RADIO RADIANCE™

Young People's Chorus of New York City™

Broadcast Listening Guide

Terry Riley

"Another Secret eQuation"

BACKGROUND:
The Young People's Chorus of New York City launched Radio Radiance™, a collaborative partnership with WNYC New York Public Radio and American Public Media (APM), in 2008. Radio Radiance™ turns YPC's award-winning Transient Glory® Commissioning Series three-dimensional, taking it from stage to radio to cyberspace. Transient Glory® was created in 2000 to commission the country's most eminent composers to write new music and expand the traditional youth chorus repertoire. Radio Radiance™ takes this series and expands it with 21st century technology. Its mission is to develop new audiences for new music by commissioning and performing choral works written or performed specifically for radio, digital media, and the web. This listening guide was created to enrich the experience of listening and heighten one's appreciation of the music.

Radio Radiance™ began as a regional program in New York City, broadcasting performances locally on WNYC New York Public Radio. Podcasts created from these performances and composer interviews were then broadcasted nationally on APM's "Performance Today" in over 90 cities across the country. It is now a national program implemented by other choirs, whose performances are broadcasted by many local stations, with listening guides being utilized in several public schools nationwide.

For more information, please visit www.ypc.org

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National Standards for Music and the Blueprints for Teaching and Learning in the Arts

This listening guide for teachers provides lessons that meet National Standards for Music Education and address all five strands of the Blueprint for Teaching and Learning in the Arts in New York City. These guides are available online at YPC's website, and are accompanied by podcasts that feature the music and in-depth interviews with each composer by WNYC host John Schaefer. We hope that by connecting the music to as many subjects as possible, you will open doors and inspire young students to aim high and dream big, just as we try to do at YPC.

By using this lesson plan, your students will be utilizing the national standards for music education:

6. Listening to, analyzing, and describing music
8. Understanding relationships between music, other arts and disciplines outside the arts
9. Understanding music in relation to history and culture. and enjoy music making with an enriched and challenging repertoire.

The Blueprint is a guide for arts educators in New York City public schools that defines five strands of learning: making music; music literacy; making connections; cultural resources; and careers and lifelong learning. We encourage teachers to pick up the fifth strand and discuss with your students how these lessons may inspire them to either pursue music further, or perhaps become poets or astrophysicists.

Each lesson has several sections. The first two provide teachers rudimentary background information on the composer and the music. The "listening to" section offers points of entry to enable teachers to help their students understand and appreciate the music. "Making connections" connects the music to other disciplines, and "Activities" will get students more engaged and appreciate the richness of this experience. Every teacher can modify the lesson according to his or her students' background and abilities, and can add further activities as time and inspiration allow.

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Another Secret eQuation

Terry Riley

One of the founders of music's minimalist movement, Terry Riley in his early works, notably In C, pioneered a form in Western music based on structured interlocking repetitive patterns. The influence of Mr. Riley's hypnotic, multi-layered, polymetric, brightly orchestrated Eastern-flavored improvisations and compositions is heard across the span of contemporary and popular music by performers who have commissioned and/or played his works. After he earned an Master of Arts in composition at UC Berkeley he spent two years in Europe, where he was involved in street theater and happenings. He then moved to New York and began collaborating with such influential thinkers as La Monte Young, whose radical approach to time made a big impact on him. He also became a disciple of the master of Indian classical voice, Pandit Pran Nath, with whom Riley appeared as tampura, tabla and vocal accompanist for 26 year until Nath's passing. Riley continues to perform concerts of Indian classical music, as well as conducting raga-singing seminars. In 1971 Riley joined the Mills College faculty, where he and David Harrington of the Kronos Quartet began a long association, including Riley's epic five-quartet cycle, Salome Dances for Peace, which was nominated for a Grammy and selected as "classical album of the year" by USA Today.

"Another Secret eQuation"

This piece is dedicated to the memory of prominent physicist Hans Sigmann, the project director at the Stanford Linear Accelerator Center and the husband of Katrina Krimsky, who performed the pulse both on the world premiere recording of "In C" in 1968 as well as during the all-star Carnegie Hall performance of "In C" organized by Kronos Quartet in 2009. Another Secret eQuation was co-commissioned by YPC and Kronos Quartet for Radio Radiance™ and had its premiere performance at Carnegie Hall in March 2010. Kronos Quartet is composed of David Harrington, John Sherba (violins), Hank Dutt (viola), and Jeffrey Zeigler (cello). The group combines a spirit of fearless exploration as they expand the range and context of the string quartet. In the process, Kronos has become one of the most celebrated and influential groups today. In 2011, Kronos became the only recipients of both the Polar Music Prize and the Avery Fisher Prize, two of the most prestigious awards given to musicians. The group's numerous awards also include a Grammy for Best Chamber Music Performance (2004) and "Musicians of the Year" (2003) from Musical America.

In this lesson, students will:

- Listen to layers of sound and understand polyphony
- Connect the music with science and learn about particle accelerators and the basic principles of astrophysics and quantum mechanics
- Learn about the Vedas, and discuss what they think of philosophy of religion
- Use thought experiments to come up with different perspectives of time and space

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Listening to *Another Secret eQuation*

The composition is in three sections and features a text written by Terry Riley. According to Riley: "I wrote the text keeping in mind that young people would be singing, and that the ideas expressed would gently address the actions of their elders and the overwhelmingly messy world the kids were being handed." The work begins with keening sounds that sound like whales (the score indicates "soft, squealing sounds"). There is a gently rocking rhythm that sounds dirge-like, and dark harmonies match the words: "We are lost and cannot find our way." The composer says that these words are saying, Here we are as a civilization, we are doing many advanced things but we are also coming to realize that we are unable to connect with nature or with one another. Several voices sing this line, and every time the words come around, the music is harmonized.

