

Rev. Kim K. Crawford Harvie
 Arlington Street Church
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Taking the Perspective of Awe

“More than a billion years ago, in a galaxy ... more than a billion light-years away, two black holes spiraled together and collided.” It was 1.3 billion light-years away, actually, but who can get their mind around that? A light-year is 5.88 trillion miles. More than 100 years ago, Albert Einstein predicted that gravitational waves would ripple outward from that collision and eventually reach us here on Earth. Einstein was right.

“If you could hear the waves, they would start on a low note and ... sweep up the scale to higher and higher [‘cheeps’], as the black holes spiral inward, sweeping toward each other, ... all the while increasing in volume.”¹ MIT’s Rai Weiss² “said you could reproduce the chirp by running your fingernails across the keys of a piano from the low end to middle C.”

This was, wrote the *New York Times*’ Dennis Overbye, “the last waltz of a pair of black holes shockingly larger than astrophysicists had been expecting. One of them was 36 times as massive as the sun, the other 29. As they approached the end, at half the speed of light, they were circling each other 250 times a second. And then the ringing stopped as the two holes [collided, coalescing] into a single black hole, a trapdoor in space with the equivalent mass of 62 suns. All this in a fifth of a second.

“Lost in the transformation was three solar masses’ worth of energy, vaporized into gravitational waves in an unseen and barely felt apocalypse. As visible light, that energy would be equivalent to the brightness of a billion trillion suns.”³

¹ Matthew Francis, “The Dawn of a New Era in Science”, *The Atlantic*, 2/11/16. Please see theatlantic.com/science/archive/2016/02/when-two-black-holes-collide/462279/

² Dr. Rainer Weiss, called Rai Weiss, Laser Interferometer Gravitational-Wave Observatory (LIGO) Co-Founder (with Kip Thorne)

³ Dennis Overbye, “Gravitational Waves Detected, Confirming Einstein’s Theory,” *The New York Times*, 2/12/16. Please see www.nytimes.com/2016/02/12/science/ligo-gravitational-waves-black-holes-einstein.html?_r=0

Six months ago, here on Earth, the Laser Interferometer Gravitational Wave Observatory – LIGO – detected those waves as they “washed past Earth,⁴ ... fulfilling a four-decades quest and opening new eyes on the heavens.

Gabriela González, professor of physics and astronomy at Louisiana State University and spokesperson for the LIGO Scientific Collaboration, explained, “This detection is the beginning of a new era: The field of gravitational wave astronomy is now a reality.” But it’s so much more than that.

Professor Laurence M. Krauss, theoretical physicist and author of *A Universe from Nothing: Why There is Something Rather than Nothing*, writes, “Too often people ask, what’s the use of science like this, if it doesn’t produce faster cars or better toasters. But people rarely ask the same question about a Picasso painting or a Mozart symphony. Such pinnacles of human creativity change our perspective of our place in the universe. Science, like art, music, and literature, has the capacity to amaze and excite, dazzle and bewilder. I would argue,” says Professor Krauss, “that it is that aspect of science — its cultural contribution, its humanity — that is perhaps its most important feature.”⁵

As Mark David Buckles and I planned this morning’s worship service to lift up and celebrate this extraordinary moment in science, Mark David opened his laptop and said, “Look.” He brought up an image of Andromeda, a spiral galaxy 2.5 million light-years away from Earth, astonishingly visible to the naked eye on moonless nights. Scientists say that in 3.75 billion years, Andromeda and the Milky Way will merge.⁶

⁴ “On 14 September 2015, at 9:50:45 universal time – 4:50 a.m. in Louisiana and 2:50 a.m. in Washington – LIGO’s automated systems detected ... [an] oscillation [that] emerged at a frequency of 35 cycles per second, or Hertz, and sped up to 250 Hz before disappearing 0.25 seconds later. The increasing frequency, or chirp, jibes with two massive bodies spiraling into each other. The 0.007-second delay between the signals in Louisiana and Washington is the right timing for a light-speed wave zipping across both detectors.” ~ Adrian Cho, “Gravitational Waves, Einstein’s Ripples in Spacetime, Spotted for First Time,” *Science Magazine*, February, 2016. Please see www.sciencemag.org/news/2016/02/gravitational-waves-einstein-s-ripples-spacetime-spotted-first-time

⁵ Laurence M. Krauss, *Finding Beauty in Darkness*, *The New York Times*, 2/11/16 (The piece ran on Sunday, 2/14/16). Please see www.nytimes.com/2016/02/14/opinion/sunday/finding-beauty-in-the-darkness.html

⁶ Please see Andromeda Galaxy at en.wikipedia.org/wiki/Andromeda_Galaxy

Gazing at Andromeda’s trillion stars – at least twice the number of stars in the Milky Way – I felt a kind of Alice-falling-down-the-rabbit-hole dizzy and disoriented. At the same time, I was filled with a profound sense of belonging: at home in the universe. I commend to you this awesome perspective: this zooming way out, this perspective of awe.

And then there’s American poet Robert Frost’s beautiful line, “Earth’s the right place for love: // I don’t know where it’s likely to go better.”⁷ That’s the perspective of awe that comes with zooming way in: experiencing awe at what’s right here, within us and among us.

