

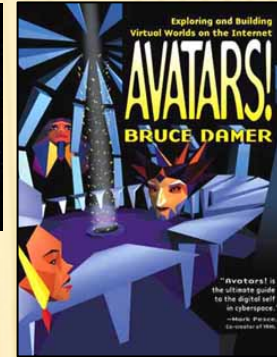
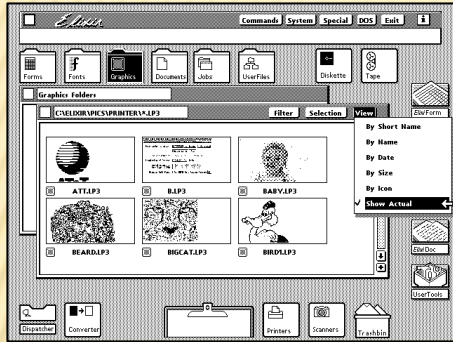
# Biota and the EvoGrid

*A short presentation*

*Grey Thumb (Boston) March 3, 2008*

*By Bruce Damer/Biota.org*

# ABOUT ME



- ✘ Built some of the first graphical user interfaces (Xerox-80s)
- ✘ Formed *Contact Consortium* in 1995, which held the first conferences on avatars: 1995-2002.
- ✘ Formed *Biota* in 1996, artificial life and emergence within virtual worlds on the Internet, four conferences 1997-2001, popular podcast and now the *EvoGrid* effort.
- ✘ Wrote "*Avatars!*" in 1997, other publications, and hundreds of talks worldwide on virtual worlds.
- ✘ Founded *DigitalSpace* in 1995, open source virtual worlds for Adobe, NASA and others.
- ✘ Founded *Digibarn Computer Museum* tells story of personal interactive computing from early 1960s-present.

# ABOUT ME

See more at

[damer.com](http://damer.com)

[biota.org](http://biota.org)

[ccon.org](http://ccon.org)

[digitalspace.com](http://digitalspace.com)

[digiBarn.com](http://digiBarn.com)



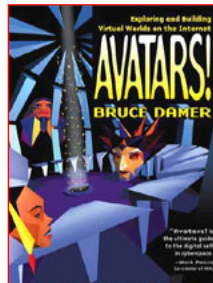
about bruce

## Damer.com

news projects photos art pen voice vid contact search

Click [here for Bruce in the news](#)

### Life Projects



[Avatars!](#) written in 1997, relevant to the Avatar revolution of 2007!



[DigitalSpace Corporation](#)  
Simulating the future of space exploration for NASA



[DigiBarn Computer Museum](#)  
New exhibits, projects and media coverage for 2007!



[Big Photo Gallery of projects, people and places](#)  
(1960s-2007)



[Burning Man 2007!](#)  
and see also our [1999-2005 Burning Man pages](#)



[Greetings from Ancient Oaks Farm](#)  
animals, plants and more!



Also see Bruce's

# The Biota Conferences

A multi-disciplinary visionary conference series 1997-2001

paleontology, artificial life, simulation, virtual worlds, art, game design, science fiction



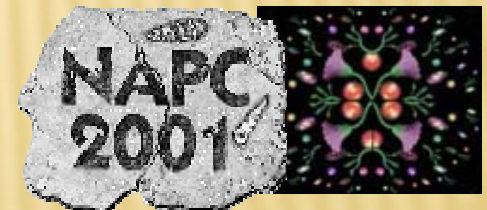
1997 – Banff Canada, Burgess Shale



1998 – Cambridge UK



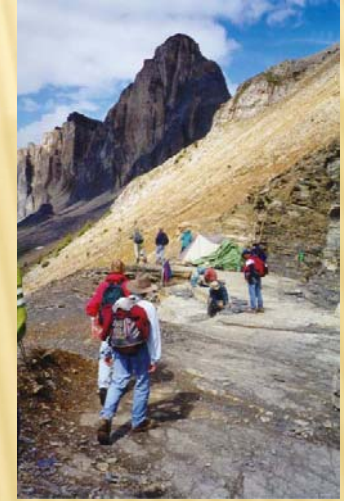
1999 – San Jose CA



2001 – Berkeley CA

# 1997: Digital Biota Conferences: Digital Burgess

(Banff Centre)





