

Preface

Artificial life is the study of the organizational principles of life, rather than the study of carbon-based life as it exists on Earth. Highly interdisciplinary across physics, biology, computer science, and complex systems, some of the fundamental questions of artificial life are:

- What are the principles of evolution, learning and growth that can be understood well enough to simulate as an information process?
- Can robots be built faster and cheaper by mimicking biology than by the product design process used for automobiles and airplanes?
- What kinds of constraints should be placed on sciences, such as "Wet ALife," which works with self-replicating elements?
- What components of physics and chemistry support emergence and automatic discovery of physical and cognitive mechanisms of life forms?
- How can we unify theories from dynamical systems, game theory, evolution, computing, geophysics, and cognition?

Ten years ago, the ALIFE 4 conference in Boston heralded breakthroughs such as Karl Sim's co-evolving computer graphic creatures. We have nearly 100 papers and posters within, and results of workshops in a companion volume, and while we can't predict which are the most significant breakthroughs (we can only tell in retrospect), we hope you join us in celebrating how the field has blossomed.

When the President of the Society for Artificial Life approached me to chair the next Artificial Life Conference (and hold it in Boston), it was immediately after I'd given a keynote at the European Conference on Artificial Life, and was enjoying all the youthful energy, idealism and late night socializing of the many young researchers attending this great conference in Dortmund. Although I resolved never to run a conference again after 1996 SAB dissipated my summer energy without reducing entropy, there was a co-arms race between my brain and my mouth, and my mouth won and said "YES."

It was October 2003, we didn't have an organizing committee or a program committee, a date, a venue, or sponsors, or speakers, or conference schwag. What other patsies could I locate to be on an organizing committee with only 11 months? I owe great thanks to Richard Watson in Boston, Mark Bedau on the west coast, Phil Husbands in the UK, and Takashi Ikegami in the far east.

The first thing we needed was, of course, a logo and a poster and a Website. We owe a great debt to Cliff Pickover for donating to the conference reproduction rights for his mathematical artwork "Telopodite Fractal 1" to use as our logo, which signifies the chaos in organizing a conference. Cliff's art really improved the website I designed myself.

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The second thing we needed was a date and a place to hold it. After calling a few of the usual downtown venues only to find them booked or too expensive, I located the Boston Convention Bureau. Julie Bennett Taylor put our conference profile out as a fax to the catering sales offices of every hotel in Boston and its suburbs. After being overwhelmed with offers, we settled on a great downtown location with wonderful space, great food, and free in-room internet access, and I would like to thank the staff of the Wyndham Tremont Hotel, in advance, for their hospitality.

The third thing we needed were distinguished keynote speakers, and we are indebted to George Whitesides, Eors Szathmary, and Murata Satoshi for their willingness to come to the meeting even before it was organized.

The fourth thing we needed were papers. To get the papers, we only had to send out a self-reproducing email virus. But, to select the papers...

The fifth thing we needed was a distinguished program committee to contribute their time and energy in review. Thanks to the following people for doing the artificial selection of the memes that will drive the field forward:

Hussein Abbass	Dario Floreano	Naoaki Ono
Chris Adami	Paulien Hogeweg	Domenico Parisi
Takaya Arita	Gregory Hornby	Daniel Polani
Wolfgang Banzhaf	Phil Husbands	Jordan Pollack
Eric Bonabeau	Takashi Ikegami	Tom Ray
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Seth Bullock	John Koza	Russell Standish
Rafael Calabretta	Kristian Lindgren	Luc Steels
Angelo Cangelosi	Hod Lipson	Hideaki Suzuki
Alastair Channon	Paul Marrow	Charles Taylor
Sung-Bae Cho	Alcherio Martinoli	Tim Taylor
Thomas Christaller	John McCaskill	Guy Theraulaz
Dave Cliff	Jon McCormack	Peter Todd
John Collier	Barry McMullin	Richard A. Watson
Kerstin Dautenhahn	J.J. Merelo	Barbara Webb
Ezequiel Di Paolo	Alvaro Moreno	Michael Wheeler
Marco Dorigo	Satoshi Murata	Claus Wilke
Alan Dorin	Chrystopher Nehaniv	Peter Wills
Sevan Ficici	Jason Noble	Andy Wuensche
	Stefano Nolfi	Jens Ziegler

Conferences get disorganized over reviewing. But, not to worry, with the latest in electronic reviewing provided by Titus Brown, this conference would be self-organizing! While Titus Brown is not one of the editors of this volume, his software for paper

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submission and review relieved the paperwork which would have required three humanoid robots. Nevertheless, extra kudos go to Richard Watson for juggling the lion's share of the proceedings grunt work between his job interviews at seemingly every university in the UK.

Seventh, we needed sponsors. We talked to large and small businesses. Still they seemed artificially devoid of life in the post bubble age. We ended up with a Best Student Paper award thanks to Dave Cliff at HP Labs, Bristol, as well as a corporate sponsorship from Icosystem, thanks to Eric Bonabeau and Paul Edwards.

We thank the International Society for Artificial Life for the seed funding which made organization possible. And we thank Brandeis University as the major university sponsor, providing my time, my students' time, the CS department offices, Sponsored Programs Accounting, the Theatre Box Office which has the only credit card machine on campus, and the eight hours of administrative time involved with acceptance of the liability of contracts. Brandeis has also contributed the energy of Ms. Myrna Fox, without whom ALife9 couldn't happen at all.

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Chairman, ALife9.org
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