The piece is in three movements, each marked by a different set of words and increasingly complicated rhythm and complex harmony. When the next words come, "they never listen, they never do," the musical layers become more complex and use a lot of polyphony. The words seem to express not just the frustration sometimes expressed by both parents and children, but also, according to the composer, the frustration citizens sometimes feel about their government. The last movement has even more polyphony and a very complex rhythm that requires fast, agile vocal techniques. Now the work goes beyond words and returns to the wordless beginning. The vocals resemble scat singing or even Indian classical singing, and the voice becomes a rhythmic instrument. "The third section offers up some nonsense syllables as a possible antidote to the gobbledygook that poses as wisdom from some of our esteemed leaders," says Riley.

Words come back into the piece with this message: "The universe makes it up as it rolls along, imagining night and day as it hums a song." The music is upbeat, but the composer also wanted to express how people are always looking for meaning and philosophies. One idea that has always haunted people is whether there is a Creator, and if there is something directing the universe. If there is, he says, then this Creator is making the universe up second by second, and there is really no master plan. Just like the improvised words in the piece, we are all improvising in some way.

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Making Connections

Science:

What is an accelerator?

Terry Riley said that Another Secret eQuation was inspired by conversations with Hans Sigmann of the Stanford Linear Accelerator Center. The center is home to a two-mile linear accelerator—the longest in the world—and is now a multipurpose laboratory for astrophysics and particle physics research.

Do you know what an accelerator is? About a hundred years ago, they were called cyclotrons or atom smashers. Scientists use a particle accelerator which is a really awesome device—because is it a huge machine that can take up the space of an entire building, but it's used to smash the smallest units of matter, like atoms and subatomic particles (particles smaller than atoms). To do that, the accelerator uses very high speeds to propel particles and make them collide. Why? Beams of high-energy particles produce a lot of energy that is useful for science and also in many technical and industrial fields. There are nearly 26,000 accelerators all over the world. Some of them are used for radiotherapy, industrial research, and biomedical research chemistry, and technology. They can also help scientists study the structure of matter, space, and time. Studying how the smallest particles behave when they collide can tell us a great deal about the universe of the very small, like atoms and particles, and the universe of the very large, like star systems, galaxies, and the entire universe. In fact, a particle accelerator can even give us an idea how much energy was needed to create the Big Bang!

The universe of the very large and the very small.

When you start looking at the universe of the very small, you may begin to wonder if the universe is actually what it seems. The answers may surprise you, as it did the many leading physicists who first asked the same questions. Albert Einstein proposed some theories that overturned an old theory that began about 200 years before his time. That theory, by Sir Isaac Newton, said that the universe followed absolute laws of motion, no matter where you were. Einstein said that maybe space and time could only be understood together, and not separately. They could be altered, or warped, by many factors, like velocity, or the speed in which you are traveling. For example, if you are traveling in a space ship at the speed of light (which is very fast indeed: 299,792,458 miles per second!), time would slow down for you. At first, people thought Einstein's theory was too crazy and hard to comprehend. But later, they realized he was right, especially since huge telescopes can now see astronomical phenomena like quasars (tightly compact regions in the center of massive galaxies), pulsars (rapidly rotating stars), and black holes (regions of space from which nothing, not even light, can escape). These huge telescopes can see not only far into space, but way back in time—because it takes light from the universe's beginning billions of miles to travel to earth, no matter how fast it moves!

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History and Geography

The Vedas

Terry Riley compares the vocal parts of the third section of Another Secret eQuation to classical Indian singing. The music of India is one of the oldest musical traditions in the world. A raga is one of the melodic modes used in Indian classical music. It means "color" or "beauty" or "melody." Some say the origins of Indian singing go back to the Vedas, which are the ancient scripts of the Hindus, or the people who live in the Indian subcontinent. The Vedas were written in Sanskrit, and they contained hymns and incantations. The individual verses are known as mantras, some of which are still recited at prayers and other important occasions. The Vedas were the basis for a number of philosophies and religions in Asia, including Hinduism Buddhism, Jainism, and Sikhism.

Activities

Thought experiments

Thought experiments are mental exercises that help you think some questions through, and may enable you to discover new ideas about yourself and your surroundings. Some of the great scientific geniuses and great artists liked to use thought experiments. They not only give your brain a good workout, they also let you come up with some interesting ideas, like the theory of time and space!

Activity 1

Listen to a piece of raga music. Close your eyes. Imagine you are moving at the speed of light, travelling in space to explore the outer limits of the universe. What do you see? Can you imagine the universe being born hundreds of millions of years ago? Do you see other people, or other animals? What do you feel? Are you thrilled, or scared? Write your reactions in a journal. Will you come and visit that universe again?

Activity 2

A quark is the most fundamental component of matter. Many quarks can combine to create parts of an atom. If you could observe a quark, you would notice that things don't behave the way they normally should. If you were to go inside a quark, what would that little world look like? Can you walk upside down? Do you still have two arms, or many? And how do you put on your t-shirt? Draw your version of a quark world. Do you hear any sounds? What kind of music can you listen to there? Write your responses as a caption to your drawing.

Activity 3

Imagine that you have a twin, and you decide to travel to the farthest reaches of space while your twin stays on earth. You both have synchronized watches to keep track of time. You travel very, very far, at the speed of light. When your watch says you've traveled for a few years, you decide to go back to earth. But since time moves much slower in outer space, by the time you get back you realize that your twin has aged 50 years! Can you imagine what it would be like? What does he look like? How do you feel now that your twin is 50 years older than you? Has the world changed since you left? Has anything remained the same?