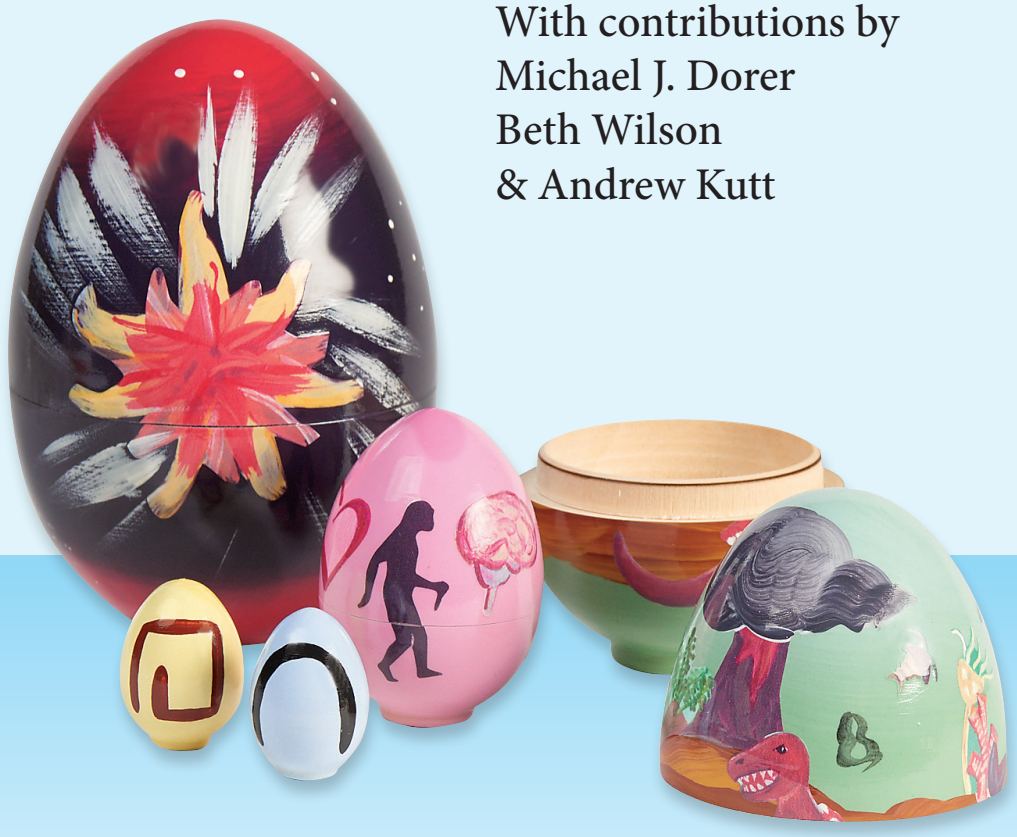
Getting Started with the Cosmic Egg

A Beginning Guide for Montessorians

With contributions by
Michael J. Dorer
Beth Wilson
& Andrew Kutt



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Introduction

by Michael Dorer

Maria Montessori's Cosmic Education program has deeply interested and fascinated me for more than 30 years. I thought I understood it, or most of it, when I studied it in Montessori elementary-level training in Bergamo, Italy. Yet since then, hardly a year has gone by that I haven't learned something new about Cosmic Education. I am happy to say that I am still learning.

It wasn't until the 1990s that I began to understand that the cosmic program was much greater than what I'd first seen at the elementary level. I began to try to view the early childhood (primary) program as well as the adolescent program through a cosmic lens, and I began to see the many features of the early childhood classroom that are, in fact, cosmic in nature. Similarly, there are great opportunities to extend the cosmic program in secondary school.

Early on, I was somewhat fixated on Montessori's five great lessons. These five lessons, presented as stories, are offered annually to all the children in the elementary program. What I began to understand was that the great lessons really exist to introduce five great themes that permeate the entire program. Lessons, of course, are temporal; they can only last so long. But great themes last for years and years. Montessori's great themes are the universe and its history, life and living things, human beings and their history, language and communication, and mathematics.

Through this lens, I began to see the many components of the early childhood program that lead up to the great lessons offered in the elementary years. Likewise, I started to grasp the importance of continuing work on these great topics all the way through elementary and secondary programs.

In the early 2000s I came to the realization that the five lessons or five themes were not actually five different things: there is simply one great story that encompasses five interrelated chapters or parts. This insight was intriguing as well as deeply moving to me, but I struggled with the problem of how to communicate it to young people.

For my first attempts to present the discovery of a unified story with interrelated parts, I used a Russian *matryoshka* doll. These nesting dolls seemed to help demonstrate the notion that each theme, while individual, is entirely contained within the larger scheme. Still, the traditional dolls were their own thing—beautiful,

but still dolls with human features. I wanted something similar in concept but different in form, yet I struggled to imagine what might be possible.

