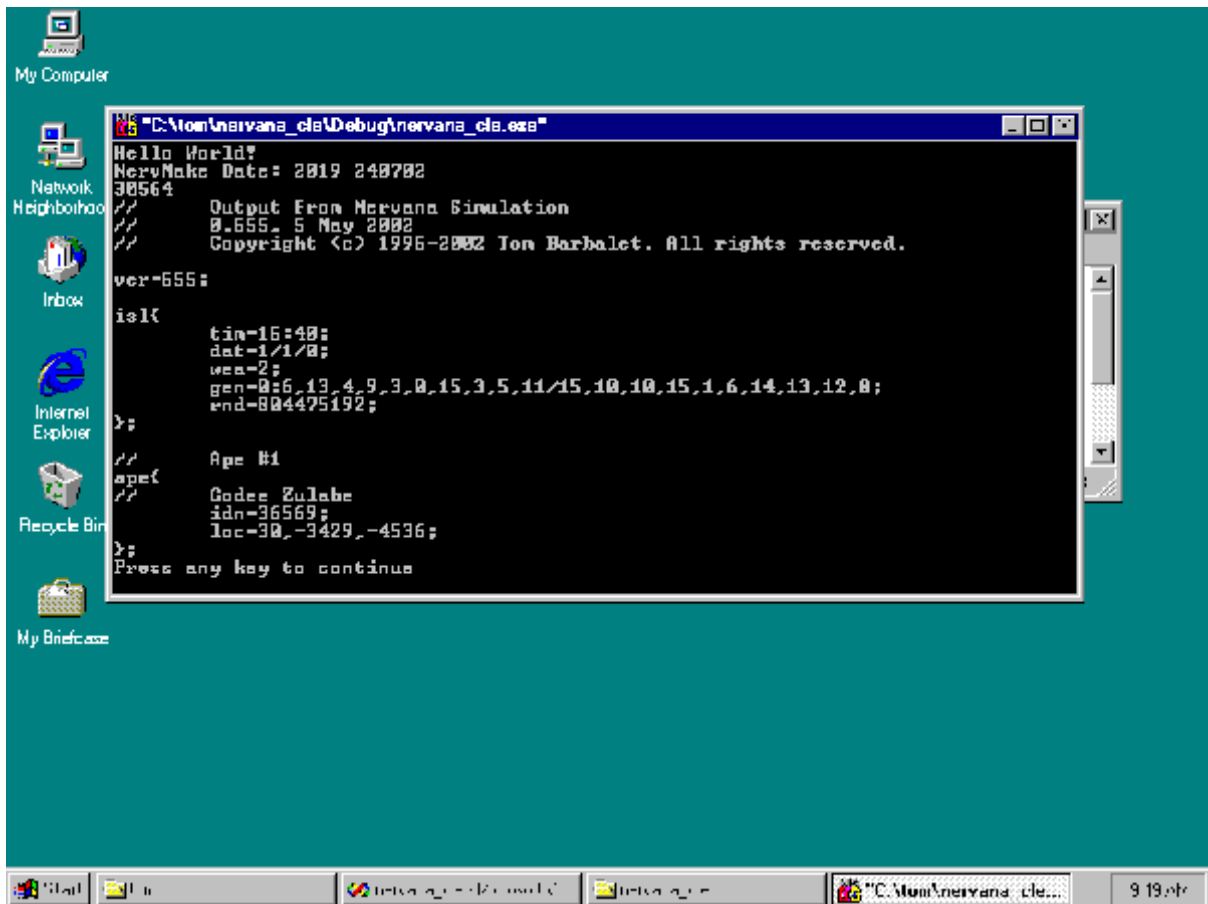


The two windows Carbon version compiled last week. And a good morning from cloudy Manchester!

---

**Log for 10:34 pm, Wednesday, 24 July 2002**

A progressive step this evening for a Windows implementation of the Nervana Simulation. Shown in pictorial form;



This is Nervana CLE running on Windows NT. What this shows is that all the core - including nervio.c - functions on Windows. Some interesting warnings in the VC++ compile which will have to be sorted. Most in nervio.c but one basic one in island.c, but all that for another evening. I have fixed /recsrc/ and hopefully made it a little more novice friendly. Good night!

---

**Log for 09:33 pm, Tuesday, 23 July 2002**

I think, aside from the platform and interface updates, the simulation core requires a little re-development currently. In particular the simulation's cat population - the Fierce Felines - have not been represented in the general simulation to-date.

Perhaps the Noble Ape is becoming a little too complacent with the island of Nervana? Writing the implementation logic for the Fierce Feline relies on them being relatively cognitively similar to the Noble Ape's only with smaller brains.

More on this in future weblogs. Good night!

---

**Log for 12:09 am, Monday, 22 July 2002**

Updated my history page after a year. Didn't really add too much. Cropped the text a little and added an update for the past year. I also pulled the John Draper Interview. After seven years of maintaining this interview - he has nothing to do with the

Nervana Project and I am not interested in maintaining the myths associated with this unsavoury character. Good night!

---

### **Log for 10:49 pm, Sunday, 21 July 2002**

Lots of bits and pieces checked in this evening. Next and Previous Ape menu commands which allows more than one ape in Proof of Concept mode and reduces the need of any 'secret' keys.

Some optimisation and a bug from the last check in fixed - not to mention removing math.h in all but one case (Ape Brain On, Hi Resolution Z Off).

Some work done on the mailout but unfortunately just another draft. Perhaps some progress this week. Good night!

---

### **Log for 11:29 pm, Thursday, 18 July 2002**

A lot of sundry housekeeping things. Since the constant attachments received problem of June 2002, I have been using email filtering. With the new fee structure coming in for mac.com, I did some housekeeping on my internic registrations. No, I am not going to pay US\$49.95 to Apple Computer. I think the tactic is really underhanded actually. I culled all my Hotmail accounts bar one (which will go eventually) for similar reasons. Pretty soon there will be no free internet left. But all my email accounts are now centrally filtered and it is a luxury! In fact, I have received email from people asking how they can generate automated filtering too. For those receiving 50+ unsolicited email a day, it is the only way to go.

Onto Nervana Project news - got a nice response from the Electronic Frontier Foundation;

*Hi Tom,*

*You are correct in that the U.S. allows people to register a work for copyright, but it is not entirely necessary. Basically, as soon as an original expression enters a "tangible medium" like paper, magnetic disks, etc., it becomes copyrighted. Therefore, your work should still be copyrighted in the U.S. even if you haven't "registered" it.*

*That's my take on it, but I would advise you to seek out competent legal counsel. If you need help finding it, we can probably be of some assistance. Hope this helps!*

*Best,*

*Ren*

*Ren Bucholz*

*Activist*

*Electronic Frontier Foundation*

Such a clean-cut bunch of activists.

Aside from that, I have been working on the new Nervana Mailout. Mixing the best from June and my rough edit for July. Will have it out? By the end of the weekend dare I say.

Tested a Carbon compile of the new multi-window Nervana and I fixed the click outside the window bug (lousy inDesk:...) so it run flawlessly. I think this might be the 0.656 release?! Documentation?

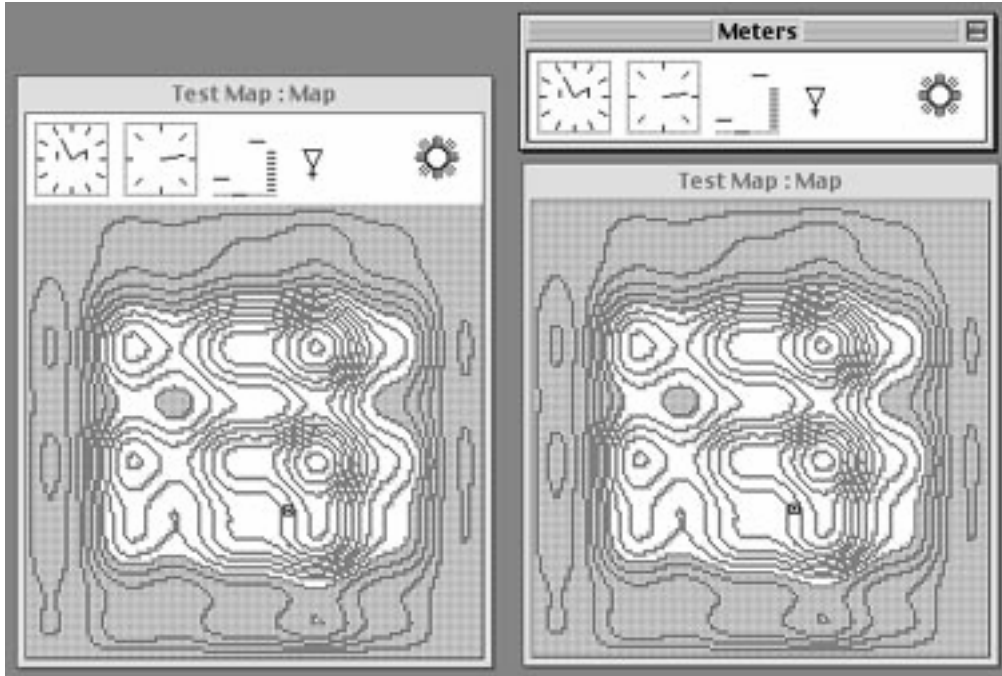
Good night!

---

**Log for 07:20 pm, Wednesday, 17 July 2002**

Two window interface up and running and a number of minor fixes in platform.c and island.c made over the past couple of days. The island accessing should be much faster and the look and feel of the Simulation has never been better. I am debating an early release of 0.656 with a central core library and a number of interface applications.

With that in mind, here is a picture of the same island, at the same time, running on a one and two window version of the simulation. I have since simplified the island drawing which should improve the resolution.



