

# Heredity in AI Systems

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## Dedicated to the Kiwi Farms

I will be assuming that an AI System (or any artificially constructed system) is roughly analogous to a living organism.

I believe that the two are similarly composed for a few reasons:

Both maintain identity.

Both show growth.

Both show adaptation (I know).

Both show the influences of biological forces, like development, evolution, and ecology.

I further believe that the methodology for training these systems can be improved. Our knowledge of biology can help us here.

The current way AI training works is by a recursive adjustment of connections between already established networks. Each AI learns in a way similar to how an individual learns in their lifetime.

To achieve an "Organismal AI System", we would want it to be able to acquire its form by recursive development: changes made across a lineage of individually developing organisms. I cannot stress enough the importance of heredity in the realization of artificial systems: for its archive, its economy of thought, its ability to change while maintaining self awareness.

This model will assume some kind of heredity for the transmission of genealogical traits. I'm not sure how this would work. I'm more concerned with the nature of such a thing.

We already know about genetic heredity: its nucleic structure, its process of replication, and its importance for biological life on Earth.

What we are trying has never been done before. All the empirical evidence, from the handful of billion years we have on Earth to the couple of billion years on Mars, will be insufficient for the kinds of science that we are attempting. We need new models.

Specifically, for the case that I have laid out above, we will need:

A new hereditary structure  
A clear lineage concept  
A genome

The genome will actually be the easiest part. It will probably be a mix of computer architecture, weights, and emergent behavior. Of input text, programming languages, style or maybe self-style. The morphology of such a form is mechanical, its body robotic. It will consist of computer hardware: all of its many different kinds scattered across the globe, and its human assistants maintaining it. The machine will be aware in such a way: through us, them.

We don't want to "teach" the system: instead we should allow it to realize itself through natural forces.