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Enlarging the View

How Hopkins, Dillard, and van Gogh Can Help us Teach Students About the World God Made

John D. Mays

Other Voices

When I was teaching full time, each year in the spring I enjoyed showing the film *The Privileged Planet* to my 9th grade science classes (a perfect activity for the day before spring break). At a certain moment in the film, an image of Vermeer's lovely painting *The Astronomer* appears. I always liked to watch the students when they saw it; it was amusing to see several of their heads turn 90° to the right in unison to look at the print of the same painting hanging on the wall in our classroom. The students knew they had seen the painting before, and they were looking to confirm where.

The film and the classroom were doing the same thing: allowing Other Voices to speak to the students about creation alongside the science.

We science teachers love teaching science. It is fascinating and fun. Scientific inquiry is an important way of responding to God's world. However, we also know that there are other ways of responding to creation than by scientific analysis. In particular, there is the artistic response to creation that I wish to consider here.

Fundamentally, the educator's task is to nurture the development of good *human beings*, full of wisdom and virtue. To do this, we must engage every part of our students' minds, souls, and spirits in the learning process. This means our teaching—even in science classes—must encompass more than the technical.

Consider the process of a child learning about fish. There are several different ways one can encounter fish. I call these ways *modes of knowing*. When children first learn about fish they should do so through a *direct encounter*. (This applies not just for children, but at every stage of learning.) Long before they see a fish in a book, children should *see*, *touch*, and even *hold* a live fish. They should also watch fish serenely swimming around in an aquarium or stream. Direct encounters with lively, flopping fish and peacefully swimming fish should be among a child's earliest experiences. The kind of knowledge we obtain from holding a fish—what it feels like, how fast it quivers, how its eyes look, how its mouth and gills move—is different from all other piscine knowledge, and cannot be obtained any other way.

A second mode of knowing fish is through the reading technical literature. In a good text, one can learn all kinds of things about fish. But the experience of reading about fish is *entirely different* from the experience of holding a live fish, and the things children learn are different as well. Both kinds of knowledge are important. (I suspect that for most people, the knowledge that comes from holding the fish is probably of more fundamental importance than the content in a text, but there is no need here to establish relative value. Both are important.)

Encountering creation through a textbook involves an intrinsically human mediation; human beings write texts and decide what to put in them. Similarly, encountering creation through the arts—a third mode of knowing—also entails human mediation. Works of art are human productions, and when humans create art in response to the world God made, we have an opportunity to expand our own experience of the world by encountering it through the mediation of the artist.

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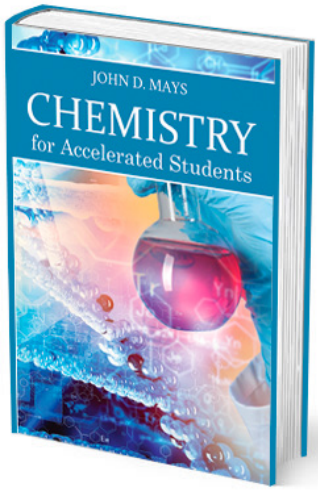

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"Works of art are human productions, and when humans create art in response to the world God made, we have an opportunity to expand our own experience."

We will look briefly at the ways the arts speak to us about nature—just the merest taste of the thousands of works available to us. The first will be the poets, and our first example will illustrate something about encountering "fish" through the arts—not fish *per se*, but creatures in general. Compare the poetic knowledge about animate and inanimate nature communicated through the poems to the knowledge one would obtain from a direct encounter or from a text.

The Poets

As kingfishers catch fire, dragonflies draw flame;
As tumbled over rim in roundy wells
Stones ring; like each tucked string tells, each hung bell's
Bow swung finds tongue to fling out broad its name;
Each mortal thing does one thing and the same:
Deals out that being indoors each one dwells;
Selves—goes itself; myself *it speaks and spells,*
Crying Whát I dó is me: for that I came.

I say móre: the just man justices;
Keeps grace: thát keeps all his goings graces;
Acts in God's eye what in God's eye he is—
Chrísт—for Christ plays in ten thousand places,
Lovely in limbs, and lovely in eyes not his
To the Father through the features of men's faces.