Major CVS check in with all the changes over the past three days! Good night!

---

**Log for 10:17 pm, Sunday, 14 July 2002**

Almost finished the ambitious one compile for multi and single windows this evening. Then the washing machine broke, the flooding that ensued took the remainder of the evening. Maybe early next week the CVS will be updated and with even more luck - the washing machine will get fixed. Good night!

---

**Log for 11:20 pm, Saturday, 13 July 2002**

I got the basic multi-window version of the Nervana Simulation working today. Now I have gotten this far, I am actually going back to the platform and gui code to get something more uniform to make the port easier.

What I am aiming to do is share all the files from display.c and draw.c. Potentially with some #if statements it may be possible to use control.c as well. This is the current development question. The first stage is to develop a two window platform version.

In attempting to maintain all functionality, the process is taking much longer than expected. It has been nearly two months since the last Nervana Simulation release. I am sure the wait will be worth it! Quite an update to the CVS! Good night!

---

**Log for 10:17 pm, Friday, 12 July 2002**

This is an interesting interface to Nervana I pulled together this evening. Basically it is a CLE compile built around a platform interface so it can include a simple menu with Quit and also plug into the operating system event structures. A tight simulation loop;

```
void main(){
short    lp;
unsigned long  timer;
    init_platform();
    isl_seed=timecall()+(timecall())>>16);
    init_island(1);
    init_ape(1);
    outputfile();
    while(cycle_event()){
        timer=timecall();
        while((timer+4)>timecall()){
            lp=0;
            while(lp<CYCLESPEVENT){
                cycle_island(1);
                cycle_ape();
                lp++;
            }
            if((timecall()&127)==0)
                outputfile();
        }
    }
}
```

```
}
  close_platform();
}
```

But most importantly, roughly every two seconds a file is written to disk called 'nerv.html'. This file is a reloading HTML file which updates about once every five seconds. A web browser picks up the nerv.html file whilst the simulation is running and there is a regularly updating text interface to the Nervana Simulation?!

It seemed like a good idea at the time and it might be something worth adding in future versions - perhaps as a compile-time option.

The development of NervMake continues. I am thinking of adapting the CTH file reader. It will be in the format;

```
input file (laden with /*NERVMAKE= etc)
output file
input file
output file
etc
END
END
```

Potentially with included comment filtering or the comments at the end. I am still undecided.

This weekend? The potential for the multiple window development. Maybe just a quiet weekend. I will wait and see! Good night.

---

### **Log for 11:20 pm, Thursday, 11 July 2002**

Fixed nervmake and checked it back in. Still not externally driven, but getting a lot closer. Soon for an additional page on the site specifically devoted to NervMake.

Something really interesting - well, for me at least;

```
X-Sender: (Unverified)
Date: Thu, 11 Jul 2002 23:14:34 +0100
To: ask@eff.org
From: Tom Barbalet <tom@nobleape.com>
Subject: Open Source and Copyright outside the US
Status:
```

Dear Electronic Frontier Foundation:

From 1996, I have developed a "Free as in Free" Software Simulation Project called the Nervana Project ([www.nobleape.com](http://www.nobleape.com)). Since 2001, I have developed it under an open source license. I have always included a Copyright from 1996 on

the software developed for the Nervana Project. I became a little concerned recently, because these copyrights were not registered, they would not be recognised in the US.

I have read that the legal rights in free/open source come primarily from the copyright.

In the UK where I am based, there is no central recorded copyright like there is in the US. If I understand correctly, in the US, the Copyright office administers copyrights and stores the information in the Library of Congress. It gives the copyright holder a certificate or some processing document which shows the date the copyright is lodged.

In the UK this doesn't exist. The UK patent office prides itself in the fact that creative folk don't have to register their copyright in a central location (or get a charged fee). Merely putting the (c) on work identifies it as copyrighted.

I can show copyright for the Nervana Project outside the US - but does the US recognise UK copyright which produces no paperwork bar the creator's own copyright mark?

What reference does free/open source have legally in countries without certified copyright?

Thank you for your feedback.

Best regards,

Tom Barbalet  
Founder, the Nervana Project.

---

I thought I might email it to the Free Software Foundation too. But I decided to wait until I got a response from EFF.

Good night!

-----  
**Log for 10:50 pm, Wednesday, 10 July 2002**

Brief flirtation with the Windows port earlier in the week, then I quickly moved on to updating nervmake to make it into a multiple interface make utility. Some additional features I would like to add like defining a date format embedded into the nervmade file. Making the whole thing automated but not scripted is the aim.

Aside from that, I have been thinking about the next step forward and what graphics features need to be removed even more. And of course the multi window interface.

Another point which comes up in my thinking roughly once every six weeks or so - simulation based programming extensions. Perhaps based on the nervio format,

but ideally more programmable. More active programming rather than variable setting. I guess it would take the form of an interpreted language. Something I have made numerous notes on - particularly for cognitive structures, development, handling et al.

Good night!

---

**Log for 08:10 pm, Sunday, 07 July 2002**

Major check-in tonight. I have divided the functions in GUI by their graphics level.

Level 1 (most basic) is found in display.c (nothing new there)

Level 2 (middle graphics) is found in draw.c

Level 3 (upper graphics) is found in control.c

The multi-window 'lota' development will use all but control.c and maintain the same look for all the graphics components. In addition, I removed the show\_cond function which has haunted the Nervana Simulation for many years. Good night!

---

**Log for 09:40 pm, Thursday, 04 July 2002**

Updated the site updater - if that is a proper sentence! The multi-window development is still causing some last minute reworking. Some of the redevelopment is optimisation, other parts are stream-lining the development. My current inclination is to create an additional file for all the low level drawing functions. Move the second level functions into display and maintain the high-level functions with control.c .

I have print outs of the gui and platform function mapping which I am working from. Hopefully that will give a better idea of the modifications needed. I want to create a new interface will inherit as much of the existing GUI layer as possible.

Enough with the rhetoric. Good night!

---

**Log for 08:57 pm, Tuesday, 02 July 2002**

Nervana's sixth anniversary! So last month... Sorry, just needed something for the index quote. Must amend that text sometime in the near future. I discovered a bug in the most recent compile of the Nervana Simulation - only the hardcore would find this - but the redraw active ape section misses when the ape moves through a sharp transition between Brain to Map say. Anything to Map can produce this effect.

The solution is the movement to a multi-window interface. I know why the bug occurs. The draw/erase/redraw cycle is built around the simulate call in the main OS event loop. The change state called through menu changes comes outside that event loop. This is a lingering bug which I have tried to fix by changing the draw

erase structure. But the improved solution on all fronts is to change the interface structure all together. The first implementation of the multi-window interface should be finished in the next couple of days - if not later this evening. The first subdivision is removing the time/weather information to another window. This should test some of the concepts already developed for a multi-window interface.

From here, the next stage is to rewrite the third level draw functions. The lower level functions such as draw\_apeloc and nerv\_line (second and first level respectively) can maintain their appearance. But the third level draw functions (control\_ typically) have to change to allow for the multi-window structure.

Enough talk - more code. Good night!

---

### **Log for 06:58 pm, Sunday, 30 June 2002**

No Nervana Mailout this month. I have about 1,500 words written but just haven't had the time to add the additional 1,000 words and edit it down. The two main time consuming reasons are (i) my email getting shut down - finally tracked down the email address concerned, now to wait for the corporate ISP to take action zzz... - and (ii) the multi-window version of the Nervana Simulation.

I am doing most of the multi window work on paper. In the process, debating keeping a central platform compile and offering an option for a multi-window version. The platform.c code is already divided by Proof of Concept and the Carbon port on the Mac. The other option is to maintain a code frozen single window interface and develop the multi-window version as the central version. This would have some advantages for establishing a compitent Windows port of the Nervana Simulation.

I have been debating introducing a task list for the main Nervana Simulation Page as something which could be updated at roughly the same pace as the weblog. This could take two forms. The first is a relatively automated process involving a spreadsheet or some compiled C to parse a text file and create a webpage - or it could just be manually updated.

The problem with a to-do list is it trivialises a lot of the development tasks and I often find myself with limited time. Take for example the version release 0.656. It is slightly overdue. It would be easy to release the five or so versions of 0.656 - OpenGL, Mac, Carbon, CLE, Proof of Concept but I am still not sure what this release should contain. Anyway, I am uploading the current source tonight for my own benefit. Not totally CVS style, but a line in the sand none-the-less. Potentially the last active single window version of the Nervana Simulation;

[src300602.zip](#)

Good night!

---

### **Log for 11:31 pm, Friday, 28 June 2002**

***Noble Ape Source Log [ 28 April 2002 - 6 September 2002 ]***

**30**

Multi-window graphics throughput starts t'row. I have put in all I need to for the implementation. Similar to the pen state, each window will be selected with a select-window-like command. Keep the model simple. Good night!

---

**Log for 10:15 pm, Thursday, 27 June 2002**

Slowly cutting down display.c and reducing control.c too for the graphics pipeline rendering model - coming to a Nervana Simulation near you very soon. The next victim is nerv\_polygon and nerv\_map, both will migrate into control as draw\_apeloc and draw\_map respectively. This migration should occur sometime in the next couple of days.

I have written about a page more on the Nervana Mailout. Got to get it finished by the weekend. Yes, the new start to this weblog was an error - made when I was very tired. Hopefully this digital blooper will be amended.

One final, somewhat sadder point. I have wasted a good deal of time in the past two weeks dealing with aggressive and malicious spam with Trojan program attachments. Multi-daily and 200-300k+ attachments. I complained to the two ISPs involved with no action from either. For this reason I am auto-routing all my nobleape.com email to yahoo.com and using their holiday greeting and blocking software to handling the volume of unsolicited email. Sorry about this folk. I am re-thinking the whole internet presence of the Nervana Project in order to minimise this kind of nonsense and its impact on my time. Good night!