Then, in late 2017, I learned of the Golden Cockerel company and its owner Walton Conway. Walton and his company facilitate the manufacture and import of objects of Russian art and tradition such as the Russian dolls. I asked him if I could have my own five-piece doll made and decorated with art of my choice.

When he answered in the affirmative, I next contacted a former student, Beth Wilson, who I knew to be a talented artist. We talked about art for the dolls and made some initial plans.

Then, in the summer of 2018, I gave the keynote address at the Montessori Association of New Zealand conference. There, at a round table discussion with elementary Montessorians, I spoke about my vision of the doll. People were interested, and I got excited! On the long plane ride home from New Zealand, I had a new idea. I wondered if it was possible to make the nesting doll, but not a doll: I began to envision it as an egg.

I have always been struck by the deep symbolism of the egg in many cultures throughout history. Among other metaphors, eggs often represent the entire universe or the birth of the cosmos. What a great symbol that would be, I thought, and I wondered if Walton could make something like that.

Thus it was that in the late summer of 2018, Beth and I begin to work with the Golden Cockerel company to create an egg-shaped Russian "doll." While Beth created original painted artwork representing the five great themes, I realized that the final two themes, language and mathematics, were not contained one within the other. Therefore, I asked if the egg could be made in a special way so that there were three hollow nesting eggs and then two, equally-sized small solid eggs contained within the last hollow one.

As it turns out, Walton was able to construct just such a material. When the first prototype eggs arrived in the spring of 2019, I examined them closely and brought them to Jane Campbell and Joe Campbell of Montessori Services/Parent Child Press. We agreed to work together to produce and distribute these "Cosmic Eggs."

Along with the actual wooden eggs, I simultaneously collaborated with Beth and another dear Montessori friend, Andrew Kutt, on two other interrelated projects. One was to be an illustrated children's book. Additionally, I wanted to reach children in another way, so I asked Andrew to compose five original songs, one for each theme.

To use and benefit from work with the Cosmic Egg material, you do not absolutely need the picture book, *Hatching the Cosmic Egg*, that I wrote and Beth gorgeously illustrated, nor do you fundamentally need the CD of songs that Andrew Kutt wrote, performed, and recorded to accompany the book and the Egg. But, I mention them here because as a creative team we are equally as proud of the fruits of our collaborative labor, and we do think that you might want to use them alongside the Cosmic Egg. They enhance the material, without a doubt.

In the summer of 2019, our first shipment of Cosmic Eggs arrived from St. Petersburg, Russia, where they had been made and hand-painted. It was an exciting moment!

Finally, the Cosmic Eggs are available to anyone. They can be used in homes or in schools, at any age starting from about 5. In Montessori classrooms, they can be offered before or as follow-up work to any of the great lessons—or they could be presented much later. Because there are five of them, there could be lessons for the whole set or for each individual egg.

Montessorians are used to using teacher manuals or albums. Since the Cosmic Egg is a brand-new material, I decided that we must create a manual, and what you are reading now is the beginning of that plan. We expect to have a more complete manual, including presentations, lessons, and thematic units, written by a team of outstanding Montessori practitioners, for early childhood through adolescent programs, in early 2020.

I would like to offer my deepest gratitude and thanks to my collaborators, Beth and Andrew. The work that they have done will have a positive influence on hundreds of Montessori guides and thousands of children.

We were greatly assisted by Molly Foran Yurchak, our talented editor; Jane Campbell, owner of Montessori Services; and Joe Campbell, author's representative at Parent Child Press.

I hope this manual is of abundant assistance to you in your work with the Cosmic Egg.

Michael Dorer
St. Paul, MN USA
September 30, 2019

What is the Cosmic Egg?

by Michael Dorer

The Cosmic Egg is a unique new learning material developed using Montessori principles. It is aimed at providing preparation for, extending, and expanding the five great themes of Montessori education that begin in the early elementary years and continue through high school. These five themes are:

1. The Universe
2. Life and Living Things
3. Human Beings
4. Language
5. Mathematics

The Cosmic Egg is constructed like a Russian *matryoshka* doll: it is a set of nesting eggs, each of which opens to reveal a new egg inside of it.

The first, largest egg is painted with a reddish background and a stars-and-galaxies design. This is the Egg of the Universe, or the Cosmic Egg itself. It represents the entire cosmos, the whole universe.

The second egg is the Egg of Life. This greenish egg is revealed when the largest egg is opened. It shows a variety of early living things from prehistoric times.

The third egg is the Egg of Humanity. Slightly pink, this egg is decorated with drawings of various early human beings as well as symbols of three great human gifts. A brain represents human consciousness, a hand represents the dexterity of humans' opposable thumb, and a heart represents love.

There is a surprise when the Egg of Humanity is opened: instead of revealing just one smaller egg, two small eggs of equal size nest inside.