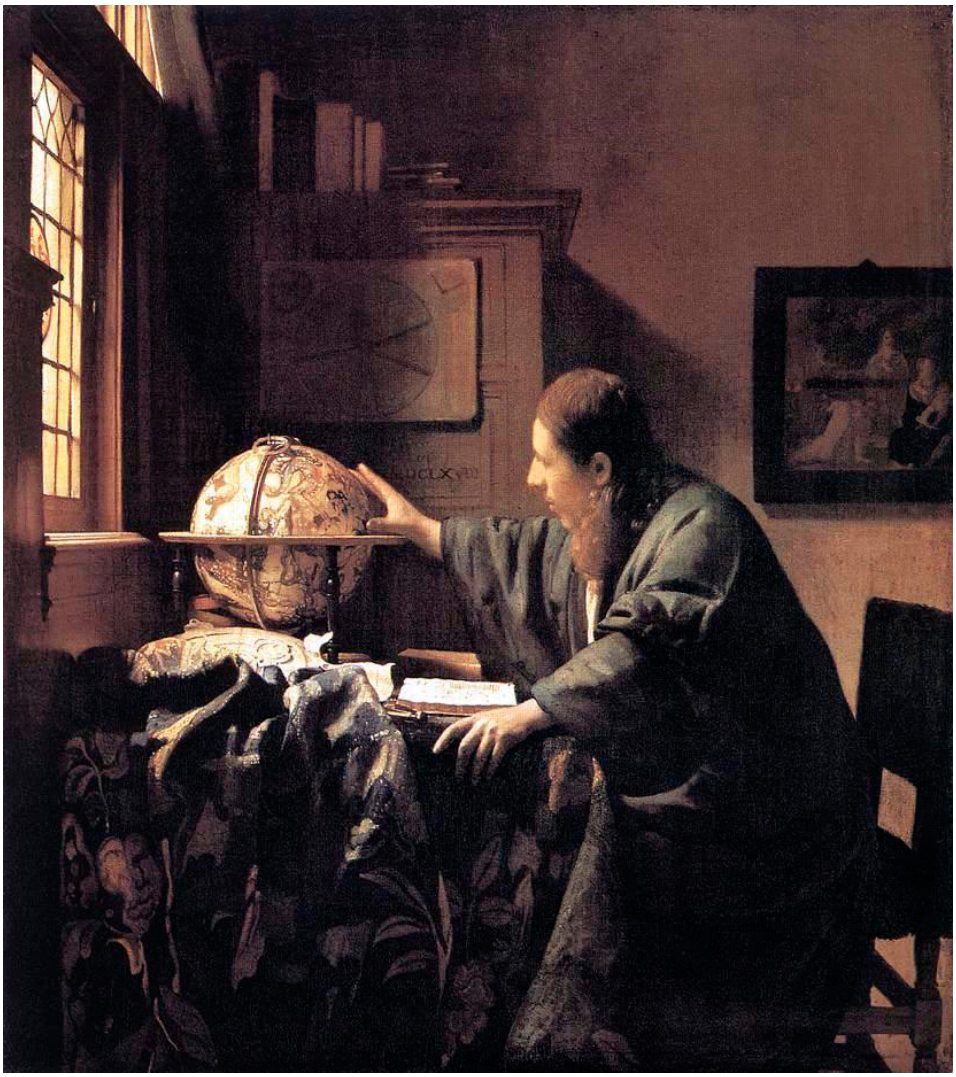
Gerard Manley Hopkins is widely regarded as one of the greatest of Christian poets. If you read poetry, *As kingfishers catch fire* is probably already known to you. Many of Hopkins' poems use imagery from nature, and that makes his poetry especially attractive for admission into science classes. Such poems include *God's Grandeur*, *Pied Beauty*, and *The Starlight Night*.

Poetry is a rich source of artful wonder at the glory inherent in the natural world. As with other art forms, it provides a unique way of encountering God's creation. Some of the following poems are well known; others may be new to you. Consider how poems like these might find a place in your science classroom.

