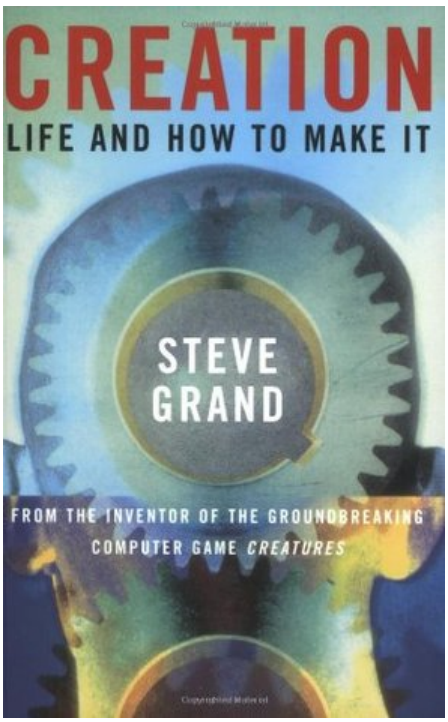

Creation: Life and How to Make it

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Creation: Life and How to Make it Steve Grand
Mankind now has within its grasp the power to synthesize true artificial life, playing out Dr Frankenstein's dream in both cyberspace and the real world. In this book, Steve Grand, a leading exponent of artificial life, provides the first authoritative and comprehensive tour of the frontiers of this burgeoning new creation. He surveys what has been achieved so far and looks at future possibilities for generating autonomous, intelligent, even conscious living things. The fundamental questions he tackles range widely: what is life? What should the minds, brains and bodies of these new life forms be like? What philosophical guidelines and computational frameworks are necessary? At the heart of this brilliantly accessible and thought-provoking book is the author's unique imaginative vision - a vision based on his experience of making some of the most advanced artificial life currently available.

Creation: Life and How to Make it Details

Date	:	Published October 4th 2001 by Phoenix (an Imprint of The Orion Publishing Group Ltd) (first published January 1st 2000)
ISBN	:	9780753812778
Author	:	Steve Grand
Format	:	Paperback 240 pages
Genre	:	Science, Nonfiction, Business, Technology

From Reader Review Creation: Life and How to Make it for online ebook

Mike Benner says

Great book on an unique way to create artificial life in a computer environment.

Jlawrence says

The author, who created the PC game Creatures, offers an intriguing view on what constitutues life and how one can simulate artificial entities in software. He concentrates on 'bottom-up' and 'emergent' design -- creating simple but dynamic systems from which more complicated and unplanned-for behavior can emerge -- as opposed to a 'top-down' approach that attempts to pre-program such behavior.

I cannot agree with some of the philosophical jumps he makes (I say his method creates models that simulate life where he would argue that once his models reach a certain level, they can be considered to be actually alive), and in some areas wish he had gone into deeper detail (the book is written for a general audience), but it's still a fascinating read.

Liv says

(Editorial note: When doing a bit of googling research on Mr. Grand for this review, it came to my attention that he lists his occupation as "Digital God" on his Cyberlife Research Profile page. While this hubris is initially prickly, it's, well, it's not far off kids.)

Back in the day when I was a young sprout, instead of a green branch, I found a game called Creatures which was OMG available for the mac. My sister and I scrimped and saved, and together with a donation from my mother (in money as well as computer timespace) we got to play it. It was groundbreaking, in ways I was too young to understand, though as I grew up with the game a bit, I came to be more and more dazzled by it. Drawn into it.

Creatures is an Artificial Life game. There's a world, Albia, 2 dimensional, with plants both dangerous and helpful, buildings, toys, underground tunnels, learning machines, and of course, creatures. Fuzzy lil' rabbit/squirrel/primate looking things are norns, the main species of the game. Can they be called a species? Oh wow, the implications! Grendels, big scaly green guys are the other species, though they are much rarer. Only one exists in the world at any time. New species were introduced in later versions, but, I'm only familiar with the first. And it's impressive enough.

Norns can be male or female. They age, eat, they get sick, they can breed, they "learn a language" (not true learning) but actually learn how to behave through positive and negative reinforcement (tickling and spanking, XD), and concept, and verb neurons in an artificial neural network. But really cool thing? They have genes coding for all this stuff (as well as mundane things like physical appearance). Ones and zeros like so many nucleotides coding for behaviours, immune systems, aging rates, and, if you're charitable, intelligence. These genes get passed onto their offspring. Just to make it even more fun, the genes can

mutate. Just to make it even more cool, you can open up the digital DNA of a norn, and edit it. My 12 year old self was opening up hexadecimal files, to create norns that would be effectively immortal (remove aging sequence here!) or really dark blue (paste in 000080 there) or super-fertile, though I don't think I ever neutered one. I was a pre-pubescent genetic engineer.