One of these is the pale yellow Egg of Language, honoring the great human invention present in all human cultures in some form. The designs on the egg represent an ox, or aleph, and a house, or beth—two symbols used in the classic Montessori story *The Piece of Paper that Sees and Speaks*.

Finally, equal in size to the Egg of Language, is the light blue Egg of Mathematics, representing another great innovation found in all human cultures. Its surface is decorated with ancient Egyptian number symbols.

The basic idea of the nesting eggs is that the universe contains everything. However, because its greatness is so immense, we are unable to think about or list every element of it, so we begin to break it down conceptually, looking at smaller components, one at a time.

Thus, we begin with the Cosmic Egg, or Egg of the Universe. This egg, metaphorically the entire universe, contains everything. To children, this usually first means outer space; stars, planets, galaxies, the sun, even cosmic dust. Then we realize that it contains Earth and everything on it or in it: rocks, air, water, soil, ice, rain, plants, animals, islands, capes, and much, much more. It's overwhelming, so vast that we cannot truly comprehend it. Thus, we decide to focus on only the living part of the universe. We then open the Cosmic Egg to reveal the Egg of Life so that we can have a detailed look at living things.

The Egg of Life contains all things biological: everything that is or has ever been alive, including plants, animals, bacteria, algae, fungi, etc., and it also contains every part of every living thing and every product of every living thing. As we explore this egg, we discover that there is too much to list—life, too, is so vast that it is also beyond our complete comprehension. So, we can again open another egg and have a look at just one kind of life: humanity.

With the Egg of Humanity, we can ponder all the various types of people who have inhabited Earth: *Homo habilis, Homo sapiens*, Neanderthals, modern Americans, the French, Australians, Africans, the Sami people—the list is immense. This egg also involves the study of human anatomy and physiology. It includes all human achievements: civilizations, cultures, art, music, buildings, roads, vehicles, clothing, tools, and much more. Since this is so much to consider, we can narrow our focus once again, looking at just two special human inventions: language and mathematics.

The first of these is explored with the yellow Egg of Language. It is decorated with symbols that represent the development of writing, which can spark appreciation for the other great components of language: speaking and reading. Thinking about language, we can contemplate the variety of humanity's languages, including great language families. This can lead to consideration of handwriting, spelling, grammar, novels, poetry, limericks, drama, signing, etc.—the endless richness that has developed in humanity because of language.

The final egg is the light blue Egg of Mathematics. Beginning with the Egyptian symbols on its surface, we can recall the history and design of numbers, the value of

counting, the purpose of arithmetic, and various kinds of number systems that have developed in different cultures. This egg can spark conversations about money, time, temperature, statistics, and so much more. Of course, this egg includes geometry, leading to the study of lines, angles, plane figures, and solids.

Having opened and explored all the eggs, we now have the opportunity to reassemble them. As we do, our focus is on the individual human child. We want to point out that a human child possesses the great gifts of language and number: to some extent every human has at least beginning language skills and rudimentary mathematical or pre-mathematical skills.

So, since we are individual human beings with the gifts of both language and mathematics, we place those two smallest eggs back into the Egg of Humanity, announcing that these are important aspects of being human.

As humans, we are therefore alive, so we place the Egg of Humanity inside the Egg of Life and close it up.

All living things are in the universe. In fact, all living things that we know of now live on Earth, as we do, though it is possible that there may be living things elsewhere. Still, no matter where we might discover more life, all living things exist within the universe, so we place the Egg of Life back inside the Egg of the Universe. The Cosmic Egg is rebuilt.

This is a basic description of the Cosmic Egg, its components, and a first look at some of its uses. A more complete manual, coming in 2020, is meant to aid teachers, parents, and administrators to explore the many possible uses of the Cosmic Egg, including exercises aimed at the Children's House or preschool child, the lower elementary child, the upper elementary child, and the adolescent. There will also be exercises to encourage using the Cosmic Egg and its concepts in music, art, and physical education. Finally, the complete section on music will include the sheet music in addition to the lyrics for Andrew's songs.

This Cosmic Egg is a new material. It does not have a history like most Montessori classroom materials. Therefore, this manual is only a beginning, a first collection of thoughts and ideas about what can be done with it. It is our hope that as you use the Cosmic Egg, you will find other ways to use it and will be able to add new exercises at all levels and in all subjects. Please be in touch as you work with the Cosmic Egg. We are very excited to hear what will grow from this humble beginning as you create your own uses for it.

About the Art

by Beth Wilson

When Michael first told me about his idea to use nesting eggs to encompass the five great lessons, I thought it was wonderful. When he asked me if I could do the artwork for them, I was delighted—but equally overwhelmed. How does one take these five vast stories and represent them in such a small way? I decided to pick a few images that encompassed the theme of each story.