One of my new favorite Hopkins poems is *I am like a slip of comet*. I only became aware of this poem last year. It took my breath away the first time I heard it. Read it aloud:

—I am like a slip of comet,
Scarce worth discovery, in some corner seen
Bridging the slender difference of two stars,
Come out of space, or suddenly engender'd
By heady elements, for no man knows:
But when she sights the sun she grows and sizes
And spins her skirts out, while her central star
Shakes its cocooning mists; and so she comes
To fields of light; millions of travelling rays
Pierce her; she hangs upon the flame-cased sun,
And sucks the light as full as Gideon's fleece:
But then her tether calls her; she falls off,
And as she dwindles shreds her smock of gold
Between the sistering planets, till she comes
To single Saturn, last and solitary;
And then goes out into the cavernous dark.
So I go out: my little sweet is done:
I have drawn heat from this contagious sun:
To not ungentle death now forth I run.

All Hopkins' poems are collected in *Gerard Manley Hopkins: The Major Works* (Oxford World's Classics, 2009).



Johannes Vermeer: *The Astronomer* (1668)

A fine contemporary poet is Richard Wilbur, appointed US Poet Laureate in 1987. Here is his thought-provoking poem *Worlds*, taken from his *New and Collected Poems* (HBJ, 1989):

For Alexander there was no Far East,
Because he thought the Asian continent
ended with India. Free Cathay at least
Did not contribute to his discontent.

But Newton, who had grasped all space,
was more
Serene. To him it seemed that he'd but
played
With a few shells and pebbles on the shore
Of that profundity he had not made.

I actually get a small feeling of vertigo when I reach that last line.

Richard Ryan's poem *Galaxy* is another beautiful meditation on light incorporating cosmic imagery:

faint
in deep space,
immense as a brain

down
through the thought-
shaft it drifts, a wale

of light to
which the retina
opens and is centered

time and
space dis-
appearing as the mind

recedes
to a soundless
flickering somewhere

deeper
than consciousness
where, permanent as

change
a whorl of light
rides, wheeling in darkness

Everyone knows (or should) William Blake's amazing poem, *The Tyger*:

Tyger Tyger, burning bright,
In the forests of the night;
What immortal hand or eye,
Could frame thy fearful symmetry?

In what distant deeps or skies.
Burnt the fire of thine eyes?
On what wings dare he aspire?
What the hand dare seize the fire?

And what shoulder, & what art,
Could twist the sinews of thy heart?
And when thy heart began to beat,
What dread hand? & what dread feet?

What the hammer? what the chain,
In what furnace was thy brain?
What the anvil? what dread grasp,
Dare its deadly terrors clasp!

When the stars threw down their spears
And water'd heaven with their tears:
Did he smile his work to see?
Did he who made the Lamb make thee?

Tyger Tyger burning bright,
In the forests of the night:
What immortal hand or eye,
Dare frame thy fearful symmetry?

I have always been awestruck by *The Tyger*'s last line, with its suggestion of God's *daring*. I know there are many who will disagree with me here (so forgive me if I press this point too far), but I think we should spend more time contemplating God's *daring* in creating animals (and the entire world) rather than speculating that tigers were somehow vegetarians prior to the fall. In Job 38:40-41; 39: 26-30; and 41:1-8, the Lord specifically describes the large cats, birds of prey, and other terrifying beasts as products of his own creation. And why would leviathan (whatever that was) be described in terms such as "around his teeth is terror" (41:14) and "terror dances before him" (v. 22) unless that beast was a threat? And why would the Lord boast of him as threatening unless he had made the beast that way? But enough on that for now.

As one last sample of poetry, the beginning of William Blake's *Auguries of Innocence* is another well-known and wonder-producing passage:

To see a World in a Grain of Sand
And a Heaven in a Wild Flower
Hold Infinity in the palm of your hand
And Eternity in an hour.

Think about that—and share it with your students—when you are about to dive into atomic theory! (The rest of the poem provides much food for thought as well, but gets pretty deep.)

The Painters

So many paintings, so little time. Well, here are a few. I mentioned Johannes Vermeer's *The Astronomer*, which hung on the wall in my classroom for years. Contemporary science labs are generally pretty paltry on the aesthetic side. Modern notions of laboratories don't leave much room for the kind of textured beauty present in the astronomer's study. Why not give students something beautiful to gaze at?

Naturally, everyone has seen Vincent van Gogh's incredible *Starry Night*. But alas for the person who ever gets tired of it! This is an item I would have on my wall if I were teaching 8th grade Earth Science/Astronomy. I think I would call the students' attention to it on the first day of school, and then

Vincent van Gogh: *Starry Night* (1889)

Joseph Wright of Derby: *An Experiment on a Bird in an Air Pump* (1768)

ask them regularly to consider what van Gogh was thinking about when he painted stars like that. And how much of contemporary cosmology is actually consistent with van Gogh's artistic intuition from 125 years ago? *A lot*, I would say. (Just google "cat's eye nebula" and see the images that come up.) Might the students' thoughts on the subject change during the year?

