CATCHING OUR BREATH AS WE CONTINUE THE GUIDED TOUR OF CREATION…

Hello everyone! Thank you for your patience with my blogs since April as I have wrestled with the best way to present parts of this guided tour on creation as a reflection of our Blessed Trinity.

Back in April, we began a tour of the physical universe and how the relationships between levels reflect the community of the Trinity.

- In May, I started with the field closest to my own training, chemistry, and realized immediately from feedback that the reflections should *precede* the science, so that you can read *only as much* of the science that is helpful. Thank you for that essential feedback!
- Next, in June, I offered the connections between collectives (herds, flocks, groves, etc.) and ecosystems in a guided meditation. Looking at this level of connections seemed much more timely and relevant to pressing matters in our world today.
- In July, I presented the two-week retreat on our own human body systems. This again was an attempt to offer something most strongly connected to each of us personally and at a time during the summer, when you might have time to enter this experience.
- In August, I thought it would be a good idea to go back to the beginning of things and then proceed from there throughout the rest of the schema. So, I wrote on the beginning at the Big Bang up to the formation of protons & neutrons. This tour of particle physics was intense, but I suppose that matches the intensity of our cosmic history in some way!

Recently I received feedback that it was time to show the roadmap itself. And quite frankly, it's good that I waited. What I originally thought would be a simple *linear* outline through the sciences in April has evolved into a *branched* outline. (See next page for the entire outline, from top to bottom with the two branches.) Atoms can become *either* molecules *or* stars. The schema recombines again when biomes and collectives become ecosystems! Note how the two branches match the first days of the Genesis story in the left column; the following days of Genesis creation story in the right column. A very unexpected and marvelous development!

This month I have written a very short presentation highlighting the relationships as we journey from protons & neutrons and separate electrons to atoms.

So, if you want to "catch up" and get your bearings,

- read the revised introduction that follows,
- go back to last month and make sure you at least browse through the beginning from the Big Bang to elementary particles to protons & neutrons, and finally
- read the very short addition I have written this month highlighting the relationships as we journey from protons & neutrons and separate electrons to atoms.

THE RELATIONSHIP OF THE TRINITY IS REFLECTED AT EVERY PAIR OF ADJACENT LEVELS IN CREATION!!!!

Energy

Elementary Particles

Protons, Neutrons

Atoms

Stars

Crystals & Molecules

Galaxies & Supergalaxies

Liquids, Solids

Biomolecules

Organelles and Cells

Solar Systems & Earth

Tissues

Organs & their Systems

Organisms

Biomes

Collectives

Ecosystems

CREATION BEARS THE IMPRINT OF THE SYNERGY IN THE TRINITY—INTRODUCTORY BLOG

Scientists study various parts of creation, but since our knowledge of creation in our 21st century is so vast, at least compared to what it once was, it has become convenient to split our study of it into more closely-defined disciplines. As convenient as these divisions are in taming the enormous amount of knowledge, *scientia,* we have about the universe, the splitting of creation into bits makes its beautiful overall integrity less obvious. In this writing, I hope to reclaim a sense of this most wonderous fabric of the universe by examining how the various parts relate to one another and in that relationship how creation reflects its Trinitarian Creator we call God.

Each specialty in science studies a slice of creation, and in each one we see how the whole made from its parts is more than their simple sum, because of the relationship that exists among them! What is less obvious is that this pattern occurs in every science and just like a nested Russian doll, one layer can fit inside the other. Unlike the nested Russian doll, however, the synergy of coming together produces something new: what is made from the union of the parts has different and more complex properties as well as a potential for providing the building blocks for the next level. Some people call the coming together of the parts *holons*, to emphasize that the whole is not equal to, but greater than the sum of its parts.

I would like to take you on a "guided tour" through various levels of our universe. Some of these will be familiar to you, depending on where you have spent your life looking at creation; others will be unfamiliar, even at first perhaps uncomfortable. Don't stress…be curious about the unity and the relationships. Don't get distracted by the plurality of dialects within the various subdisciplines used to describe this integrative process. It is all the same wonderous community reflecting the Trinity as it produces more than a simple addition of the original parts.

What are these various levels? How many are there? We begin with a simple catalogue, not necessarily complete, of various types of scientists and what they study. We will start with the Big Bang and the energy of the universe and follow its evolution by living into increasing levels of complexity to the world as we understand it today. This interrelationship at every level reflects the beautiful mystery of the Trinity in community:

- Cosmologists and particle physicists study the origin of the universe (the Big Bang), particles of the smallest types, like quarks, and how they combine to form "next" level particles such as protons and neutrons.
- Nuclear physicists study how protons and neutrons combine with electrons to form atoms

At this point, two possibilities for complexity emerge. Atoms at this level can combine through the force of gravity to initiate nuclear fusion *or* through electrical forces to form molecules and crystals. The first leads to the place we live (and the rest of the universe) and the other to life itself!