# 1998: Digital Biota 2

(Cambridge UK, Magdalene College)

**digitalbiota2**

September 10-13, 1998

## Speakers

### Current confirmed speakers:



photo by Lisa Lloyd

**Richard Dawkins**,  
Charles Simonyi  
Chair of Public  
Understanding of  
Science, and a  
Professorial Fellow of  
New College, Oxford



**Douglas Adams**, Author  
and Chief Fantasist at  
The Digital Village



**Christopher Langton**,  
Editor of the Artificial  
Life journal



**Demetri Terzopoulos**,  
Professor of Computer  
Science and Electrical  
and Computer  
Engineering at the  
University of Toronto



**Larry Yaeger**,  
Distinguished Scientist,  
Apple Computer  
Corporation

**Margaret A. Boden** is Professor of  
Philosophy and Psychology at the  
University of Sussex (no photo  
available)



**Steven Rooke**,  
self-organised community  
masquerading as an  
individual



**Rudy Rucker**,  
professor of  
computer science at San  
Jose State University



**Steven Rooke**,  
self-organised community  
masquerading as an  
individual



**Rudy Rucker**,  
professor of  
computer science at San  
Jose State University



**Stuart Gold**, Chief Architectural Officer,  
DigitalSpace  
Corporation



**Richard Harris**,  
Research Director and  
one of the founding  
partners of the Digital  
Village



**Aaron Sloman**,  
Professor of Artificial  
Intelligence and  
Cognitive Science, The  
University of  
Birmingham

**Gordon Selley** and Jane Prophet,  
Technosphere (no photos available)



**Bruce Damer**, founding  
director of the Contact  
Consortium



**Sue Wilcox**, Journalist  
and  
A-life evangelist



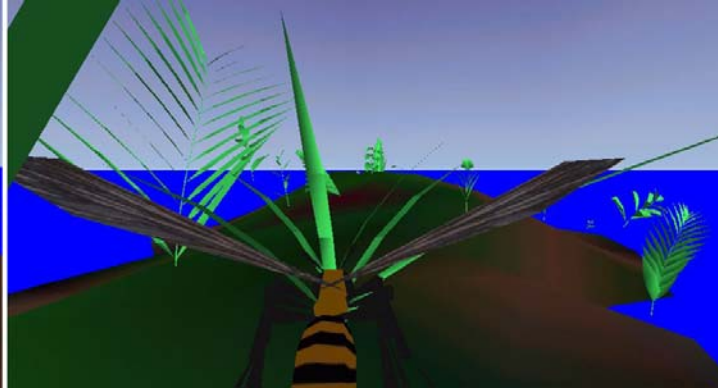
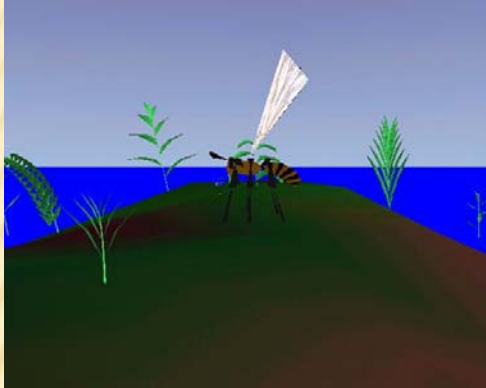
**Steve Grand**, Director  
of Technology,  
CyberLife Technology,  
Ltd



**Chris Winter**,  
Development Director,  
CyberLife Technology,  
Ltd

# Early Biota project

SIGGRAPH 1997: Nerve Garden - Growing gardens in cyberspace



1999-2001 DB 3 and 4

Today: Biota Podcast by Tom Barbalet

(History, news, discussion about artificial life)



[ [About](#) | [Podcast](#) | [People](#) | [Projects](#) | [Papers](#) |  
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## Biota.org Podcast



### Welcome to the Biota.org Podcast!

A collection of interviews, conference lectures and conversations with artificial life developers, academics and users.