---

**Log for 11:26 pm, Tuesday, 25 June 2002**

I have the five window setup down now. Still quite a bit of code to modify to support additional offscreen buffers. I have modified the point code to only be used on the Map and Brain windows. The time window uses line code, but line code in fixed parameters. The only real potential for an offshoot comes with the Terrain and View windows. In the current implementation these windows have different height values. I suspect it will be easiest if these both have the same height value so I can implement uniform line restrictions.

On another point, I have noticed the increased interest in minimal processor encryption (ie 8-bit code for 8-bit processors). This traffic will only grow in the near future. Unfortunately the Preview section is the only page on the site that describes encryption currently.

Code modifications in the next couple of days? Nervana Mailout? We can live in hope! Good night!

---

**Log for 08:54 pm, Monday, 24 June 2002**

A quiet evening planning the multi-window implementation. I think I am going to reduce the view and terrain windows height-wise. Something I think I missed in

yesterday's weblog, the Timed control takes 1/15th second intervals and allocates 1/60th second for screen redrawing/OS and packs the rest of the 1/15th second with simulation. The Nervana Simulation operates in 1/15th second time parcels in Timed mode - to say it another way. I tested the timed mode under Carbon this morning and it burned away. Days went by in a couple of seconds.

So aside from the multi window implementation on my other machine, the Nervana Mailout is my only other task for the week. I have been working on a Sashimi website or set of pages at least. Still working on a stable 8-bit version with only 8-bit instructions. Probably more on that at the weekend - when I have a chance to work on it again.

Good night!

---

**Log for 09:36 pm, Sunday, 23 June 2002**

A number of small changes over the past couple of days. The main one has been the introduction of nerv\_pset which is a pixel set based on penval. This graphics primitive doesn't have boundary checking so it will be ideal for the 256 x 256 windows.

I tried the window layout on my other 8500 this afternoon and they don't quite fit as planned. I suspect I am going to have to cut down the Terrain and View windows to 160 height? Something that small. I have reduced the Time window and... a particularly interesting new feature on the Control menu - Timed, which only draws to the screen / handles OS nonsense every 1/15th second, leaving the rest of the time for simulation. A little jerky, but marked speed improvements.

Penned a page and a bit on the Nervana Mailout... Good night!

---

**Log for 12:02 am, Sunday, 23 June 2002**

New check-in. Removed control\_erase for a dual control\_draw method. Removed nerv\_pen(65) and nerv\_pen(66) requirements and the redraw hack. Good night/morning!

---

**Log for 10:50 pm, Wednesday, 19 June 2002**

The order of the main "loop" has been the subject of my development over the past couple of days. The Mac OS makes it difficult to schedule window updates - the simulation had masked this to date by doing constant window updates.

I changed a lot of the platform code and the control code only to find that my changes didn't result in the speed increase I was looking for. In the case of layering windows, the update cycle was impossible to maintain without split second update times. More work on paper needs to be done. I reverted to the past CVS. I am thinking of modifying the way getstate and the control\_ functions interact.

I am heading down south for the next couple of days. Hopefully I should have a draft of the mailout when I return. Good night!

---

**Log for 10:25 pm, Sunday, 16 June 2002**

Additional fix and still working to remove the need to do a redraw every cycle. The logic is if in the single window version I can remove the need to redraw every cycle, a multi-window version won't require every window to be redrawn per cycle. This development has already removed a lot of the duplication in the control\_draw and control\_erase functions.

I have to start working on the next Nervana Mailout! Maybe sometime this week. Good night!

---

**Log for 05:45 pm, Sunday, 16 June 2002**

Checked the reduced window code. Still not the multiple windows yet. I want to incorporate the idea of "redraw". Really "draw" would be an appropriate term as well. There are occasions where the window doesn't need to be redrawn. In most circumstances when the simulation is paused, there is no reason to redraw the screen.

Draw and erase are important parts of the simulation cycle currently - so I need to find the conditions where draw is unnecessary. As the simulation is now, there is far too much drawing and re-drawing going on and the window is redrawn each cycle accordingly.

Removing the OS redrawing and the simulation redrawing should improve the simulation time greatly.

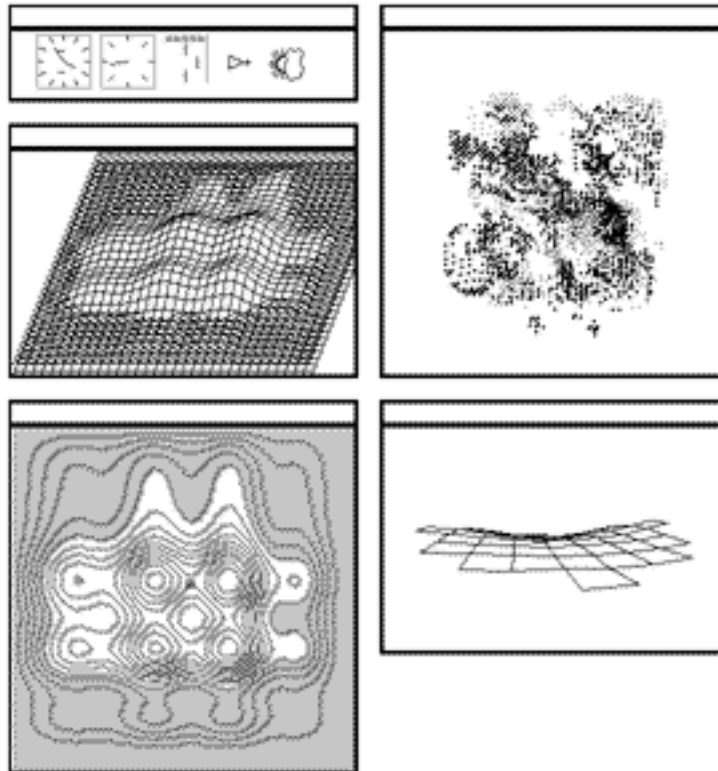
---

**Log for 11:09 pm, Saturday, 15 June 2002**

Migrated to the 256 width windows today. Moved everything to deal with local coordinates. Still working on the multiple windows and concepts like redraw (a boolean which is set before every draw cycle to identify if it is needed or not).

I am doing all the new Nervana Simulation development on my non-internet connected 8500 so I can do a large check-in when the development is completed. Another thing I have been thinking about is allowing a single window and Iota platform version. Iota was the old release name for a multi-window version of the Nervana Simulation. It was a term that was used when the Nervana Project spread from just the single simulation to contain other developments as well.

For simplicity with the graphics interface, I am keeping all the windows 256 pixels wide. Here is the layout I am running with currently.



Please note the weather window comes from a rotation of the previous interface graphic. This image is just to give a graphic to the interface development. Good night!

---

**Log for 11:21 pm, Thursday, 13 June 2002**

Six years of the Nervana Project. Celebrated tonight with a quiet evening in front of the telly! No beer, no lasers. Quite quiet really. Two things that are ongoing work on paper.

First, the Nervana Simulation multi-window version (lota?). The new graph grid for the views in 256 x 128 - edge space. Two short listed. One a diamond format taken with the formula something like;

```
screen_x=k1+((grid_x+grid_y)*k2)
screen_y=k3+((grid_x-grid_y)*k4)
```

Or the other a trapezoid;

```
screen_x=k1+((grid_x+grid_y)*k2)
screen_y=k3+(grid_y*k4)
```

Both have their advantages. I think the diamond is more aesthetic but the trapezoid is a better use of space.

Second, I spent quite some time last night working on the unsigned short input

version of sashimi and something goes terribly wrong with the parsing. The assumption is that the len value (which is the number of bits set in the transform) remains uniform in both transform and inverse. This isn't the case necessarily in the 16-bit case. Not totally sure why, but it means the 16-bit input falls down.

My instinct says keep the core 8-bit then. But it is a major blow to the strength of the algorithm. One of the premises is basically wrong. I think I will have to expand the idea a little more and then consider if it is feasible to continue the development. The parsing from actual space to bit-number space and back is really slow too. I have tried with 2Mb files and it can take more than three minutes in worse case scenarios which is very poor - roughly 1 1/2 blocks (8k) per second which is effectively the top telephone line modem speed.

Anyway, I am being very critical. It should all be right eventually! Good night!

---

**Log for 11:21 pm, Wednesday, 12 June 2002**

Cleaned out the old log, as it had reached the 24k of text limit I have been setting myself. Also the political log earlier this evening should best be archived at the top of an archived log! Good night.

---

**Log for 09:32 pm, Wednesday, 12 June 2002**

Looking through the sashimi code this evening I have spotted a number of mistakes! I think it should process 16-bit throughout. One of the two allocations, I suspect the XOR should be variable dependant and not loop dependant. And I am not sure about the grabbits macro. It appears to be taking a lot of time to do encrypt and decrypt. Good initial idea. More integration work needed.

Six years of the Nervana Project t'row and I am working on encryption this evening. I read an interesting paper today which talks about Open Source - in particular the contrast between the GPL (GNU, FSF etc) and the BSD open source licenses - the Nervana Project Open Source License is derived from the latter. I have not talked publicly about my choice of open source license quite intentionally because I think there is a lot of eroding discussion currently about open source and the political component. Short to say, I am not a huge fan of the GPL or FSF because I feel they are closet nationalist organisations who attempt to play a nationalistic legal game with open source. I do not believe intellectual property protection in the US is anything more than an expensive way of re-enforcing hostile attacks on creative development by the wealthy establishment. I don't see it as a basis for a political or enlightened movement.