- Astronomers study
    - the formation of simple, 1st-generation stars and their life cycles as well later 2nd or later-generation stars like our Sun.
    - the formation of galaxies and supergalaxies from the smallest deviations in the density of primordial hydrogen and helium.
    - the formation of our solar system as a by-product of our Sun's formation. Others are also by-products of their suns.
    - how a major collision that almost destroyed the Earth led to the formation of our Moon, the tides in our oceans and the seasons in the middle latitudes.
- Climate scientists study the rhythms of long-term weather patterns on Earth, and how these are affected by the Earth-moon relationship.
- Oceanographers study the composition, life in and currents of the oceans.
- Geologists study the rock cycle. How it
    - emerges from the mantle
    - is transformed by weather and pressure, and then
    - subtends back into the mantle.
- Chemists study atoms and how they form smaller molecules and large crystals by their interactions. They also study the intermolecular forces that lead to the formation of liquids and solids.
- Biochemists study
    - larger biomolecules and how their folding influences their function.
    - chemical cycles that occur in organelles.
    - how organelles work together to form the smallest independent unit of life, the cell.
- Microbiologists study how the smallest living creatures live and move.
- Histologists study how whole cells operate and how they come together to make tissues.
- Anatomists and physiologists study
    - how tissues make up the organs, and
    - how these organs work together support an organism.
- Zoologists and botanists study not only organisms in their entirety, but collectives of organisms, like herds.
- Ecologists study relationships within local ecosystems and regional biomes. This last level brings together the non-living and living parts of the universe in a beautiful symphony of interrelationship. All aboard!

This guided tour of what synergies and interactions a scientist might see within a specific discipline is accompanied by an opportunity for contemplation via ponderings, a reflection, a blog or a novena. My hope is that we will all begin to see more clearly just how close God is to us, at every level of the universe, no matter where we are! *We may even understand more deeply how where we are informs us about Whose we are, and how what we do in our own communities reflects God's own Self too.*

(DON"T FORGET TO GO BACK TO LAST MONTH'S BLOG BEFORE CONTINUING….)

FROM PROTONS, NEUTRONS, & ELECTRONS to THE FIRST ATOMS—PHYSICS TO CHEMISTRY

REFLECTION

Coming together in a stable way can take time. When we want or need to interact with someone else, sometimes the hardest thing to do is to wait…Not convinced? Try sitting still for just 30 minutes without your cell phone, not talking to anyone else, not doing anything, just being.

Before electronic communication, physical distance taught us how to delay our need for such conversation. Today, we phone, text, tweet, etc. immediately. There can be very little time between our emotions and our communicated reaction to the other.

Our tendency might be to try to fix something or someone who is "wrong" or to enter a conversation when the moment is right for us, but not for the other person. To understand how ineffective this is, consider the last time someone had criticism, even, helpful criticism, which *you* were not ready to hear. It's easy to become defensive and to throw up a wall of defense to hold off the unwanted conversation!

Yes, in some circumstances, the best thing to do is *nothing*, not a thing, at least for a while. And, our waiting is not without fruit. We wait for a change in attitude (ours or others), an inspiration, or for the right moment. When wisdom tells us to re-enter back into activity we go. In most circumstances, the waiting paves the way for a two-way beneficial conversation where both parties are looking for clarification and/or understanding.

SCIENCE BEHIND THE REFLECTION

Our next step in the journey of the universe will take us from 380,000 to 150,000,000 years.

- At 380,000 years and a temperature of only 4000 K, atomic nuclei and independent electrons combined to make neutral atoms of hydrogen and helium Photons from this recombination were released as the cosmic background radiation (CBR), discovered by Arno Penzias and Robert Wilson of Bell Telephone Laboratories back in 1964.
- The Dark Age of the universe followed, before the subsequent formation of stars, our next step in the journey. This is one branch of the two possible for atoms, thanks to the gravitational attractions between them. (The other is the formation of molecules based instead on the electrical attraction between them. See the blog in from May to read about this.)

Bless the Lord, all you atoms,
Hydrogen and helium, bless the Lord;
Cosmic background radiation, bless the Lord,
Praise and exult God forever!