

What is Artificial Life?

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Rethinking Life: Scientific and Philosophical Perspectives
A Workshop at Artificial Life IX
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(Foil~~TEX~~ Presentation)

Preamble

- “. . . The workshop includes presentations by both scientists and philosophers”
- Could there be a distinct *engineer's* perspective?
- Questions: Good, Bad, Ugly...

Outline

- Schrödinger's Question
- von Neumann's Question
- Vitalism is Dead! (Long live vitalism?)
- Questions of Origin
- Questions of Growth
- Questions of Being
- Simulation and Realization (!?)
- Frankenstein Redux

Schrödinger's Question [1]

“. . . We feel clearly that we are only now beginning to acquire reliable material for welding together the sum total of all that is known into a whole; but, on the other hand, it has become next to impossible for a single mind fully to command more than a small specialized portion of it. I can see no other escape from this dilemma (lest our true aim be lost forever) than that some of us should venture to embark on a synthesis of facts and theories, albeit with second-hand and incomplete knowledge of some of them—*and at the risk of making fools of ourselves.*”

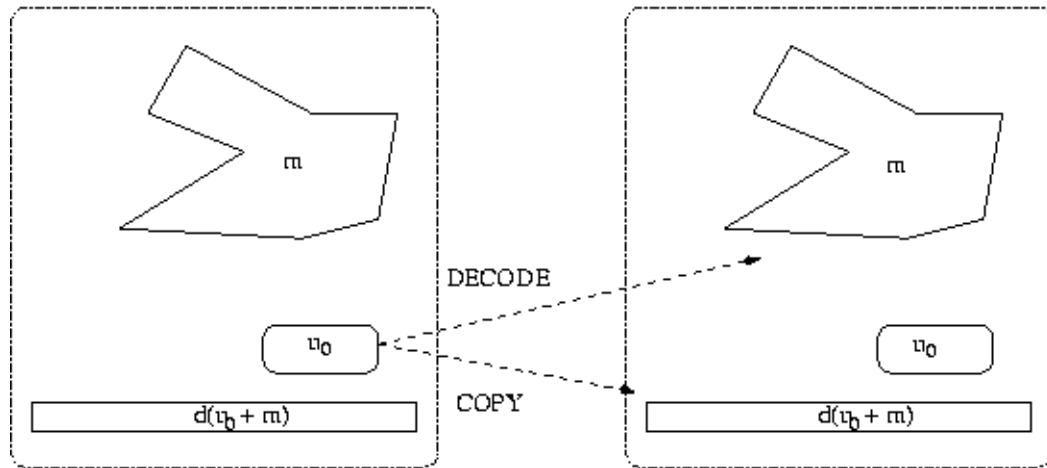
Schrödinger's Question [2]

- "What is Life?"
- (Trinity College Dublin, 1943)

von Neumann's Question [1]

- Engineering: Complexity degenerates
- Biology: Complexity grows
- Paradox?

von Neumann' Question [2]



$$((u_0 \oplus m) \oplus d(u_0 \oplus m)) \rightsquigarrow ((u_0 \oplus m) \oplus d(u_0 \oplus m))$$

Vitalism is Dead! (Long live vitalism?)

- Genetic Algorithms
- Genetic Programming
- Coreworlds (Tierra et al.)
- But ...

Questions of Origin

- Bootstrapping a genetic architecture?

Questions of Being

- Self-maintenance?
- Self-repair?
- Self-reproduction?

Questions of Growth

- Evolutionary Time?
- Somatic Time?

Simulation and Realization (!?)

- Real fires burn...
- Real rain makes you wet ...
- Real organisms do ... what?

Frankenstein Redux

“ The past appeared to me in the light of a frightful dream; yet the vessel in which I was, the wind that blew me from the detested shore of Ireland, and the sea which surrounded me told me too forcibly that I was deceived by no vision and that Clerval, my friend and dearest companion, had fallen a victim to me and the monster of my creation. ”

Related Online Resources

- DCU Alife Laboratory:
 - <http://www.eeng.dcu.ie/~alife/>
- Research Institute for Networks and Communications Engineering (RINCE):
 - <http://www.rince.ie/>

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