My personal interest with open source is as a mechanism to show divergence from traditional legalise/expensive intellectual property protection. The Nervana Project is a truly international project - I don't want to tie the project with any nation's legal system and in particular I don't want the project to be used for ambiguous political gains. So I have no time for the GPL, GNU or FSF. I would like to use the software I develop free from legal expense and free from hostile attacks which

would attempt to refuse my development of my own software.

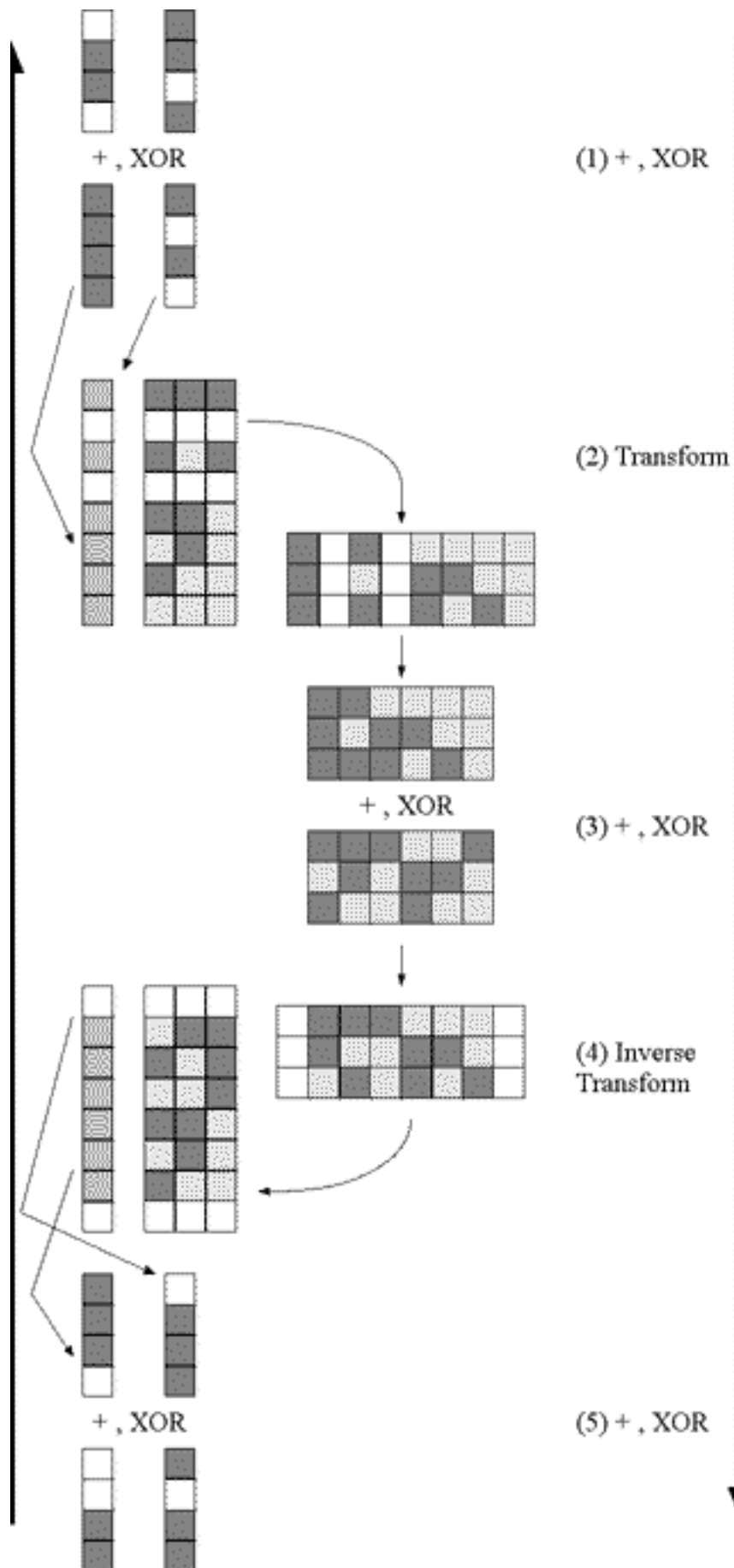
At my core, I believe in the public domain. If the public domain acknowledged achievements then it would be ideal, but I am a child of the rip-off. From my earliest successful developments there have always been companies and individuals that have looked to exploit this development - always for short-term gains - and never truly realising the development of the technology. The Nervana Project has not been immune to these kind of attacks. But at the end of this six years, there is a solid visualisation and artificial intelligence core to the Nervana Simulation which is unequalled. Irrespective of the criticism of the various interfaces of the Nervana Simulation - it still stands as a stable application that does what it needs to with an integrated elegance.

Good night!

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**Log for 11:22 pm, Tuesday, 11 June 2002**

Here is a cute diagram which explains how the sashimi encryption algorithm works. I am incorporating more info for the new encryption info pages.



Not to mention the current sashimi/preview page;

<http://www.nobleape.com/preview/> (No longer online)

More online soon. Good night!

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**Log for 10:21 pm, Tuesday, 11 June 2002**

I have been working on the new window formats. The first step is actually to reduce the width of the current window to 256 x 320. The main fix here will be the 32x32 vector grid. I am thinking of moving it to the diamond orientation for additional surface coverage. From there I am going to implement separate draws for the top 256 x 64 and the bottom 256 x 256. This will include the boolean redraw command as well as the existing graphics buffers. The next step is to move this into the five window interface. The gui and platform code will need to be extensively reworked. I am thinking of implementing a single window version too but this again is in the future. As it is currently I am just working out the graphics metrics for the translation.

I have been thinking about is the ever looming sixth anniversary, falling this Thursday. I have decided to keep it a low key affair. The website is currently designed for minimal throughput and the development is still quite low key. I will upload the sashimi file encryption code over the next couple of days. I am thinking of creating a totally new encryption part of the site to cater to sashimi and the development of fishyfish.

More on that in a day or so. Good night.

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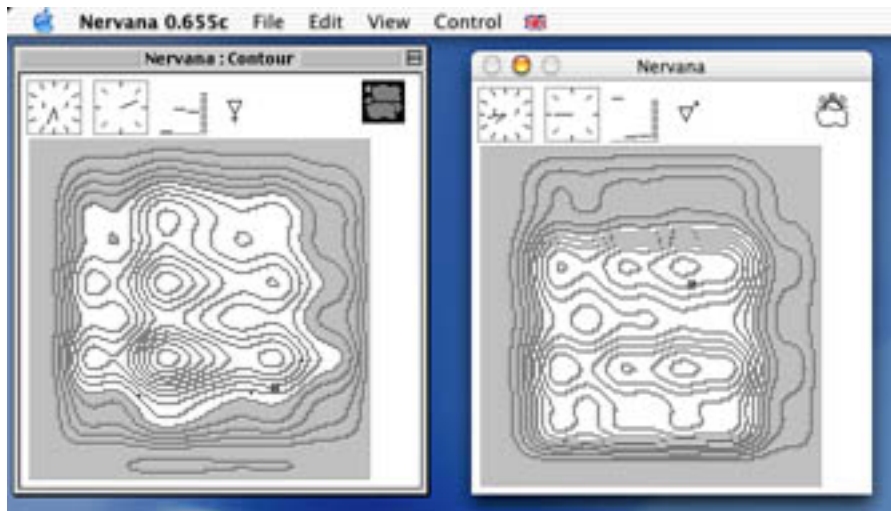
**Log for 11:18 pm, Sunday, 09 June 2002**

Updated the CVS with the window parameter source changes. Next step multiple windows! Good night.

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**Log for 08:08 pm, Sunday, 09 June 2002**

An interesting weekend with some real progress. Before I continue, here is a cute image I have been meaning to put online of the Nervana Simulation running on "Classic" and OS X - side by side.



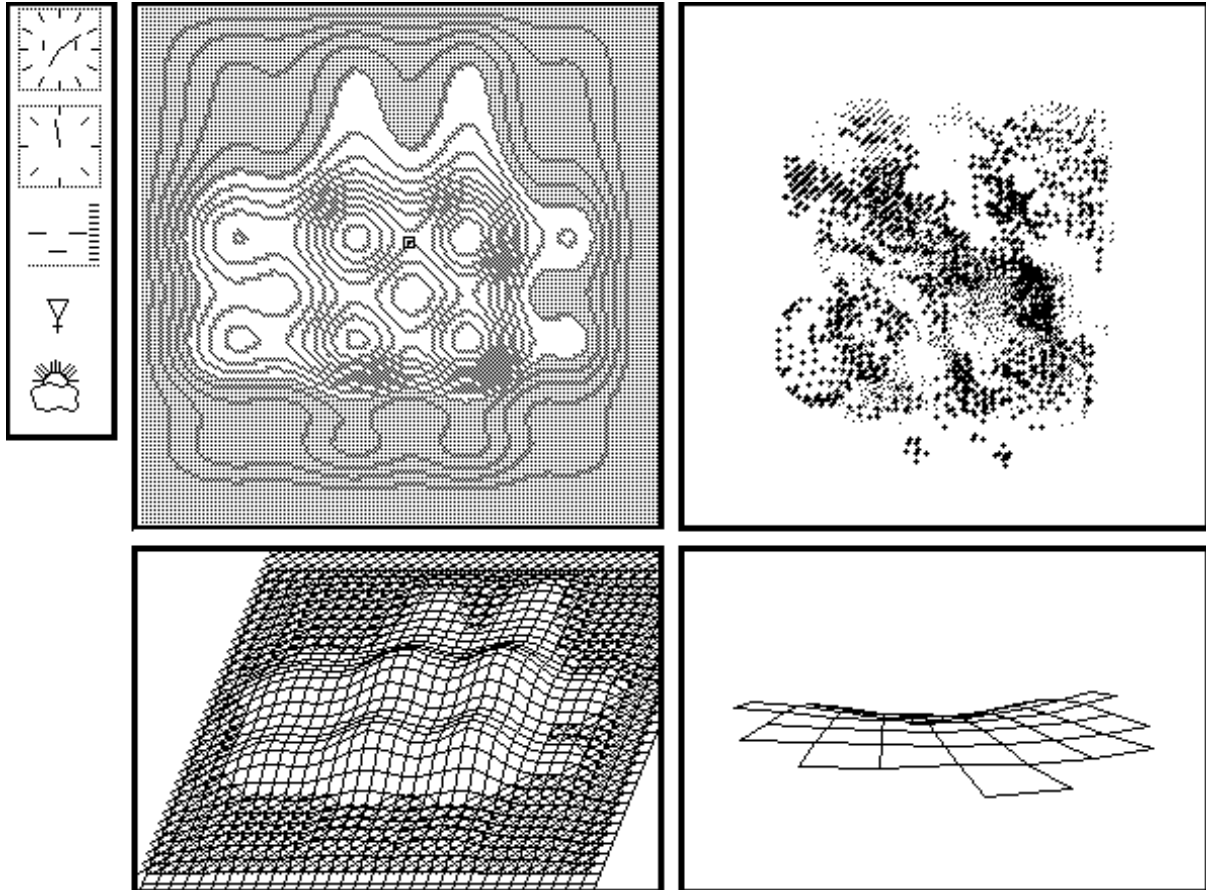
The problems of this weekend have been mainly to do with the development of a multi-window version of the Nervana Simulation. I can now do scalable windows at compile time, but I would like to have more information on screen at any given time and this means a number of floating windows. My current hotlist are;