Another electronic community rose up around the one of Norns and Grendels. The users. People playing around on the computer were suddenly inspired to be hackers, graphic artists, breeders, and world-creators. Each Creature is exported to a file which can then be traded. People started doing interesting things. Genetically engineer norns to avoid incest. Make zombie norns with a constant "life force" of 0% but still be quite alive. Breed for backwards walking norns. Create masochistic norns, who would feel rewarded when spanked, and punished when tickled.
"Wolfling runs" were popular. Start a new world, throw a mish-mash of norns in and leave it without human interference for an epoch or three. See what evolves.

Steve Grand was the lead programmer of Creatures, and the latter half of Creation is a generalized description of how he did it. The first half of the book is an introduction to the concepts he considered and used in doing it. Interestingly, he did not take a reductionistic approach to creating artificial life. Instead he worked from the bottom up, creating simulations of smaller structures, then throwing them together. They worked almost "like magic" because the higher-level processes he was trying to simulate were emergent phenomena. He does a decent job of outlining his use of such topics as

* emergent phenomena
* consciousness as such
* feedback systems
* ways of playing with information: transducers, differentiators, integrators, etc. in biology (or simulations of biology)

His explanations are nice, in that they build in complexity. Starting off easy enough for the layman to understand, and become more and more layered. He makes ample use of easy to understand analogies but do to the pop-nature of the book, he doesn't have much room to expand upon the implications of the subjects he touches on. But it is enough to intrigue.

The second fraction of the book is a more concrete description of the step-by-step processes involved in actually creating the creatures for the game. There is not much in the way of hard how to computer programming instructions, though I expect that if one were a good programmer, the general description would be easily converted to code behind their purple pupils, and for the non-techno-whiz, it's accessible. We just get to understand that the mysterious code monkeys will somehow translate. We suspect magic, or perhaps cocaine, but they'll do it and make it show up on our screens, god love 'em.

This combined with peeking over the shoulder of a programmer, having a small amount of knowledge myself, and the obvious occupational benefits has convinced me that I really must learn to seriously program.

One stylistic note: Steve Grand apparently lives in some beautiful section of England. This is great, and all Steve-o, but starting every third paragraph with describing what you see out your front door, and then turning it into an analogy or example is not a fantastic writing device. The seventh time.

Srinivas says

Through Richard Dawkins from his TED talk:http://www.ted.com/talks/richard_dawk...

Alex says

Started of interesting and philosophical.

In particular, I got captivated by the discussion of cellular automata, persistence and emergent behavior.

As the book went on, it lost its edge.

Bricoleur (David) Soul says

Witty and provocative this is a great guide for a general audience - a kind of 'Zen Guide' to artificial life that is based not on the debunking or debasing of life but rather in its elevation to its proper place.

Grand is perhaps most widely known as the creator of *"Creatures"* the first computer game (circa 1997) based on the concept of artificial life but he is also a researcher in the field. In this book he lightly touches on the game but mainly he gives us a great tour of the main concepts of artificial life as he romps through a variety of prerequisite subjects from an introduction of cybernetics (the science of communication and control) through ideas about emergence and the necessity of balance in nature.

Along the way he evokes our thinking about concepts that are often unexplored or even taken for granted by many of us -- such factors as matter, mind, free will, and the nature of persistent systems are all areas where the reader can gain new insights which in turn lead to questions about how we define life and what it might mean to create artificial life that is intelligent.

As with all good books, this one leaves us with broader horizons and more exciting questions and unknowns than we had before we encountered it. Its well worth the read!

As for myself, I simply have to find out the directions and findings of the author's research since he wrote this book so I've put Grand's more recent book, Growing Up With Lucy: How to Build an Android in Twenty Easy Steps , on my wish list and will likely end up special ordering it rather than just hoping it shows up in my favorite haunts....

Tris says

First and foremost this was an interesting and insightful read and lived up to my expectations.

It did disappoint me a little towards the end of the middle third of the book, when Steve decided to skip some of the detail and started to write in much more general way about some of the topics.

On a more personal level Steve touched on a number of topics that are very dear to my heart with this book, especially in his summary at the end and for that I would like to say thanks.

Robert Wilson says

Outstanding. One of the most insightful books you'll find on the relationship between human thought and artificial intelligence. A fantastic work that will teach you new things page after page.

Felix Liao says

on Jeff Bezo's reading list