### New in 2008: Biota LIVE!

Taking elements of the Biota Interviews, Chats and Conversations, the next step is producing a LIVE, weekly podcast

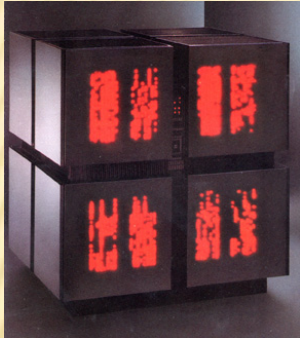
Host/Contact: [Tom Barbalet](#)



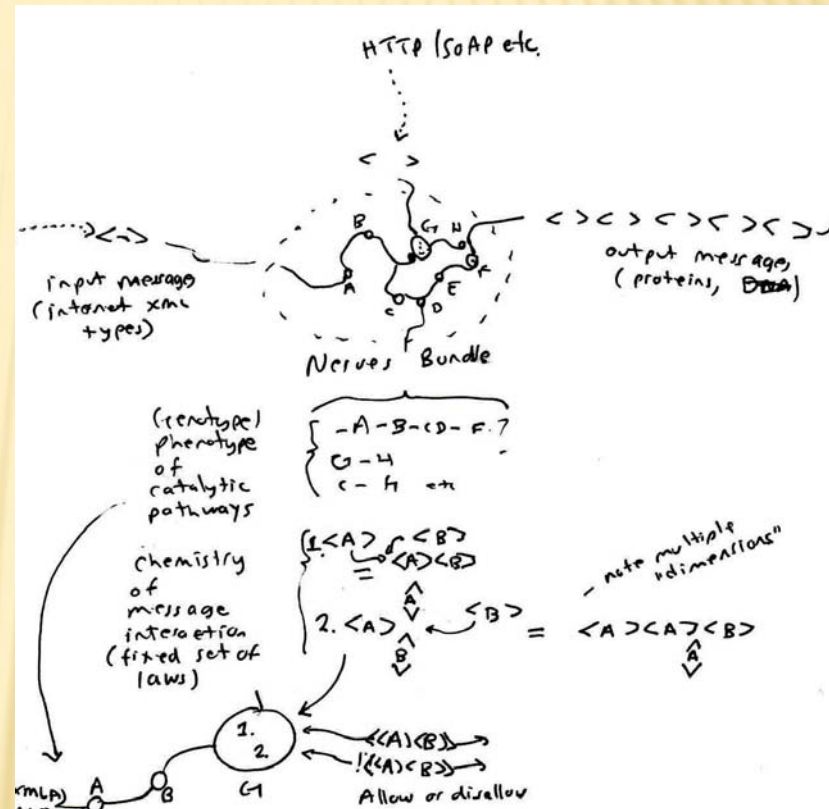
# EvoGrid:

a new initiative for the Artificial Life community

Concept development stage (Q1-Q2 2008)



Early artificial life Grids: 1991-94, Karl Sims evolving virtual creatures on Connection Machine (2K processors), and Tom Ray's Tierra, running across the Internet on servers (1992-98).



What would an artificial life Grid for the 21<sup>st</sup> Century look like? Running across the modern Internet: XML semantic spaces, web 2.0 interfaces

# EvoGrid:

## a new initiative for the Artificial Life community



Concept development stage (Q1-Q2 2008)

*Imagine an L-System forest, a herbivore simulation and a carnivore simulation all developed separately without each having its own graphical front end. Each object in the separate simulations would communicate locally or via the network using some agreed upon protocol. Next, picture one or more 3D front end “view portals” with all the bells & whistles that visualize what is going on in the engines and traffic, putting any local “area” together into a coherent scene.*

*If it existed, such an A-life system could be run as a true grid, an “Evolution Grid” or “**EvoGrid**” if you will, with the computation not limited to one processor or one 3D scenegraph’s rendering step clock. Developers could focus on their areas of strength while the quality of the collective simulation grid would improve much faster than any one individual effort. And perhaps best of all, new developers could connect their engines, protocols or view portals into the grid or take up development of existing engines and protocols so that no projects need stagnate or die. So with this vision in hand, is something like the EvoGrid possible, workable, desirable, and doable?*