Map,  
Terrain,  
Brain, and  
View (all the rest selectable from the View menu)

This may seem reasonable - but where will the profile/weather and time information go. The Map window seems the obvious choice. I anticipate the windows will be sized accordingly;

Map - 256 x (256+64)  
Terrain - 256 x 192  
Brain - 256 x 256  
View - ???

Writing this weblog, I decided to a mock up of my desired interface and ended up with this working plan. I like the five windows view however it may be challenging to operate with/around.



The View, Contour, Terrain and Time/Weather et al windows all have the potential for no-update needed in a cycle. The Brain window will constantly be active. The View will need to change to accommodate the new windowing.

Anyway, I think this is enough for a single weblog entry. Good night!

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#### **Log for 07:19 pm, Friday, 07 June 2002**

I put the Carbon port of the Nervana Simulation online today. It is compiled from last night's CVS so technically it is the Nervana Simulation v0.655+. I have developed a sashimi encryption format for file handling which I will put online over the weekend too. For more info on sashimi, check out;

<http://www.nobleape.com/preview/> (No longer online)

I am debating the sixth anniversary press release currently. More news on that later tonight or t'row.

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#### **Log for 06:59 pm, Thursday, 06 June 2002**

My modem was knocked out in an electrical storm over the weekend - hence the break in source log updates. Similarly the web hosting has been playing up so the elements have been working against me this week.

Some minor changes to display.c and the fixes to the file handling/nervio as promised in recent logs. Somewhere through this I have to work on a mailout as well. I will check in all the new changes tonight. The next step is to enlarge the main window to 512x552.

An interesting development fact, the proof of concept is 10k smaller than the normal platform version (or roughly 25% smaller). Some minor resolution additions to be made to island.c and I am working on a programmers' FAQ.

Good night!

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**Log for 11:10 pm, Saturday, 01 June 2002**

I am installing Linux2000 on one of my 8500, to see how it copes with Nervana CLE and potentially a platform port. Similarly the real time strategy interface has me thinking about uses for the Nervana simulation core outside the Nervana Simulation.

Two ideas come to mind. One is an application that requires some land description for testing purposes. In this application, the resolution of the Nervana Simulation may be a stumbling block. I have been talking for quite some time about implementing an high resolution island render. Currently the high resolution mode refers to the height resolution. However I would like to expand the island rendering down to the ape units.

The second application is again a game which requires not only a land description but also a biology, weather and time description. Both these applications have distinctly different interactions than the current simulation.

Similarly, I have been thinking about the programmer documentation or lack there of. Diverse thoughts. More t'row (when Craig Ubik and co arrive). Good night!

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**Log for 11:46 pm, Friday, 31 May 2002**

No code updates this evening. More a quiet reflection about documentation, fiction and the all important sixth anniversary press release. I have my friend Craig Wilson/Ubik coming to stay this weekend. I haven't seen Craig for over a year and he is heading down with his family. I met Craig in California in 1999 through John Draper. Craig is currently a graphical user interface developer and Draper's main web designer.

I am looking forward to some feedback on the website and potentially some design ideas for the Nervana Simulation user interface(s). I will keep you all posted. Good night!

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**Log for 11:25 pm, Thursday, 30 May 2002**

The astute will notice that I have cut down the regularity of my weblogs. This has been done for a couple of reasons. First, I have been returning home each evening particularly tired recently. The long daylight hours seem to be more taxing - particularly with late evenings. Dawn occurs at roughly 4.30am here.

Second, I feel the impact of daily weblogs seems to be lost over the typical Nervana Simulation/Project development cycle. Whilst a lot goes into the Nervana Project every week, the blow-by-blow account means the important information can be lost. Somewhere between the dawn description and this sentence.

I have been inspired in recent months to publish my thoughts on operating systems and open source. Roughly three times a month, something occurs which re-enforces my resolve to move the Nervana Project from a humble middle-of-the road open source project to a political attack on the dominant nationalistic open source movement. But I always think the better - eventually.

The past couple of weeks have been punctuated by requests for the original images or hi-res scans of the John Draper photos from my 1995 interview found here;

<http://www.nobleape.com/old/john.html> (*page removed*)

I finally got these images out today and will put the hi-res output online when they return. Living in the UK, I have almost no contact with the people I knew in the US or Australia. Partially due to my current work and also just through lack of contact. But life goes on.

The big development news of recent days has been moving the Ocelot development (which still remains rather undescribed), the real time strategy engine and the existing Nervana Simulation interface into something which is coherent. I am hoping to have all this finalised before the Nervana Project's sixth anniversary.

But like I said, I am feeling rather tired this evening. Hopefully this has filled some gaps! Good night!

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**Log for 10:32 pm, Tuesday, 28 May 2002**

I have been looking at a new interface to the Nervana Simulation over the past couple of days. This one is inspired by the standard real-time strategy game interface.

[Click here for a large \(64k GIF\) of the island rendered in the new interface.](#)

Good night!

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**Log for 09:49 pm, Sunday, 26 May 2002**

Put the Nervana Simulation Manual online. Will put more links into it t'row (I am quite tired this evening.) But as a preview this evening;

<http://www.nobleape.com/manual/>

More links t'row. Good night!

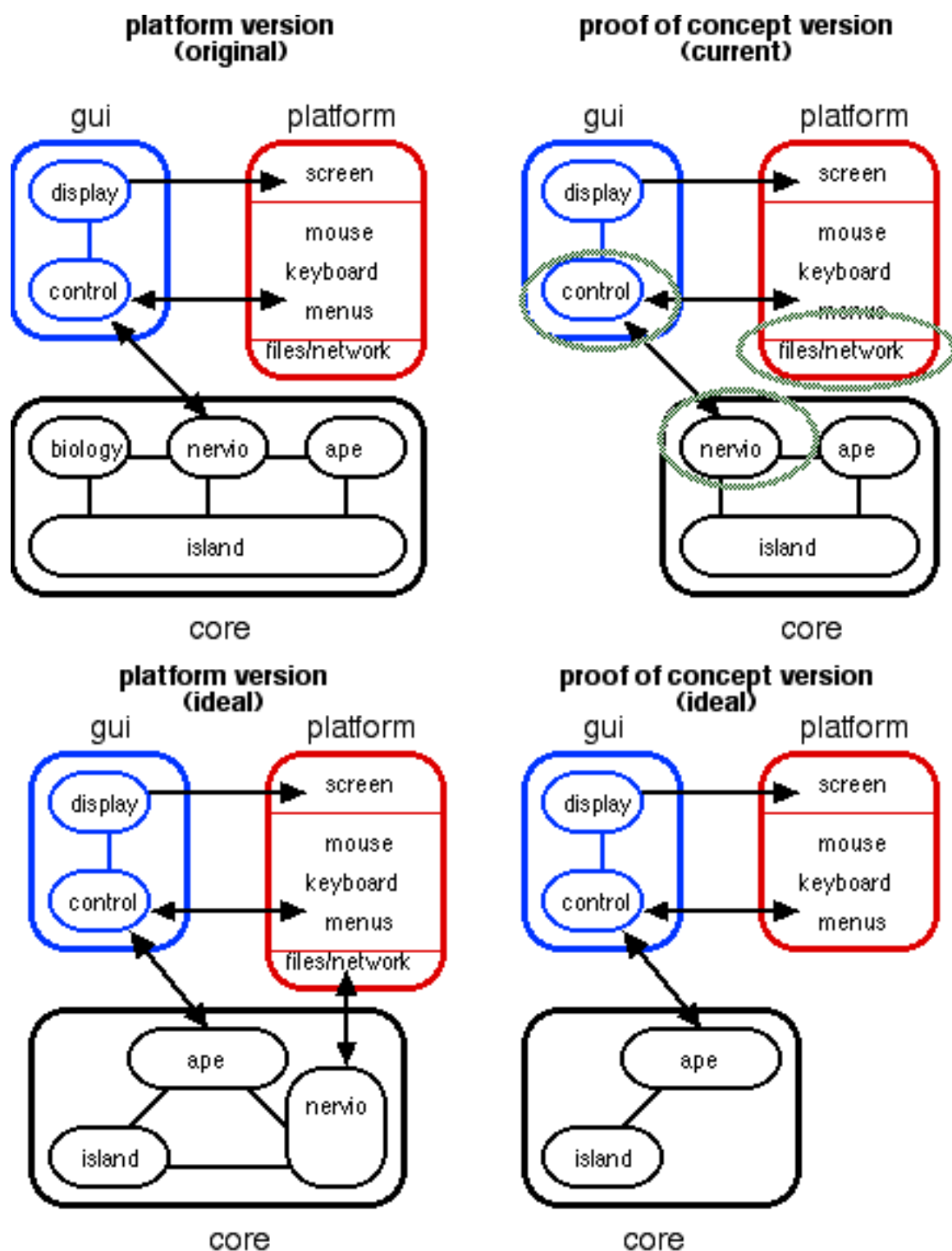
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### **Log for 01:41 pm, Sunday, 26 May 2002**

A couple of nights off from the updates over the weekend. Three attempts at different angles for the Windows implementation with some movement forward but little final success. Having spent a day and a half trying various processes, I concluded that the documentation I have (for Windows 3.1 and NT 3.1) is too out of date to begin such a project. The compiler I was using was a modified Mac Codewarrior which didn't let me know how far I had gotten - merely when everything went wrong. So, marks down for the Windows implementation.