Here’s one of my favorite stories about experiencing awe from a very close perspective, as told by surgeon Richard Selzer.

“On the bulletin board in the front hall of the hospital...,” Dr. Selzer begins, “there appeared an announcement. ‘Yeshi Dhonden ... will make rounds at six o’clock on the morning of June 10.... Yeshi Dhonden is Personal Physician to the Dalai Lama.’

“I am not so leathery a skeptic that I would knowingly ignore an emissary from the gods.... Thus on the morning of June 10, I join the clutch of whitecoats waiting in [a] small conference room.... The air ... is heavy with ill-concealed dubiety and suspicion of bamboozlement. At precisely six o’clock, he materializes, a short, golden, barrelly man dressed in a sleeveless robe of saffron and maroon....

“He bows in greeting while his young interpreter makes the introduction. Yeshi Dhonden, we are told, will examine a patient selected by a member of the staff. The diagnosis is unknown to Yeshi Dhonden, as it is to us. The examination of the patient will take place in our presence, after which we will reconvene in the conference room, where Yeshi Dhonden will discuss the case. We are further informed that for the past two hours, Yeshi Dhonden has purified himself by bathing, fasting, and prayer. I, having breakfasted well, performed only the most desultory of ablutions, and given no thought at all to my soul, glance furtively at my fellows. Suddenly, we seem a soiled, uncouth lot.

“The patient had been awakened early and told that she was to be examined by a foreign doctor; ... when we enter her room, [she] shows no surprise.... This was to be but another in an endless series of tests and

⁷ Robert Frost, *Birches*

examinations. Yeshe Dhonden steps to the bedside while the rest stand apart, watching. For a long time, he gazes at the woman, favoring no part of her body with his eyes, but seeming to fix his glance at a place just above her supine form. I, too, study her. No physical sign or obvious symptom gives a clue to the nature of her disease.

“At last, he takes her hand, raising it in both of his own. Now he bends over the bed in a kind of crouching stance, his head drawn down into the collar of his robe. His eyes are closed as he feels for her pulse. In a moment he has found the spot, and for the next half-hour he remains thus, suspended above the patient like some exotic golden bird with folded wings, holding the pulse of the woman beneath his fingers, cradling her hand in his. All the power of this man seems to be drawn down into this one purpose. It is palpation of the pulse raised to the state of ritual.

“From the foot of the bed, where I stand, it is as though he and the patient have entered a special place ... of apartness ... across which no violation is possible. After a moment the woman rests back upon her pillow.... I cannot see their hands joined in a correspondence that is exclusive, intimate, his fingertips receiving the voice of her sick body through the rhythm and throb she offers at her wrist.

“All at once, I am envious – not of him, not of Yeshe Dhonden for his gift of beauty and holiness, but of her. I want to be held like that, touched so, *received*. And I know that I, who have palpated a hundred thousand pulses, have felt not a single one.

“At last, Yeshe Dhonden straightens, gently places the woman’s hand upon the bed, and steps back.... All this while, he has not uttered a single word. As he nears the door, the woman raises her head and calls out to him in a voice at once urgent and serene. ‘Thank you, doctor,’ she says, and touches ... the place he had held on her wrist, as though to recapture something important that had visited there.... Rounds are at an end.

“We are seated ... in the conference room. Yeshe Dhonden speaks now for the first time, in soft Tibetan.... He has barely begun when the young interpreter begins to translate, the two voices continuing in tandem – a bilingual fugue, the one chasing the other. It is like the chanting of monks. He speaks of winds coursing through the body of the woman, currents that break against barriers, eddying. These vortices are in her blood, he says. The last spendings of an imperfect heart. Between the chambers of the heart, long, long before she was born, a wind had come and blown open a

deep gate that must never be opened. Through it charge the full waters of her river, as the mountain stream cascades in the springtime, battering, knocking loose the land, and flooding her breath.

Thus he speaks, and is silent.

“May we now have the diagnosis?” a professor asks.

“The host of these rounds, the man who knows, answers. ‘Congenital heart disease,’ he says. ‘Interventricular septal defect, with resultant heart failure.’ A gateway in the heart, I think, that must not be opened. Through it charge the full waters that flood her breath....

“Now and then it happens,” Dr. Selzer concludes, “as I make my own rounds, that I hear the sounds of his voice, like an ancient Buddhist prayer, its meaning long since forgotten, only the music remaining. Then a jubilation possesses me, and I feel myself touched by something divine.”⁸

Beloved spiritual companions, in a galaxy more than a billion light-years away, two black holes spiraled together, collided, coalesced, and vaporized into gravitational waves. After more than a billion years, the waves washed past Earth, leaving in their wake pure awe.

In a hospital in an American city, a doctor stands above a patient, holding her pulse beneath his fingers, cradling her hand, all his power drawn down into this one purpose. In this way, he makes a gift of beauty and holiness. In this way, may we give and receive, hold and be held, touch and be touched by something divine, jubilant.

Zooming way out, may we find awe in vastness.
Zooming way in, may we find awe in love,
remembering, always, that “earth’s the right place for love.”
Let us choose to live from the perspective of awe.

Amen.

⁸ Dr. Richard Selzer, *Mortal Lessons: Notes on the Art of Surgery*, pp. 33-36