For a good introduction see Tish Shute’s blog:

<http://www.ugotrade.com/2008/02/14/evogridbruce-damers-vision-for-the-22nd-century/>



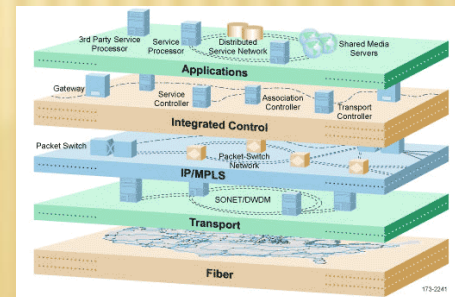
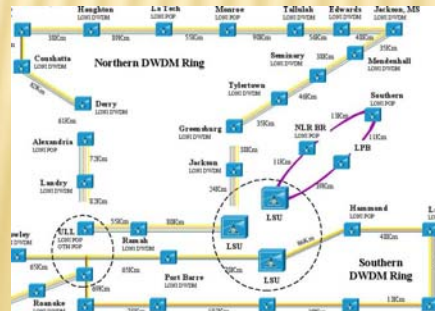
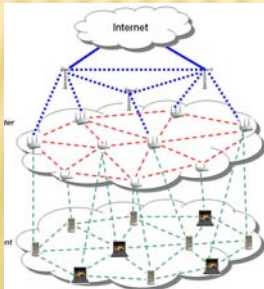
# EvoGrid:

Concept Development – discussants so far:

Tom Barbalet, Gerald de Jong, Jeffrey Ventrella, Robert Rice, Bruce Damer. Inviting more participants from Grey Thumb and beyond.

**What are the distributable atomic components of an EvoGrid?**

- 1) Physics (laws determining how objects and energies change and interact over space and time)
- 2) Genotype (determines 3, 4, 5, and 6 below)
- 3) Sensors (how aspects of the environment (and the organism itself) are perceived and fed to the brain)
- 4) Brain (takes sensor data, process it, and then affects the actuators)
- 5) Actuators (what the brain affects)
- 6) Geometry (organism bodies (objects) consisting of 3D coordinates, polygons, and parametric primitives (if any).)
- 7) Rendering (It's sole job should be to render the geometry)





# EvoGrid:

## Concept Development – Goals

### What are next steps and realistic goals for an EvoGrid Alpha 0.1?

- 1) Design Taxonomy, Semantics and Protocols (simple tags, minimal subset)
- 2) Connect a couple of existing Alife simulations into the Grid together with a Visualizer: How about active Grey Thumb projects, Noble Ape, Darwin@Home, Darwin's Pond, Darwin's Park, Nerves Router/Digital Spaces or Breve?
- 4) Build a simple demonstration grid by end of 2008?

*Interested? Sign up on mailing list, blog, and Biota Podcasts/LIVE shows about the EvoGrid (already underway).*

*Visit [www.evogrid.org](http://www.evogrid.org)*

# EvoGrid Applications?

2007: Design for a human mission to an asteroid



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# EvoGrid Applications?

## Evolved robotics for low gravity exploration



FUTURE TECH: SPACE EXPLORATION

# NASA'S NEW TARGET

A manned mission to an asteroid sounds far-fetch but a new study says it will soon be possible

BY DAWN STOVER ILLUSTRATION BY NICK KALOTERAKIS

**H**ere we are, nearly eight years into the 21st century, and the most spectacular manned mission NASA can pull off is a trip to the International Space Station, a mere 210 miles above the Earth. Even the most ambitious part of NASA's current plans for human spaceflight involves visiting a celestial body we've already been to: the moon. Astronauts, space buffs and an unimpressed public hunger for space exploration that's more dramatic, more heroic, more new. Something like, say, landing astronauts on a distant rock hurtling through space at 15 miles per second.