This afternoon I turned to a point of concern I have thought about over the past couple of weeks. Recent logs talked about abandoning the biology.c predator/prey model in favour of embracing the full quantum mechanics biological implementation. The face of the simulation has changed quite a bit. I am considering removing the Ape's Brain define and the File Error define, in favour of cutting nervio.c in the proof of concept version and migrating all file routines to the edge of the platform - bar the nervio.c routines.

I have created four diagrams. They show original platform structure (top-left), the current proof of concept structure (top-right) with the problem links circled in green. On the bottom, the two ideal implementations for platform and proof of concept. More on this thinking later this evening. (If folks would like to see a Windows implementation with priority, please drop me an email (tom at nobleape dot com).)




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Log for 08:47 pm, Thursday, 23 May 2002

Press releases 101 last night. I didn't have a chance to put up an update. I am planning on penning a couple of press releases in time for 1 June - but I am paying it less mind over the next couple of days. Two current development tasks - the website and the Windows port. Known for digression, I want to expand a little *Noble Ape Source Log [ 28 April 2002 - 6 September 2002 ]*

bit on my thoughts with the Windows port.

The proof-of-concept interface doesn't use any file calls and yet requires the plat\_file function because of do\_file et al. The file framework all the way down to nervio needs to be optional(ised). Modern compilers do a lot of the leg work. Must remember the end goal.

Those familiar with the source log, will remember last weekend - set myself tasks and I will get them done. The Windows proof of concept into the CVS by the end of the weekend. 's on.

Onto the website - what is the Nervana Simulation? What is the history of the Nervana Project? This is what I am working on - explanations. Good night.

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**Log for 06:56 pm, Wednesday, 22 May 2002**

I am working on a couple of documents and the ever important proof of concept Windows code. Also the press releases for the Nervana sixth anniversary. 'It's monkeys, monkeys and more monkeys. Did I mention the monkeys?' But seriously, the website went down today and when it came back up, it was a day younger?!

One last thing, I've been investigating more minimalist open source licenses and I think I will nail it down to a three point license. The Apache mod on the Simulation et al is getting a little tired and verbose! Maybe some more later this evening. Maybe not.

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**Log for 09:27 pm, Tuesday, 21 May 2002**

A quiet evening watching the trees and thinking about the proof of concept implementation - it looks like roughly 3/5 the size of the existing platform.c which is still some code to be written! My texts on Windows bridge the history of the OS too - without a Windows machine to test it on, I am constantly working towards something which will be back compatible and yet run on the current version.

In other thoughts, I went through my historical documents for the Nervana Project and it reminds me of what needs to be celebrated with the Nervana Project's sixth year. Perhaps not the people who have been involved with the Project or the funding bodies or piecemeal history of the Project - but the developments of the Project itself. Good night!

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**Log for 11:32 pm, Monday, 20 May 2002**

Proof of Concept mode implemented in a #define for Mac. This will be the starting point for Windows and Palm initially. New code added to the CVS. RIP biology.c. Good night!

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**Log for 10:13 pm, Monday, 20 May 2002**

An interesting thought came to me today. Rather than try to adopt a potentially unstable and computationally costly predator prey model, I should utilise the existing quantum mechanics model with a couple of additional features. This removes the need for biology.c from the project and also moves the project closer to the mythical completion date.

The idea of a completion date was rendered fantasy after 1998, when I declared that the Nervana Project could end very shortly, as the original aims of the project were near to being achieved. This date disappeared from use after 1999. Rather than being a wrap up date, the completion date refers to the time where the basic aims of the project have been achieved. The project could then act as a development of new implementations of the simulation engine and other exciting software etc.

Working through the Windows implementation has got me thinking about a new interface called 'Proof-Of-Concept'. This is a very basic platform interface with nervio removed and only mouse interaction. Also no detailed window naming based on state and a lone Noble Ape. This removes almost all the porting overhead and enables a basic Nervana Simulation to be quickly ported to a number of platforms. I will implement this through platform.c #define code in the next couple of days.

On the Windows implementation, I hope to have this checked into the Nervana Simulation CVS by the end of the week - in a work in progress form at least. Now for a little sleep!

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### **Log for 09:47 pm, Sunday, 19 May 2002**

Another weekend - and I am Nervana-ed out! This afternoon I began coding the Windows port which is a return to old coding memories for me. The port should be relatively easy with a couple of sticking points - no doubt. But looking at the Mac application as a whole, the only part that sticks out as slightly counter intuitive is the file handling which switches back and forth from gui to platform in a set of functions which really could be handled by one super function.

The graphics a la display.c and glutform.c is something I have embarrassingly forgotten. Another flashing neon sign for better code documentation. But I return to the stability of the Nervana core and the implementation on the Mac. The code for the Mac platform is currently clocking in at 14,510 lines. Which is more than manageable. Changes sometimes mean improvements, but typically with new operating systems it means purely fixes for compatibility.

There is good reason I have kept the basic platform code monochrome and the user interface simple - I have wanted to maintain portability and simplicity for development. Increasingly I don't feel this has damaged user functionality - ultimately the user of the Nervana Simulation does not care about up-to-the-second appearances.

Something I have been thinking about quite a bit recently is the quality of information on the site. For example the Simulation main page - which is actually named after 'Recent Source' (ie recsrc) - doesn't give any information about the simulation. I have thought of pulling some text from the current Nervana Simulation manual to give the random wandering some insight into what the simulation is. Historically, I went off text on the site sometime between 1999-2000. Something about less text being more - perhaps for the general user. I also think of the simulation and access the simulation as a speed interface. But this again points to my connection and development shortcomings with the simulation rather than an improved or improving feature. Anyway, I am having an early-ish night and thinking about the biology implementation. Good night!

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#### **Log for 04:10 pm, Sunday, 19 May 2002**

I have implemented up to point four on my list of weekend to-dos (now found in the old archive). The new source is checked into the CVS and I have changed the menu interface quite a bit. A lot of rewriting is needed for the Manual - maybe more later this evening. But I like the new interface. I will need to change the control keys I think.

I haven't added the biology window yet. That is something that still needs a little notebook planning. I want to keep it as aesthetic as possible. Still it has been an interesting weekend development wise and I was able to do what I wanted bar the final memory division point. I might save the multiple windows/multiple renderers until after the Windows port.

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#### **Log for 02:22 pm, Sunday, 19 May 2002**

Updated the site with the new Nervana Mailout! Always a monthly plus when the mailout finally hits the ether.

[Nervana Mailout, May 2002](#)

If you have been wondering what happened to the old log, you can find it here;

<http://www.nobleape.com/log/log280402.html>

I have been working a draft of the Nervana Project programming guidelines. Something which will explain a little about the coding style, methodology and how to make the Nervana Simulation run on countless platforms. I have been doing some playing with source code this morning. More later this evening with my evening update.

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#### **Log for 09:20 pm, Saturday, 18 May 2002**

Quite a bit done this afternoon. Less coding than I imagined but quite a bit on the website. The Nervana Mailout for May is starting to feel a little overdue but I am

planning on adding some more sentences t'row and maybe even mailing it out. Anyway, this afternoon doing some bread and butter updates on the website. Creating a weblog archive etc. Nothing that would break a sweat.

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#### **Log for 03:08 pm, Saturday, 18 May 2002**

A couple of new thoughts I will add this evening. This *log check in* is mainly to transfer over to the log archive format!

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#### **Log for 11:56 am, Saturday, 18 May 2002**

Sorry about the lack of update last night. As it was, I got to the machine at about 11.30pm and spent most of the time until 2am looking up old Nervana Project connection folk. Nik Gaffney of inSect fame (who was quite prevalent the Nervana Project support - contributions of food, lodging et al, in 1996-1997 and 1999) has a project he has been doing in Belgium. I have lost contact with almost everyone who had some early interest in the Nervana Project. From Nik's site, I returned to a number of AFC related people. The AFC [Australian Film Commission] provided a modest grant for the Nervana Project in 1997-1998. There was quite a closed and small community of digital artists - I was on the very fringes of that. Anyway, interesting wander from site to site seeing old names (but never old faces!)