The first two eggs were the easiest: the Big Bang for the Egg of the Universe, a few favorite images from the Timeline of Life for the Egg of Life. For the third egg, the Egg of Humanity, I decided to do a simple evolution of man separated by the three gifts humans hold: hands for work, minds for thought and creativity, and hearts for love. The fourth and fifth eggs needed to be simple due to their small size.

For the Egg of Mathematics, I chose to put the symbol for 1,000,000, as I have never forgotten Peter Hanson's lesson on the Story of Numbers during my own Montessori training; and for the Story of Language, I chose to use the letters of the Ox and the House story (with my name being Beth, I've always been partial to the "house" letter).

Michael and I then discussed a thought—the use of color is so important in the Montessori environment. What would be the color scheme for our eggs? That I will leave for you to discover and interpret.

And so the designs for the eggs were created—with a brilliant idea, a few creative interpretations, some acrylic paints, and much love.

The First Egg Story

by Michael Dorer

Imagine that you could go outside with me on a beautiful summer day. Let's look around and see what we see. There are many plants covered in leaves, there is a beautiful lawn, tall trees, and green bushes. How many leaves are there? There must be hundreds, thousands, probably millions. How many leaves do you think there are in the whole world? We wouldn't be able to count them, would we? The number of leaves in the world is simply uncountable.

While we are outside, we may feel the breeze in our hair. How many hairs do you have on your head? Do you have any idea? There are quite a few I'm sure. How many hairs do you think there might be on all the heads of all the people who live on Earth now—and who have ever lived? That would be such a gigantic, uncountable number that I can't begin to imagine it!

Now let's walk down to the shoreline of a beautiful blue lake. Feel the sand under your toes. There surely is a lot of sand on all the beaches and all the shorelines in the whole world. Do you believe it would be possible for anyone to count every single grain of sand in the whole world?

All these uncountable things that we have imagined are here on Earth, but Earth is just one planet in our solar system, and our solar system is just one group of planets surrounding one single star, our sun. Our sun is only one star among many, many stars that make up a galaxy. Our galaxy, the Milky Way, is only one of hundreds, thousands, millions, or more galaxies. Together, many of these galaxies, too many to count, make up our universe. Some people call our universe the cosmos. Whatever you call it, it contains more stars than all the grains of sand on earth.

Bring out the Cosmic Egg and show it to the children. You may let them handle it.

Let's imagine that the whole universe is like a gigantic egg filled with planets, stars, cosmic gases, dust, asteroids, moons, dark matter, and even black holes. Look at this special egg that that I am holding. This special wooden egg is decorated with stars, suns, galaxies and planets. It represents the whole cosmos, which is why we call it The Cosmic Egg. It's like a tiny model of something very, very big. We can imagine that it holds everything there can be, not only in outer space,

but everything there can be on Earth as well. Let's imagine that it holds lakes, rivers, streams, and oceans. It holds soil, gravel, sand, and rock. It holds mountains, plains, valleys, and peaks. It holds all emotions—happiness, anger, fear, joy, and love. It holds light, sound, energy, and matter.

The universe holds everything, but I have only mentioned things that are not living. The universe also holds life and living things. At this time, we only know of one place where there are living things. That one place is Earth. We know for sure that there are living things all over our Earth.

Let's open this Egg of the Universe, this Cosmic Egg, right now. Inside it, there is a beautiful green egg decorated with living things. This is the Egg of Life. We can imagine that all life is like a fertile egg inside of the universe. We can imagine that the Egg of Life contains everything that can live, has ever lived, or may ever live. What a vibrant, joyous, exciting egg!

Open the Cosmic Egg to reveal the Egg of Life. Show it to the children and let them handle it. As they do, close the Cosmic Egg and place it on its base.

Life takes so many forms. Often, we think of animals first. We may think of our pets or animals that we see in the forest or in the zoo. But, of course, plants are alive too. So are lichens, mosses, algae, and fungi. And everything that lives depends on those leaves that I talked about a while ago. The leaves put oxygen in the air that we breathe. They give that to us freely. We live on Earth because of all the other living things—like the plants with their green leaves.

Everything that is alive has certain characteristics. All living things need food of some sort, some kind of nutrition, and all living things eliminate waste, grow, and reproduce. All living things are made of cells. Fossils give us a record of some of the things that used to be alive but no longer are.

Living things are all over the world. They live in the water—the oceans, lakes, rivers, and streams—that covers most of the Earth. They live on mountains and in deserts, marshes, and swamps. Some burrow beneath the ground and others flit lightly through the air. Some living things are very large, like a blue whale. Others are as tiny as a single cell. There is a huge variety in life and yet all of us are interrelated.

I have told you of many kinds of life and where they all live. But there is one form of life that I have not mentioned. Human beings! That's right, we are alive. Of course we are. But we are a special form of life, especially interesting because we ourselves are human beings. Let's look inside the Egg of Life and see what lies within.