That's exactly the kind of trip NASA has been studying. In fact, scientists at the space agency recently

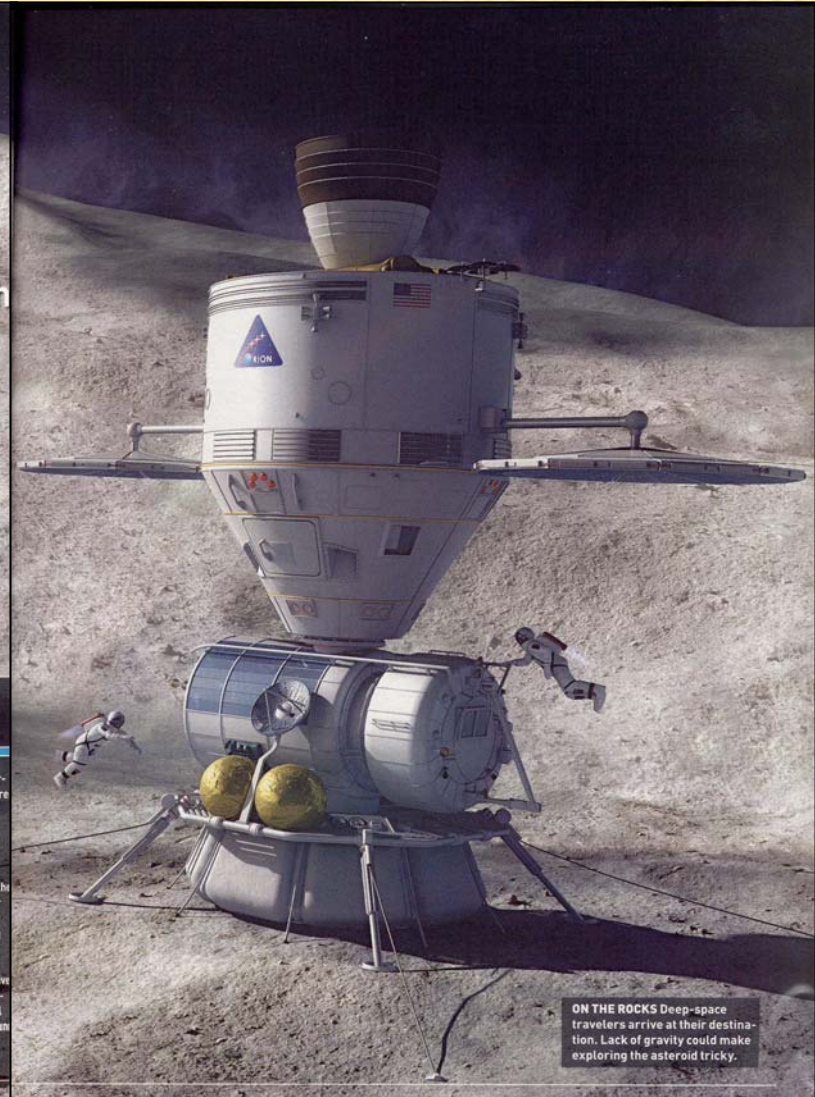
determined that a manned mission to a near-Earth asteroid would be possible using technology being developed today. The mission wouldn't be easy. A crew of two or three would spend months riding in a cramped spacecraft before reaching their barren, nearly gravity-free target. That such a mission is even being considered, though, says a lot about the versatility of NASA's next fleet of spacecraft and the ambitions the agency has for them. If nothing else, it's a signal that space exploration could soon get much more exciting.

### THE ALLURE OF AN ASTEROID

This wouldn't be our first trip to an asteroid. We've been visiting them by proxy for years now, using unmanned

### THREE KEY FACTS

- 1 A manned mission to a near-Earth asteroid would require a crew of two or three to spend months traveling through deep space in cramped living quarters.
- 2 Astronauts would explore the asteroid's surface by either pulling themselves along anchored tethers or flying around using jetpacks.
- 3 A crewed mission could deliver information about the asteroid's composition essential for knocking an Earth-bound rock off course.



**ON THE ROCKS** Deep-space travelers arrive at their destination. Lack of gravity could make exploring the asteroid tricky.



# EvoGrid:

Final message



We will all evolve,  
much faster and much better...  
***Together!***

Contact: [Bruce@Damer.com](mailto:Bruce@Damer.com), sign up at [www.evogrid.org](http://www.evogrid.org)