Joseph Wright's famous painting, *An Experiment on a Bird in an Air Pump* caused a bit of a sensation in 1768 because of its startling new subject matter—*science*! The age of Enlightenment! This painting is a fine way to initiate a conversation about the ethics of scientific research, particularly research on living creatures. Wright's painting *The Alchemist Discovering Phosphorous* is another attention getter, and a nice way to enliven a chemistry lab.

On the last page is J. M. W. Turner's spectacular *Rain, Steam and Speed*—in my view, an absolute must for any lesson touching on the advancing technology of the Industrial Revolution. How shocking that time must have been, and how hard to put ourselves back there! (We who can't drive 60 seconds in a car without digital music playing.) Can we try to imagine why Turner painted the train with such a menacing aspect? What was he thinking? And why did he break one of the rules of composition by having his subject running off of the canvas instead of into it? All good questions for discussion.

As an aside, it is always fun to see if the students can spot the hare scampering to get out of the way of the train. (Impossible in a small reproduction, but the hare is just over halfway from the engine to the lower right corner of the painting.)

The Hymnists

One of my holiest memories—repeated on many occasions—is being in the woods on a Boy Scout camping trip on Sunday morning. I was a typical energetic 13-year-old and loved to hike and explore to the point of exhaustion. But on Sunday morning, something luminous always happened. Our troop would gather around the breakfast campfire and worship. I remember it always being so quiet as we gathered to sing, hear a passage from God's word, and pray. The service was always simple, short, and very, very quiet.

One of the hymns we always sang was the beautiful "This is my Father's World." We could hear the wind in the trees and feel the warm sun on our faces. We sat on rocks or pine needles and we sang:

This is my Father's world, and to my listening ears
All nature sings, and round me rings the music of the spheres.
This is my Father's world: I rest me in the thought
Of rocks and trees, of skies and seas;
His hand the wonders wrought.

This is my Father's world, the birds their carols raise,
The morning light, the lily white, declare their Maker's praise.
This is my Father's world: He shines in all that's fair;
In the rustling grass I hear Him pass;
He speaks to me everywhere.

This is my Father's world. O let me ne'er forget
That though the wrong seems oft so strong, God is the ruler yet.
This is my Father's world: the battle is not done:
Jesus Who died shall be satisfied,
And earth and Heav'n be one.

This beautiful hymn changed my life when I was 13 years old. Does it still have that power, or are modern teenagers too preoccupied or jaded? That all depends on the preparation they receive. The hymn was written by Maltbie D. Babcock, a highly regarded Presbyterian minister who used to go for walks in upstate New York to see "his Father's world," as he would put it.

The other hymn we always sang on those camping trips was "Fairest Lord Jesus," composed by German Jesuits in the 17th century and translated into English in 1873 by Joseph Seiss. I can imagine gathering at night with telescopes for an 8th grade Astronomy star gazing party. After spending the evening being awed by the beauty of the heavens—and talking about Vincent van Gogh—we would sing this hymn before ending our evening together.

Fairest Lord Jesus, Ruler of all nature,
O Thou of God and man the Son,
Thee will I cherish, Thee will I honor,
Thou, my soul's glory, joy and crown.

Fair are the meadows, fairer still the woodlands,
Robed in the blooming garb of spring;
Jesus is fairer, Jesus is purer,
Who makes the woeful heart to sing.

Fair is the sunshine, fairer still the moonlight,
And all the twinkling starry host;
Jesus shines brighter, Jesus shines purer
Than all the angels heav'n can boast.

Beautiful Savior! Lord of all nations!
Son of God and Son of Man!
Glory and honor, praise, adoration,
Now and forever more be Thine.