Back to Nervana. Woke up this morning pretty early and implemented up to point 3a. I have implemented the eight species but not the new menu items. So slightly different order to that proposed 16 May 2002 [aka below]. The menu stuff appeared new (nothing like multiple developments to confuse you on the state of the code. But all the drawing stuff and menu stuff is localised to gui. No need for the breadth of macros I was proposing. The actual drawing stuff is still a rat's nest. I dread sorting that out! Anyway, a CVS checkin with this stuff to keep the versions up to date and maybe more this evening.

---

#### **Log for 11:08 pm, Thursday, 16 May 2002**

This evening has been the final planning before the eight species implementation. The modification will come in five distinct parts which I hope to implement this weekend;

Macros will be developed to parse from the View Menu down to continuous graph space (ie remove menu divides etc). This information will be parsed down by further macros. These macros will eventually migrate back to simple functions when there is a flexible number of species.

The second step will be implementing the additional menu items for ape view and ape brain views (don't mind the grammar). This will still be with the original fifteen species implementation. An additional menu item called biology will be added. This will show the food chain diagram with icon representations of the eight species (a fudging step).

The third step is the actual reduction down to the eight species. Probably at the first step the whole source will be sealed and stored for future reference. Now the species have been reduced the species will be selected from either the biology icons or the main menu. Again this will add a feedback process that needs to be tracked somehow in platform.c. This adds an additional behaviour where the gui feeds back into the platform, just to apply a little tick mark to the species selected. My original thinking, which may be found in this implementation, is the species selection should be local and allow for the predator/prey characteristics to be changed. This will not cause any behaviour change. With multiple windows, this selection in the biology view could produce a resulting change in the real time population density graph. But more on my thoughts on that in another web log entry.

The fourth process is to include the predator/prey biology model including the ability to set environment variables from the biology interface. I have some ideas on that with sliders etc and active (click-select) icons.

The final step for the weekend will be dividing the screen memory into the upper render (including the clock, weather etc) and the lower render (containing the contour map, vector views etc). This is part of a movement towards multiple windows. More on that in a future web log. I need some sleep!

---

#### **Log for 10:30 pm, Wednesday, 15 May 2002**

A number of things to write about tonight. First - the old checkouts I was playing with for fixing the graphics piping (moving from the render down to each polygon towards data specific rendering), and, the 680X0 back compatibility port, both failed. The first checkout (1 December 2001) was blank and the second (21 December 2001) didn't compile for 68k without substantial artifacts. Similarly the latter checkout showed the nightmare that was the old display.c before the unification and function reduction which occurred in January 2002. The moral of the story is not to romanticise too much about the past.

After last night's weblog, I went back and fixed up the Nervana Manual some more. I have been pondering porting the whole thing to HTML to save the editing hassle and allow for it to be displayed and updated online. Of course, I would offer a PDF version too, but the HTML version would a better real-time representation. There may be another month until the next Nervana Simulation version release - but I would like the manual to be updated independent of the Nervana Simulation version releases.

Central in the Nervana Manual re-writing has been including and explaining the eight species model. I hope to have some additional check-ins to the CVS t'row which will reduce the menu interaction and allow direct Ape Brain and Ape View modes from the menu bar.

The final point for tonight's weblog is that the Nervana Project will be celebrating six years next month. This is a long-time running and I am planning some

celebrations, a site rework and a little publicity to mark this momentous event. One idea I have been kicking around is a Nervana Project Hall of Fame for all the people involved with the Project over the past six years. I developed a shortlist of roughly twenty this evening which may begin its time online via this very weblog.

Anyway, I think I have typed enough this evening. Good night to you all!

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**Log for 09:14 pm, Tuesday, 14 May 2002**

The updated and soon to be reworked Nervana Manual can be found on the Nervana Simulation web page;

<http://www.nobleape.com/sim/>

Perhaps I am abusing the weblog a little! Good night!

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**Log for 09:07 pm, Tuesday, 14 May 2002**

Fixed the Nervana Manual - somewhat embarrassing the lingering typos contained within it. More work on paper for the biology implementation (eight species etc). Plans for a few interface changes - change of menus and putting the ape's view and ape's brain on the View menu. Another early night, I must be getting old...

---

**Log for 06:26 pm, Monday, 13 May 2002**

I have been checking late 2001 source for a 68k compile and a simple graphics interface - a step backwards in both cases. The tbrand function needs to be written to be more platform independent. The next implementation will be cutting the biological simulation component down to the eight plant and animal species. I am having an early night!

---

**Log for 11:01 pm, Sunday, 12 May 2002**

Flora and fauna icons added to the CVS (after half an hour of changing the format of the icons) and the nervmake core bug fixed (shifted up the nervmake comment a function in island.c). Strictly for the late night Nervana following! Good night!

---

**Log for 10:18 pm, Sunday, 12 May 2002**

1200 words written on the Nervana Mailout. Icons B&Wified for porting into Nervana Simulation from Ecosim. Ecosim code gone through the wranglers and a number of functions removed, code recompressed and uploaded without link changes (ie the version on the preview section is the new version). Sleep needed...

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**Log for 10:21 pm, Saturday, 11 May 2002**

The Ecosim code is now online in my usual pre-ALPHA 'must get it online...' format. It can be found in the 'Preview' section of the site. I have spent most of today

working on a new Nervana Project release codenamed Ocelot. I haven't started the Mailout, but the night is still young... Not that young!

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**Log for 11:15 pm, Friday, 10 May 2002**

A slight detour this evening, investigating the new release of a profiling program called Chronoscope. I was an informal beta tester for the first version and I really like the idea. The first version was almost impossible to get output from. This new version seems to contain a smaller number of bugs but still makes profiling a masonic practice.

You can find more information on the software via its SourceForge site;

<http://chronoscope.sourceforge.net/>

More on this and the Nervana Mailout (cough cough...) in the morning. Good night!

---

**Log for 10:29 pm, Thursday, 09 May 2002**

I am working on a colour graphing window for the biology.c test element. The mathematics for this is similar but not identical to the Ecosim development in 1998. I have been meaning to put the Ecosim source online actually although it may confuse things with the current biology.c development. The mathematics that makes a functioning and maintaining ecosystem is not trivial. With some automation and some alterations by hand, you can produce a simple five species ecosystem. Producing an eight species ecosystem may prove more challenging. Ecosim provided sliders which the user could adjust for each species for consumption (ie the amount eater) and nutrition (the benefit for the predator in population increase. Ecosim was based on equations;

$$dP = \text{prey} ( \text{growth} + \text{consume}[\text{predator}] + \text{nutrition}[\text{plant}] + \text{etc} )$$

The Nervana equations are based on;

$$dP = \text{prey} ( \text{growth} + (\text{consume}[\text{predator}] * \text{predator}) + (\text{nutrition}[\text{plant}] * \text{plant}) + \text{etc} )$$

This produces very different mathematical properties - particularly for long term prediction.

With the Nervana Mailout and putting Ecosim online, it looks like this weekend is going to be very busy. Incidentally on my Eudora exploration, I found the Japanese Eudora source which has advanced to a Carbon port however it is still rubbish code and about three times the size of the 1.3.1 source release. I am tempted by the challenge of the 1.3.1 port and reduction. But it is still a hundreds of thousands of lines of code. Doesn't need to be, but was released as is. Good night!

---

**Log for 09:24 pm, Wednesday, 08 May 2002**

coretest.c added to cle. This enables system compatibility checks etc - optimisation whilst maintaining functionality (1:1 with speed improvement). I have also reduced the offscreen bitmap memory. This has been outstanding since 2000, but I only came to find it when calculating the new screen formats. The plan is to provide a multi-window interface as well as the standard vector platform interface. More on that t'row. I am rather sleepy this evening.

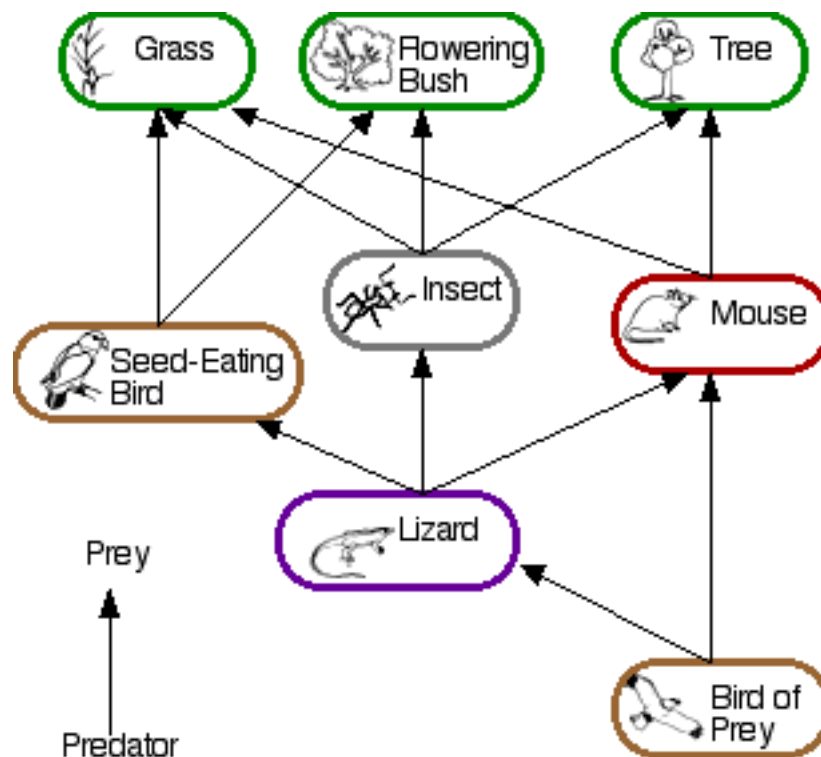
PS Working on a little side-project to find an open source email client for the Mac. Beating the OS X Jaguar release's spam filtering with some open source feedback. So far, just found the umpteenth version of Eudora 1.3 source code. Big, overly complicated and will compile after about a week's work. There must be a better solution. Good night!

