The Evolution of Software, Software as a Life Form

People think of evolution as something that happens in the world of matter. we live in a universe where stars evolve into astronomers. Evolution has traditionally applied to biological organisms but software evolves too. In fact - software is evolving faster than anything on this planet has ever evolved.

Consider what Reality does rather than what it is.

Let's consider a non-traditional view of the universe. Sometime when someone looks at Reality from a different perspective one can see properties not noticed from a traditional point of view. We usually look at the universe from the perspective of stuff. The universe is matter, energy, galaxies, stars, planets, asteroids, rocks, and little green men from other planets. But instead of looking at the universe as stuff, let's look at it from the perspective of function, Not what the universe is, but what the universe does.

We live in a mathematical universe. When we understand anything about the universe we find an equation that describes how it functions. And even if we don't yet have an equation for the stuff we don't yet understand, we expect there will be an equation when we figure it out. And eventually if the core nature of Reality were known we would expect that there's probably some root equation that Reality itself emerges from - an equation for existence.

A simulated Reality and a real Reality would likely be indistinguishable.

Some people even say that perhaps our Reality is a simulation. That our universe might be an instance of an app on someone's cell phone somewhere. And if the phone is rebooted our universe goes away. A simulated universe would also likely be a completely mathematical universe as well, and the fact that the universe has a finite age, finite size, and a finite resolution (quantum mechanics) is the type of thing one might expect in a simulation. Are we made of stuff or are we made of dots? Atoms are dots, held together by electromagnetic force fields. There's a lot of material for those who think we're in a simulation.

It probably doesn't matter if we are in some base Reality or in a simulation and we might never know. Even if this is a simulation it's Reality from our perspective. If this is base Reality the base reality is still an equation. Somehow Reality arises out of the mathematics. And ir is the execution of the equation over time that is our universe. Thus the universe itself can be thought of as software.

Biological Software

Traditionally software is thought of as code that humans write to run on a computer. Software is the instruction sequence that tells the computer to do A then do B the if a condition is met do C. Computers and software allow us to create a mirror of the processes we invent and run them far faster and more accurately than humans can. Computers and software allow us to extend the functionality of our minds.

But there are other kinds of software than our silicon based computers. For example, DNA is biological code that has the instructions to turn a single cell into you. And it's code that was written by evolution. 3.5 billion years ago chemicals in the ocean started reproducing and evolving. As time went on the fitness function (survivability) caused random mutations to evolve into an improved algorithm. What a new function made the organism more resilient that function became a permanent part of the DNA coding. Thus the software essentially wrote itself following the rules of the universe.

Software as a Life Form

What is life. When it comes to biological life we have a pretty good idea. When you get down to simple viruses it gets a little questionable around the edges. But we tend to think of life as biological. But what if we were to consider non-biological life? Suppose we expanded the definition of life beyond chemistry. What would be a useful definition and

examples of things that exhibit life like properties?

For example - is fire life? It reproduces. It can reproduce. In the right environment it is self sustaining. In some causes it even seems to adapt. So it has properties that life shares. It doesn't evolve however. Not that fire is actually life, but as a thought experiment it is interesting to contemplate the possibility.

But what about software as life? Like fire, it reproduces. But it also evolves. Of course software running on computers is completely dependent on us. We create its habitat, cyberspace. We control it's evolution. But it is also involved in its own evolution. As me make software better we use that software as a tool to make even better software. We also use software to design better computers and computer networks for software to run on. Ans humans are evolving our meat based software to be more interdependent with the software world. Our relationship with software is symbiosis.

The Software creates the Hardware.

Now - taking this concept to the next level, as we learned earlier, DNA is biological software. So we are software writing software. The very equations of the universe which give rise to the laws of physics and cause the universe it iterate over time is much like a program running. The universe can be seen as a recursive algorithm that started running at the Big Bang and continues to run now.

So if you look at the universe mot as stuff but as function the it seems that the function created the stuff, and not the other way around. That the universe due to the laws of physics is taking every moment of time and executing the laws of the universe against that instant to create the next sequential instant in time. The universe itself can be looked at as a program running and that it's the software that preceded the hardware.

The History of the Evolution of software.

The universe started out far simpler than it is today and as it evolved there were new emergent properties that led to higher complexity. First the 4 forces emerged, the strong nuclear force, the weak nuclear force, electromagnetism, and gravity. Energy condensed into simple matter. Matter became an emergent property of the universe as it interacted with the Higgs Field and started to experience time and gravity. Gravity led to the formation of stars and stars formed galaxies. Stars fused hydrogen and helium into heavier elements and eventually exploded in novas which scattered heavier elements into the universe.

These heavier elements had many new chemical properties and formed planets around next generation stars. Our planet and Sun is an example of this. The software of the universe makes more complex hardware and that hardware makes more complex software. When the universe evolved for about 10 billion years those chemical processes led to the formation of life. Life was a significant emergent property.

Live evolved and became more complex as it u=is guided by the rules of evolution. Life evolved minds, a biological computer that became self aware. We are now able to contemplate and reason and understand the universe we live in. Awareness, agency, free will, curiosity, all of there are emergent properties of the universe.

And although we evolved a neocortex for higher reasoning it's not our hardware that's responsible for our understanding of the universe. A single mind can not accomplish that task. It was the emergence of language that led to these new abilities. If a single individual discovered a new truth of reality, that information can now be shared an passed on. Our ability to communicate increased with written language and that evolved into radio, television, and the internet. We became a networked species and we evolved to star and store knowledge in what we call the {ln:Tree of Knowledge}. I don't know that the universe is 13.8 billion years old. We know it collectively.