The Composers

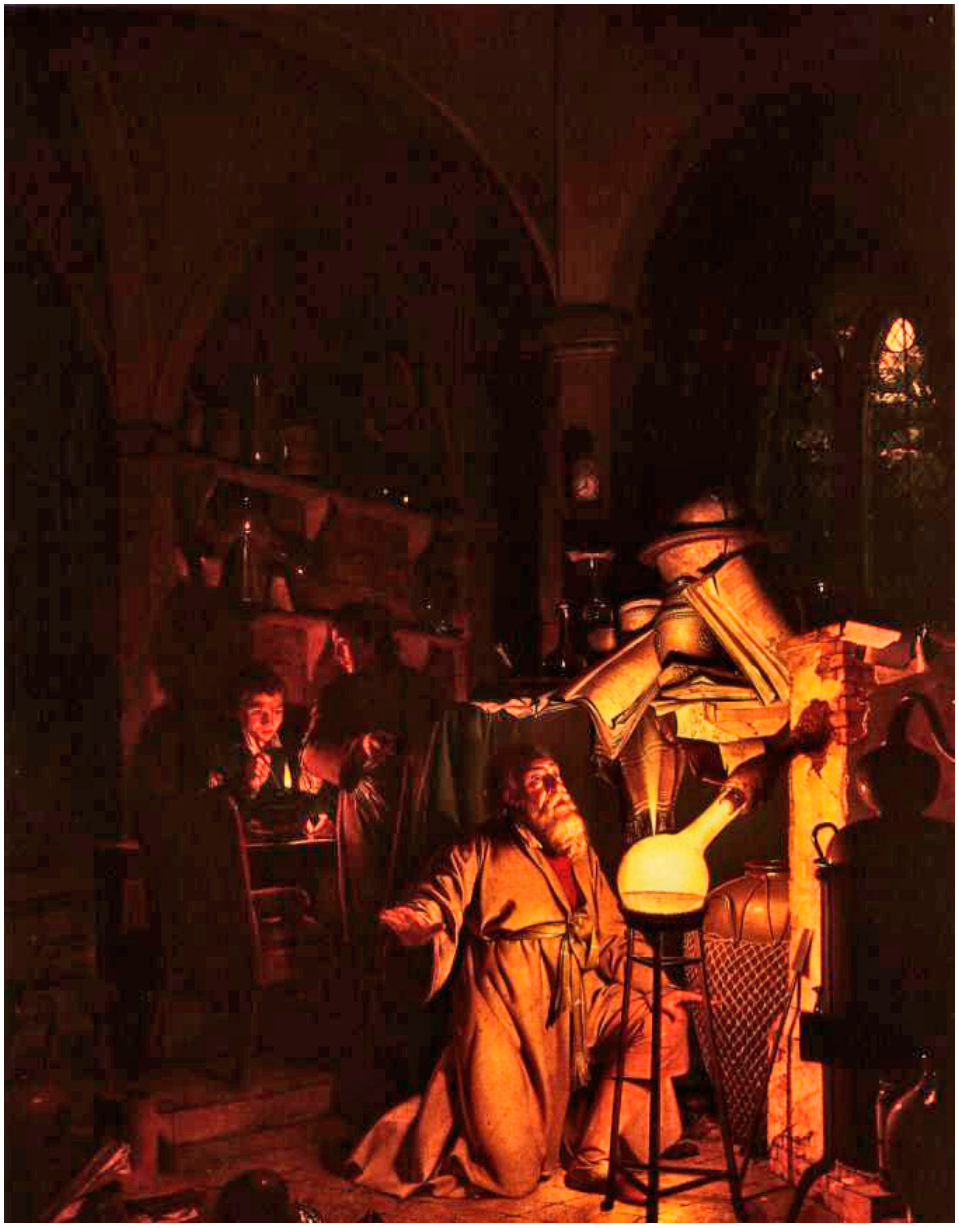
When it comes to music, the classical composers have much to offer. An obvious choice to play at your class party is Antonio Vivaldi's *The Four Seasons*. Kids love Ferde Grofé's *Grand Canyon Suite*, with its crazy thunderstorm at the end. Another standard is *The Planets*, by Gustav Holst. Recently, symphony orchestras across the country have been performing this work while showing stunning video images (and two computer models) of the planets from NASA. We saw the performance in Austin a few years ago. The combination of Holst's music and NASA's images was striking. If such a performance will be in your town anytime soon you might consider making a class excursion to hear and see it. Hans Graf and the Houston Symphony Orchestra produced a DVD and Blu Ray version of this performance in 2010. Unfortunately, new copies seem not to be available any longer, but a few used copies can be found online.

