The Philosophical Underpinnings of Work in Artificial Life

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Keynote Abstract

There are, of course, a wide variety of research questions examined by the Artificial Life community. However at their core there are some common philosophical assumptions that span the field. Almost all Artificial Life research, as with almost all Artificial Intelligence research, assumes a materialist reductionistic understanding of the Universe. Some philosophers believe that material reductionism can neither explain how order arises from disorder, and thus can not explain evolution, nor can it explain states of mind, and thus can not explain sentience, or more comprehensively it can not explain consciousness. Some therefore argue for fundamentally new types in the Universe. These positions are fatally flawed as the same arguments can be used to show that computation on physical machines can not be explained by material reductionism. However we have managed to build physical computation machines without having to resort to any new types, so our mathematical models of computation are certainly sufficient to fill that gap. Many Artificial Life and Artificial Intelligence researchers thus put a layer of computational metaphor on top of material reductionism as argue that that is all there is. Turing and Church brought us this metaphor--originally as two separate metaphors which were later shown ot be equivalent. But is it possible that there is some further metaphor, beyond a computational metaphor that is necessary to make real progress in Artificial Life. And is there yet another metaphor that is necessary to make real progress in Artificial Intelligence. In each case, something beyond the Church Turing thesis, but in each case something that does not contradict material reductionism. And then, another question is that if these new metaphors are needed, could they be the same one for both Artificial Life and Artificial Intelligence.