---

**Log for 10:43 pm, Tuesday, 07 May 2002**

I have completed three pages of the Nervana Simulation technical specification completed. I think I will include some of it on the Nervana Simulation web page(s) and put all in a downloadable PDF. Other than that, I have been thinking about the biological stability of the reduced (eight species) predator/prey model.

My first included image into the weblog;



This gives a good indication of the food chain and potential stability. The upper food-chain (at the bottom of the image) provide single point release pressure valves and all the creatures depend on at least two species for food. The grand collapsing state should be avoided. More on the fine tuning in the next couple of weblogs - and I must start the mailout soon-ish. Goodnight!

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**Log for 10:31 pm, Monday, 06 May 2002**

A late coding session defined the reduced biology tuner to eight species. Here are the winners;

Grass  
Flowering Bushes  
Trees  
Insects  
Mice  
Seed Eating Birds  
Lizards  
Birds of Prey

Changes checked into CVS. Good night!

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**Log for 06:41 pm, Monday, 06 May 2002**

A day of documentation? I am exploring a uniform format for the documentation on all the Nervana Project technologies. Uniformity can be productive in small parcels! I am planning on adding descriptive text to the web site to introduce the user to the project. I am always interested in feedback (*tom at nobleape dot com*) on the Nervana Project. The current format for the site - minimalist - and developed with the view that those looking at the site have some introduction to the Nervana Project.

This is not always the case and those who are familiar with the Nervana Project won't mind the additional navigatory text. The re-development of the biological simulation or the 'safe island' model where the Noble Ape is a minimal grazer with no predators. The current Nervana Simulation has the following plants and animals (and landforms);

Bushes  
Flowering Bushes  
Grasses  
Potatoes  
Fungi  
Trees

Beaches  
Rocks

Insects  
Insectivorous Birds  
Mice  
Night Birds  
Sea Birds

Sea Fish  
Seed Eating Birds

I want to cut this down to;

Flowering Bushes  
Grasses  
Trees

Insects  
Mice  
Sea Fish  
Seed Eating Birds  
Bird of Prey  
Carnivorous Lizard

The lizard was a creature added for the 1997 development Ecosim. Mathematically it simplifies the biological equations of the island. The previous predator/prey model I used had three mini-ecosystems and the Noble Ape's grazing on all three. This model simplifies the process in appearance but creates one more complex ecosystem.

In any case, these are my thoughts on the matter. Some may notice the slightly new format for the site. I thought there were a number of pages on the site that could go neglected or had lost links, so I created a hotlist of pages to feature which are randomly selected when I compile the nightly log.

An early night tonight - maybe some documentation will be done later in the evening but it is optional on a public holiday!

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**Log for 08:48 pm, Sunday, 05 May 2002**

Completed the 0.655 release this morning - with a number of last minute modifications. Not as many features as expected from the [April Nervana Mailout](#). But none the less a progressive start on a number of fronts. This is the first release where I have included the OpenGL (GLUT) version on the website too.

So what was changed?

The core now has a central variable system with the format;

`nv_XintY`

where X is u or s, for unsigned and signed respectively and Y is the number of bits (8,16,32). The main aim of this development was to reduce the number of kinds of variables that reside and interact in the core. Removing all 32 bit variables is important for the porting to the 680x0, or should I say back-porting. I reduced the ape ID number to 16-bits for simplification and now the only two remaining 32-bit

variables are the random number seed (isl\_seed) and local ape's brain related variables. The problem with the 680x0 port exists outside the core and should be resolved within the next couple of weeks.

I spent some of this afternoon writing C source for compiling the website on a daily basis. As it has been for the past week, I have made daily log entries, however this change is not reflected on the main Nervana Project home page until now. Whilst PERL seems to be the scripting language of choice for many, I am still writing ANSI C for this kind of thing. I have nominated twelve web pages of interest on the Nervana site for regular highlighting and the code embeds some text from the log into the main home page. If anyone is interested I will release the source with the existing logtrack.c source.

I should begin work on the Nervana Mailout t'row. Good night!

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**Log for 11:34 am, Sunday, 05 May 2002**

0.655 release source added to the CVS. More information this evening.

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**Log for 09:57 pm, Friday, 03 May 2002**

Started working on writing some of the documentation for the etoy this evening. There is still a lot of planning for the format of the documentation. An all in one manual worked well for the early Nervana Project although some found it quite overwhelming. As the etoy development is still a cast of one, it would be ideal to put all the information in one source to start off with.

I have been pondering putting Nervana 0.655 online this weekend as there are a number of minor additions that need to be added - and it has been the poorer cousin of the etoy over the past week as the logs testify. It is a three day weekend in the UK, so I can look forward to a little programming time... Maybe... Good night!

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**Log for 10:17 pm, Thursday, 02 May 2002**

A quiet night watching BBC, I am afraid. Work done on paper - fixing the invisibilise algorithm in the etoy and the overall structure. An introductory technical document needs to be penned in the near future. Good night!

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**Log for 08:49 pm, Wednesday, 01 May 2002**

More work on the etoy. Memory re-write - memory down to 25% from last night. Further compression of the icons to come. Some switching in the states for a rewrite of that section (ie game/OS) in the near future. Made the variables more name friendly but still work to do on encryption and invisibilise etc.

Latest source added to the 'Preview' section... Good night!

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**Log for 09:36 pm, Tuesday, 30 April 2002**

Tonight I have been looking at the etoy implementation. Both the existing implementation and also including the icon compression and new encryption code. I have put about 50% of the old code online. I haven't included the iON compiler and a lot of the analysis code.

The etoy as online is not particularly memory efficient, in fact the only code which is useful is the central state change code which is part of the OS/game component. The structure of the iON etoy includes;

OS - central high-level control of the etoy environment, quite literally an operating system

game - the component contains the gameplay elements - interaction, skill development etc

I/O - handles the user interface, infrared and potentially memory handling

draw - manages the icon/sprite interface (layering, effects, decompression)

encryption - an optional layer that works between I/O and draw to protect writing and/or reading memory and transmitted information.

The iON etoy was developed to have only 32k of memory initially and this memory usage was intended to hold a character roughly 64 different skills and movement associated with these skills.

Aside from the etoy, I have been looking at the implementation methodology behind the scalable island - in particular the resolution of the initial island rendering. Ideally it would be on a 8192 x 8192 grid, rendering down to roughly 39cm or roughly 15 inches. At this resolution additional factors will need to be included to make the island environment appear realistic. The existing Nervana Simulation's vector interface will remain at the same resolution graphically - however it would be nice to have a zoom in effect to take into account the full resolution improvement. This resolution could potentially bump the simulation's memory requirements up by 'a Noble Ape brain' (ie 64k).

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### **Log for 10:01 pm, Monday, 29 April 2002**

There must be some combination of converting to a 68k compatible core and expanding the island generation to allow for different mapping resolutions. This has a potential flow through into other sections of code, but there needs to be a stable working core.

Variable land mapping (constant and variable)  
68k executable code  
Stable - static and development minimal

This would be an ideal time to implement a fully functional Noble Ape grazing environment that enabled sustainable growth and genetic development (think of England).

The core scalability is the first priority - before developing an expandable and reducible graphics output model. This graphics model is a requirement for the Palm port (low end), the existing platform vector graphics (and the redevelopment of the platform code) and the GLUT graphics (higher resolution and greater detail).

Rather than running at the code. I am taking a couple of days to look over the code and think of possible solutions.

The core scalability must allow both pre-runtime (constant) scalability and runtime (variable) scalability.

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### **Log for 07:47 pm, Sunday, 28 April 2002**

Welcome to the first Nervana Source web log. To think people pay money for this kind of service! This weblog was generated by /src/cle/logtrack.c - developed for the Nervana Project but available to all under the Nervana Project Open Source License.

This weekend I have been looking at a number of issues with the simulation, plus some additional news of interest.

The first simulation problem has been [the PalmOS](#) port. I found my old Palm development code from 2000 for cross-platform development. It needs quite a bit of polishing up. The Palm development environment I have compiles for 680X0 machine code. The Nervana Simulation was originally developed for the 680X0 however from 1997, it migrated to the PowerPC. Late last year I worked on keeping the simulation 68k compatible which took the better part of a day and a half.

Once I had started reworking the old PalmOS framework, it occurred to me that I should be sure that the current simulation core would work for 68k. I ran the Mac platform version of the simulation and for some reason the time refused to advance. This run was with all core simulation extras turned off (so very basic). This is something troubling which will need to be fixed in the next week.

The second simulation problem I have been looking at is the graphics interface. Mainly removing the current OpenGL inspired interface which maps from the landscape surface to the nerv\_polygon and then onto a nerv\_line. This produces too much code and when the OpenGL interface was implemented in GLUT, polygon primitives remained mute anyway. All was done with optimised grid mapping rather than returning to the individual polygons.

A general problem I have been checking into the CVS over the past week is code comments. The Nervana Simulation has traditionally been minimally commented. Recently I have thought this could reduce the potential user base and as the

Nervana Simulation documentation has been lagging for many years now, embedding documentation into the Nervana Simulation source seemed just as good a solution.

This additional news this weekend has been the inclusion of some software in a new section of the Nervana Project website called '*Preview*'. This is software that I am progressively moving under the Nervana Project's Open Source License. I have started with a preview of quite a major release with the Nervana Project - the iON etoy. My time frame has the formal release sometime in June or July 2002 but I wanted to begin the migration onto the Nervana Project's website. Also two developmental encryption technologies which are still very much work in progress. In the past I have put Blowfish cryptography information on the Nervana Project website - but I am interested in having a dedicated cryptography/cryptanalysis section on the site.