Open the Egg of Life and bring out the Egg of Humanity. Then close the Egg of Life and stand it on its base next to the Cosmic Egg. Show the Egg of Humanity to the children. You may let them handle it.

Here is a beautiful egg that represents humanity, people, all of us everywhere, all over Earth. This egg represents all of the people who live here now, all of the people who have ever lived, and everyone who will ever live in the future. It even represents all of the things that humans do and all that we have done—all of our greatest inventions.

On the Egg of Humanity, you see a human brain like the one that is inside each of our heads; a hand that represents our ability to hold and grasp every sort of tool, large or tiny; and a heart that represents human love. This means all kinds of love: the love we have for our families, the love we have for our friends, the love people have for their husbands and wives, even the love that we have for our homes.

Humans have changed the world. Think of all the many inventions that human beings have come up with and all of the discoveries that we have made and are still making. We invented clothing, farming, pottery, weaving, concrete, paint, music, and paper. We invented many, many more things than these.

Human beings also domesticated animals, tamed fire, discovered electricity, built ships and boats, cars and bicycles, giant airplanes and small scooters. We have built homes to live in, giant apartment buildings, streets to lead us from place to place, and sidewalks for walking.

It's true, human beings have changed the world. Our inventions and discoveries have made so many things possible. But there are two inventions of human beings that stand out. These two things have made so many of our discoveries possible and have allowed us to share our inventions and discoveries with everyone else.

Open the Egg of Humanity and bring out two eggs, the Egg of Language and the Egg of Mathematics. Then close the Egg of Humanity and stand it on its base next to the Egg of Life. Show the two new eggs to the children.

One of these inventions is Language and the other one is Mathematics. Let's think about each of these for a moment. While we do that, let's look inside that Egg of Humanity and see what we see. There are two beautiful small eggs: the yellow one is the Egg of Language, and it is decorated with symbols of an ox and a house. Those two early symbols represent the beginning of our alphabet.

The other egg is a lovely, light blue color. This is the Egg of Mathematics, and it is decorated with ancient Egyptian number symbols. Let's examine these two eggs closely.

The yellow Egg of Language represents all our human communication. In every culture, in every place, everywhere that there are human beings around the world, we have invented language. We have invented so many different kinds of language and speech. Some are very close to each other and sound nearly the same. Others are so very different from each other that their sounds are hard to understand.

Set aside the Egg of Mathematics and show the Egg of Language to the children. You may let them handle it.

We have learned to speak with many sounds and sometimes by signing, using no sounds at all. We also communicate with gestures, expressions, smiles, and sometimes a grimace. Our languages contain words of all kinds: naming words, action words, describing words, defining words, connecting words, dividing words, expressive words. So many, many words.

Sometimes when we speak, we whisper—or maybe we shout! Sometimes we yell or just murmur. We can chant, recite, call, holler, and sing. We use our voices and our words for so many things.

Humans do not only use language for speaking. Language allows us to write, using special symbols, an alphabet, or characters of various sorts—these all have special meanings. When we write, we can leave our thoughts for anyone to see, even people who have not yet been born. We can make notes or write poems, novels, and plays. We can use musical notation to write songs.

Wherever there is writing, there is probably reading. Reading lets us understand the thoughts of people far away from us. We can know what people think about, whether they lived in the distant past or are our neighbors today. Reading is a wonderful human power, something that lets us learn, share, enjoy, and treasure. With reading, we can have favorite books that portray things that we love, stories that make us laugh or cry.

There is certainly no doubt that these three things—speaking, writing, and reading—make up one of humanity's greatest and most useful inventions: language.

Set aside the Egg of Language and stand it on its base next to the Egg of Humanity. Show the Egg of Mathematics to the children. You may let them handle it.

Our final egg is the beautiful, blue Egg of Mathematics. When we think about what's inside this egg, we think of numbers, shapes, sizes, measurement, the numbers we use to refer to specific years in history, and even our ages. But there is much more inside this egg than that.

The first things that might reveal themselves are quite simple. Putting things in order, making lists and plans, matching things that go together—these are all part of mathematics. In this egg, there is also sorting, classifying, finding patterns, and making comparisons. It may be surprising, but all of these have to do with math.

Then there are quantities and numbers to express them. There are numerals from cultures around the world. We find Arabic numerals, Roman numerals, Mayan numerals, and also Greek, Hindu, Egyptian, and Japanese numerals. Looking even deeper into the egg, more than 27,000 years in the past, we find notched sticks that were used to match things one to one.

Addition is in this egg. We also find multiplication, which seems to be a child of addition. Then there is subtraction, addition's opposite, and its descendent, division. This is also the egg in which we can find roots (but not the kind that grow on plants). We find algebra, trigonometry, calculus, statistics, even some chaos.