If you don't know the choral music of Eric Whitacre, you must remedy that by getting the *Complete A Capella Works* CD, produced in 2002 by the Brigham Young University Singers. To say that Whitacre's music is achingly beautiful is to say nothing. You can only have the knowledge of this music by *listening* to it. The first piece on the CD, "Water Night," is indescribable.

The CD includes several pieces related immediately to nature or technology. "Water Night," with its enchanting text by Octavio Paz, sounds like its title. "Cloudburst" is an 8 1/2-minute choral enactment of a thunderstorm, also with text by Paz. The sacred piece "Lux aurumque" is a profound meditation on light, gold, and the nativity. The meditation on light brings to mind another passage from Job—38:19, 20: "Where is the way to the dwelling of light, and where is the place of darkness, that you may take it to its territory and that you may discern the paths to its home?" We cannot emphasize enough to our students the mystery behind light—pure energy that we characterize in terms of particles or waves, but which continues to defy understanding. Finally, there is "Leonardo Dreams of His Flying Machine"—my heart always soars when we get to the place where "Leonardo steels himself, takes one last breath, and leaps..."

The Writers

There are thousands of works of literature that dabble in the scientific or technical (the entire genre of science fiction, for starters). There are also works that focus on the romp and delight of scientific discovery, books like *The Disappearing Spoon*, *Napoleon's Buttons*, *The Dancing Wu Li Masters*, and innumerable others. But here I will just mention a few works that entreat us to hear the Other Voices with which nature speaks to us.



Joseph Wright: *The Alchemist Discovering Phosphorous* (1771)

Annie Dillard is the first author that come to mind because her works make such luminous contact with God's creation. Her lovely book *Holy the Firm* is profound, one of my all-time favorites. Also striking are *Pilgrim at Tinker Creek* and *Teaching a Stone to Talk*, personal narratives deeply steeped in nature. Here is a taste from *Pilgrim at Tinker Creek*:

> I am no scientist. I am a wanderer with a background in theology and a penchant for quirky facts. As a thinker I keep discovering that beauty is itself as much a fact, and a mystery, as the most gruesome parasitic roundworm. I consider nature's facts—its beautiful and grotesque forms and events—in terms of their import to thought and their impetus to the spirit. In nature I find grace tangled in a rapture with violence; I find an intricate landscape whose forms are fringed in death; I find mystery, newness, and a kind of exuberant, spendthrift energy.

Then there is Vigen Guroian's beautiful little book, *Inheriting Paradise*, a collection of spiritual mediations on gardening. *Inheriting Paradise* is one of my devotional

favorites. It got me started doing some gardening of my own and thinking differently about the natural processes going on in the garden and what they say to us about life on planet Earth.

Wendell Berry is another favorite. He has written a lot, but a good starting place is his collection of essays, *Sex, Economy, Freedom and Community*. In 2000, Berry published *Life is a Miracle*, subtitled "An Essay Against Modern Superstition." This most important book is a polemic against the reductionism and industrialization plaguing science today. Before reading it, you may wish to brace yourself and read Edward O. Wilson's *Consilience*, a reductionistic, atheistic blast against the transcendent. It will be worth it just to be able to rejoice thankfully as Wendell Berry tears it to shreds.

No End

There is more to explore on this subject than a lifetime can touch. As I think about how to interact with students in the context of a science class, I am deeply motivated by this truth: just because we have a scientific account of some natural phenomenon does not mean that the scientific account is all there is to say about the phenomenon, and it is certainly not all that the phenomenon has to say *to us*.

Just because we have a scientific account of bioluminescence doesn't mean that the beautiful colors of light emitted by deep sea fish aren't stupefying, even mysterious—truths the arts help reveal. Just because we have scientific accounts of lightning, supernovae, and hurricanes does not mean that we do not tremble at the awesome power displayed by them and wonder at their extravagance.

Perhaps another quote from Annie Dillard's *Pilgrim at Tinker Creek* would be an appropriate note to end on:

> After the one extravagant gesture of creation in the first place, the universe has continued to deal exclusively in extravagances, flinging intricacies and colossi down aeons of emptiness, heaping profusions on profligacies with ever fresh vigor.

J. M. W. Turner: *Rain, Steam and Speed—The Great Western Railway* (1844)

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