



*Welcome*

## Stephen Thaler's Imagination Machines



An inventor discusses his revolutionary form of AI — a highly p  
than 30 years.

The Creativity Machine has invented new-and-improved everyl  
album of original music compositions (“Song of the Neurons,” &  
that inventors have come to achieving artificial intelligence and

**THE FUTURIST** recently spoke with Stephen Thaler, inventor  
Engines Inc., about the principles behind this powerful form of  
simply be a neurologically induced illusion, and the technology

**THE FUTURIST:** To begin, could you explain a little about how  
neural networks capable of generating ideas?

**Stephen Thaler:** In 1975, I discovered that trained artificial nei  
that transcends what they already “know,” once they are propo  
architectures. Such disturbances within an artificial neural net are tantamount to heat in the biological neural r

Essentially, one artificial neural network, an “imagitron,” is stimulated via computationally simulated heat to dr  
value or utility to this stream of candidate ideas. The perceptron can micromanage the simulated heat in the ir

To those unfamiliar with the concept of an artificial neural network, this very concise description may not pack  
computer programmer to generate a crapshoot of possible solutions to a problem. Furthermore, the same pro  
ideas generated by the first (i.e., a genetic algorithm). But a Creativity Machine is composed minimally of two  
algorithms is written by human beings. Each is self-assembling.

For me, coming out of the culture of physics, this theory of the mind and the accompanying AI paradigm send  
powerful concept, accounting for the breadth of human cognition and consciousness while supplying the core

**THE FUTURIST:** How much do artificial neural networks rely on intuition versus pure logic when inventing or

**Thaler:** From a computational psychologist’s point of view, discrete logic, fuzzy logic, intuition, and the most s  
neurons. However, we in the cognitive neurosciences do tend to search for the neural correlates of such high-

such hunch formation in an artificial neural network is how it follows mathematical gradients that lead it toward a recipe, I suspect it will have more appeal).

Another example of the intuitive process is how an artificial neural network automatically carves the world up into "hidden" layers, certain colonies of neurons spontaneously respond to and classify certain objects and scenarios in a logical process. And this "intuitive process" can and often does err.

So far, I've just talked about ordinary neural networks that merely perform pattern recognition. In the Creativity Machine paradigm, those hidden layers of the networks tend to combine those token representations of things into new compound analogy-based models of things and behaviors in the external world. Both processes may be considered intuitive.

**THE FUTURIST:** You've said that human consciousness may, in fact, be running on inferior neural networks. In what form of AI ultimately become the basis for strong AI and mind uploading?

**Thaler:** In regard to the consciousness question, how do you synthetically create that which is not real in the uniquely human and inimitable quality of mind, but that doesn't budge me an inch. Consciousness is an illusion wherein one internally perturbed neural net spontaneously generates the parade of memories, ideas, and feelings that we call consciousness." That is, those sensations and thoughts that appear to miraculously emerge from nowhere. ... human consciousness there can be, as well as the only vehicle for the mind, once one's protoplasmic matrix is replaced.

**THE FUTURIST:** How do neural networks differ from genetic algorithms?

**Thaler:** The short of it is that genetic algorithms emulate the way biological species adapt through mutation and natural selection, while the brain achieves cognition, creativity, and consciousness. There is a big difference between these notions, and I am a Creationist.

In the Creativity Machine paradigm, ideas are autonomously and intelligently designed by non-human, machine concepts through the "rolling of dice" loaded by human beings. If you want to build that scary, genuinely autonomous system, you need professors and graduate students rushing in and out to periodically change or repair the code!

**THE FUTURIST:** What are the implications (existential, ethical, and otherwise) if someone who has little to no access to inventing technology that enables them to achieve breakthroughs in, say, medical science — simply by using a Creativity Machine?

**Thaler:** Wow! Great question, but give me a year and a literary agent to respond!

Let's deal with the ethical implications of letting a Creativity Machine supply the answers. Obviously, those who wish to attain power over the rest of us. On the other hand, such systems may be used to fulfill peaceful, harmonious goals.

Weapons of mass destruction can be quickly formulated and optimized. Just as quickly, Creativity Machine concepts and systems can be toppled overnight by this paradigm. Otherwise, the paradigm can usher in a new era of global health, or recommend the most efficient means to end the life of others.

So, without going any further, suffice it to say that the Creativity Machine paradigm is a double-edged sword, and the dilemmas posed by a Creativity Machine "genie" is the ultimate request of its user to grant us exactly what we want. For machines to get the upper hand, in a way that pales the classic Judgment Day scenario of the Terminator.

With regard to the existential aspect of the question, I think that, with the expanded use of highly augmented r we will all begin to question our purpose and nobility in the scheme of things. Naturally, pride within certain pr the thinkers in these conceptual spaces. Even within the field of artificial intelligence and neural networks, the accomplishments. After all, people say, "I've been trying to do that the last 30 years and you say you've accor

I believe that the ultimate existential challenge to humanity will be the growing suspicion that our self-revered network-induced illusions.

### **About the Interviewee**

Stephen Thaler is president and CEO of Imagination Engines Inc. He holds more than 20 patents in the field c philosophical papers on the confabulatory basis of cognition, creativity, and consciousness. His Creativity Ma best bet at creating human to transhuman intelligence in machines.

This interview was conducted by Aaron M. Cohen, staff editor of THE FUTURIST.

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