Looking deeper we discover the world of geometry. Points and lines, surfaces and solids. There are triangles, seven kinds. There are many squares, rectangles, polygons, cubes, pyramids, ovoids, and spheres. There is area, perimeter, height, and somewhere I see a hypotenuse.

It seems like the whole world might be in this egg. Even though the egg is part of the universe, it seems that the whole universe is also in this egg. Maybe everything can be counted, numbered, organized, or arranged in patterns. Maybe the whole universe has shape and size. In fact, so do every one of us. The very shapes of ourselves—our bones, our fingers, our heads—are geometry in our bodies. Our height, our weight, our body mass, and our age all show numbers as part of us. We are connected to mathematics and mathematics is connected to us, and it connects us back to the universe.

We've seen five wonderful eggs. The Cosmic Egg, which contains the entire universe, the whole cosmos. We've seen the Egg of Life, containing every living thing, which so far as we know exists only on our own planet. We ourselves make up the Egg of Humanity, where we join with every other person: past, present, and future. As I tell this story, I am part of the Egg of Language through my speaking, and you are part of it through your listening. Our final egg is the Egg of Mathematics, containing the ways we measure, count, and can begin to understand all the other eggs—all the way up to the entire universe.

Pick up each egg and admire it as you refer to it.

Let's put this egg back together again. As we put the Egg of Mathematics and the Egg of Language into the Egg of Humanity, we remember how great and powerful these two inventions are. When we put the Egg of Humanity back into the Egg of Life, we are reminded that we share so much, including life, with all the other living things who also share our Earth. Returning the Egg of Life back to the whole universe, the Cosmic Egg, we are reminded that as important as life is, it is only one part of the magnificent universe which is around us and within us.

Reassemble the egg completely. Put each piece together as it is mentioned in the story.

Let's enjoy these eggs and all we can learn from them as they take us back and forth through all the parts of the universe. Now let's go back outside just as we did at the beginning of the story, but this time, let's go out after dark. Look at the myriad stars scattered across the sky. There are too many to count, but they let us know that we are part of the whole universe. The plants and animals around us remind us of that second egg, the Egg of Life. That's the egg where we people find a spot in the Egg of Humanity. And there we exercise our great abilities of language and mathematics.

Let's imagine that we can lie down on our backs in the soft green grass and lose ourselves in the mystery of the cosmos. What a wonderful universe we live in!

The Cosmic Egg: First Presentations

by Michael Dorer

Materials: the Cosmic Egg, sticky notes, a chalkboard, blackboard, whiteboard, or other surface upon which you can stick many notes

Preparation: an introduction to Globe I with the concept of a model; an introduction to mind maps or some similar form of graphic organizer

First Presentation:

1. Gather a group of at least five children. Discuss the universe—talk about how large it is, how all-inclusive it is. With elementary children, you may reference the great lessons.

2. Show the Cosmic Egg. Tell the children that this egg represents the entire universe—everything that there is—everything. Explain that it is not actually the universe but a model. Take time to examine it and comment on the images.

3. Ask if we can list everything that is in the universe. Say: "Let's give it a try. We will write down everything there is."

4. As children come up with ideas, have them write these ideas on the sticky notes and give them to you. Stick them up on the chalkboard or whiteboard.

5. In the center of the board, place a sticky which you have labeled *The Universe*. Start to organize the sticky notes; for example, group things in outer space together and things on Earth in another group. In the outer space category, you might separate out planets, stars, galaxies, etc. Draw lines connecting them so that it becomes a mind map.

6. Ask the children to take all that they have written on the sticky notes and write it in their notebooks (or on chart paper or poster board). Have the children create mind maps of what was on the board. Introduce and demonstrate mind maps if this is a new concept.

7. Collectively, create a large mind map of living things which can be posted on a wall. Let the children add to it over the next several days. Other graphic organizers may be used.

Second Presentation

1. Pause to reflect with the children: "There are so many things in the universe that I believe it's impossible to list all of them." Look over the mind maps that have been made and suggest: "Let's just look at one part of the universe. We'll just look at the living part." Open the Cosmic Egg and take out the Egg of Life. Take time to examine it and comment on the images.
2. Following the same procedure, begin to list all living things. In the center of the board place a sticky note which you have labeled as *Living Things or Life*.
3. Be sure to include animals, plants, invertebrates, vertebrates, mosses, algae, etc. As this goes on, the students (especially the older ones) may suggest parts of living things, such as leaves, flowers, legs, feet, fur, roots, etc. Continue to post all these suggestions so long as they are alive or are a part of a living thing.
4. Start to organize the sticky notes. For example, group vertebrate animals together, plants in a separate group, invertebrates in a third group, etc. Then, in a category such as vertebrates, you might separate out fish, amphibians, reptiles, birds, mammals, etc. Draw lines connecting them so that it becomes a mind map.
5. Once again, suggest taking a look at all that the group has written on the sticky notes and have the children write it in their notebooks (or on chart paper or poster board). Have the children create mind maps of what was on the board.
6. Collectively, create a large mind map of living things which can be posted on a wall. Let the children add to it over the next several days. Other graphic organizers may be used.

Next Presentations

1. Follow the same general procedure with the remaining eggs: Humanity, Language, and Mathematics. Each time, open an egg to reveal the next egg or eggs. Always examine the egg, looking at the images painted on its shell and discussing their meaning. In each case, conclude with a large mind map which can be posted and added to over the next several days.

2. Review all the mind maps, comparing and contrasting them. Recall: "We started with the Universe, then went within it to discover Life. We then went inside Life to discover Humanity. Within Humanity, we found the two great inventions of Language and Mathematics."

3. Reassemble the Cosmic Egg. Start with yourself: "I am Michael Dorer (insert your own name). I am gifted with the incredible power of language, so I can communicate. I know how to sort things, to classify them, to match things, and to count, I know about numbers and shapes. That means that I have the gift of mathematics."

4. Put the Eggs of Language and Mathematics into the Egg of Humanity. Say: "With Language and Mathematics, I am human, like all of you and every person who lives on Earth or who has ever lived on Earth."

5. Put the Egg of Humanity into the Egg of Life. Say: "I am a living thing like every human being. I share this egg with all living things and everything that has ever lived, and every part of every living thing. All life is joined together in this egg."

6. Put the Egg of Life into the Cosmic Egg. Say: "All living things exist in the universe, and that includes me. I am a living thing like every human being. I share this Cosmic Egg with everything there is or has been. All living things are there with me, and so are the stars, planets, cosmic dust, galaxies, and dark matter. This egg has all light, sound, time, and history. Everything in the universe is joined together in this egg." Close up the Cosmic Egg.

7. Now the Cosmic Egg may be placed in a special location on the shelf to be examined and worked with in future exercises.

Control of Error:

Visual Control: the Cosmic Egg itself
Reasoned Control: preexisting knowledge or experience
External Control: the adult

Aims:

Direct: to understand the nested nature of the five themes or concepts

Indirect: to perceive the limitless nature of each of the five themes; to prepare for all future exercises with the Cosmic Egg

Vocabulary: universe, life, humanity, language, and mathematics, as well as the names of all the items that appear on the sticky notes

Age Range: 5 to 9

Variations: use a variety of graphic organizers

Classroom Ideas for the

Songs for *Hatching the Cosmic Egg*

by Andrew Kutt

The picture book *Hatching the Cosmic Egg* comes with Andrew Kutt's five-song CD. You can also listen to the songs online at AndrewKuttMusic.com/hatching-the-cosmic-egg.

- Photocopy the lyrics for each song and give them to the students. It's best if the students can keep the lyrics in binders or folders. As appropriate, give the students highlighters or pencils.
- Play the songs in the classroom so all students can hear them. It is usually best to focus on one song at a time. Invite the students to follow the lyrics as they are listening and to highlight, underline, or circle the parts of the lyrics they like or are curious about.
- Invite the students to share the parts of the song they liked the best as well as parts they have questions about or didn't understand. The teacher can use this opportunity to teach certain concepts or vocabulary.
- The students might want to make art pieces to go with the songs. The students can use the same titles as the song titles if they wish. The art pieces can be displayed on bulletin boards or at an art show. One option for display is to arrange the art pieces in sections according to the titles.
- The students can perform the songs at a school show. Hand and body motions can be created to go along with the songs. Be creative!
- To take it to another level, the students, possibly with adult help, could do a "musical" based on the songs. Stage dialogue could be written, costumes and sets could be designed, and—boom—you potentially have a whole show!
- Classroom teachers can build history, geography, and science lessons around the songs, coordinating them with Montessori materials such as the Timeline of Life and the Timeline of Humans, for example. Older students can make their own materials or projects or do extended research on areas of interest to them.

- The songs lend themselves to fun and instructive spelling and vocabulary lessons.
- Older students who learn the songs and do some of these activities can share what they've learned with younger students.

Note: Andrew Kutt is happy to support teachers as they develop and lead lessons and activities. As an artist, Andrew asks that you do not make copies of his music without permission. Please feel free to contact him by email at andrew@onenessfamily.org. He also enjoys seeing videos of students singing or performing his songs!

Lyrics for Songs for *Hatching the Cosmic Egg*

The Universe Came to Be

by Andrew Kutt

Verses 1 & 2
How did it all begin
And exactly when
The universe came to be
Now that I would like to see

That must've been a sight
Right at the birth of light
Stretching to darkest space
The Cosmos had a face

Chorus/Bridge
Hundred billion years ago
Is a long time that I know
Stars and comets radiate
Black holes swallow what they ate
But here we are on planet Earth
Cause this is where life took birth
I sit here now and sing this song
All about how crazy long
This whole thing's been going on

Verses 3 & 4
Particles somehow formed
Stars were suddenly born
They traveled in families
That we now call galaxies

In different shapes they swirled
Some like a string of pearls
Some colored in rainbow rays
Each star in a different phase

Chorus/Bridge

Interlude

Chorus/Bridge

Life Was Born

by Andrew Kutt

Verses 1 & 2
Four billion years ago
Deep inside the sea
Sunlight kissed the carbon
The rest is history

Carbon chains were formed
And oxygen set free
Tiny single cells, well
They somehow learned to breathe

Chorus 1
And the world would never be the same
The ocean was aflame with
New colors and new dreams — Oh, yeah
New colors and new dreams

Verses 3 & 4
Some lasted a short while
Some vanished mysteriously
Others lived for eons
From fossil layers we see

8.7 million species
Live on planet Earth
Some are disappearing now
Will others still take birth

Chorus 2
And who could ever have foreseen
The things that came to be
How they'd swim and run and fly — Oh, yes
How they'd swim and run and fly

Bridge
New colors and new dreams (x 8)

Repeat Chorus 1

Humans Came Along

by Andrew Kutt

Verses 1 & 2
There came a special day
I walked in a new way
Up on two feet
Trees were obsolete
I could run and play

Then I found my thumbs
Could help me overcome
I could make new tools
Build a home and school
Draw pictures of the sun

Chorus
The love we feel
Is the truest seal
The dreams we make real
Are what it means to be
Part of humanity
When you're family
You share a destiny

Verses 3 & 4
It's been quite a ride
We look back in time
From painting on cave walls
To the Taj Mahal
Skyscrapers to the sky

Supersonic jets
And the internet
From old stone wheels
To medicines that heal
Not even our best yet

Rap
Being human is a journey that will never end
Go beyond our limits always trying to transcend
Climb the mountain run the distance take it to the end
We might fall but we won't break if we never bend

We built cathedrals — sent astronauts to the moon
But here on Earth we've got to change some things and pretty soon

Be a light let's unite and sing a whole new tune
Spread some love there's not enough so give the best of you

Chorus

Musical interlude

Chorus

The Story of Language

by Andrew Kutt

Verses 1 & 2
I can name
The stars above me
I can tell you
All about me

I can sing
The morning sunrise
I can tell you
Where the bird flies

Chorus 1
The words the words the words the words
Have come
The words the words the words the words
Have come

Bridge A
Write your poems in the sky so blue
Tell the world what you aim to do
Always try to speak what is true
Only express the best of you

Language keeps our soul alive
It writes the story of our lives
Lets us laugh and helps us cry
Gives us power to ask why

Verses 3 & 4
The world is turning
Dawn is breaking
The sun is rising
Deep inside me

Touched by morning
Tears are streaming
Light is blinding
The veil is lifting

Chorus 2
The sun the sun the sun the sun
Has come
The sun the sun the sun the sun
Has come

Bridge B
Express your heart and sing your dreams
Let your rhymes shine and gleam
Leave a little space in between
Where you can truly BE

The words the songs and the stories we tell
Ring through time like the oldest bell
We made metaphors before we spelled
Language is the medicine that makes us well

Repeat Verses 1 & 2

Close
The words the words the words the words
The words the words the words the words
Have come/have come/have come

The Story of Numbers

by Andrew Kutt

Intro
If I could measure the world If I could measure the world

If I could measure the world If I could measure the world

I'd cut a ribbon about that long
And wrap it gently round in bows of love
And wrap it gently round in bows of love

Verses 1 & 2
When I learned to count
Make tallies and amounts
I could keep track of
All the friends I made

What I grew on my farm
And built with my hands and arms
I could barter
Exchange and trade

Chorus 1
If I add my voice to yours
Maybe we can subtract some sorrow and pain

And if we multiply all the good we each have inside

We could overcome division and blame

Verses 3 & 4
By the power of numbers
I can count my blessings
I can count the faces of those
Who have touched my life

By the grace of numbers
I can know the limits
And the boundaries
I must push beyond

Chorus 2
If I add my voice to yours
Maybe we can subtract some sorrow and pain

And if we multiply all the good we each have inside

We'll find that love is the answer once again

Verses 5 & 6
The mathematics of
happiness peace and love
Are the equations
We must know the best

Because a human life
Is a vector of pure light
Straight from the cosmos
To shine in our midst

Chorus 3
If I add my voice to yours
Maybe we can subtract some sorrow and pain

And if we multiply all the good we each have inside

We could overcome division and blame
We'll find love is the answer once again

Verses 7 & 8
Geometry
Means to measure the Earth
Oh how I treasure the worth
Of this beautiful day

If I could touch and see
The whole galaxy
I could count the stars
In the Milky Way

Close