

Looking Up: Wonders of the Night Sky

Stargazing

Lyrics by David Haines

When skies are clear and I can see the stars,
I seek a place where I can be alone.

Then I am just a fleeting thought in a random universe.
This is the greatest feeling that I know.

When I lie down beneath the spring-time sky,
Counting the shooting stars that stream across the night,

The ups and downs of this small world are dissolved in children's dreams.
This is the greatest feeling that I know.

See how the planets circle in the void,
As we perform our petty dances here below.

We could burn our Earth to smoke and ash and the moon would shed no tears.
This is the greatest feeling that I know.

We could burn our Earth to smoke and ash and the moon would shed no tears.
This is the greatest feeling that I know.

Big Bang

Lyrics by David Haines

What caused the beginning of the universe?
What made the Big Bang?

Infinitely dense and infinitely hot
Nearly fourteen thousand million years ago
Space and time and energy and matter all burst out
Where it all came from nobody can know...

What caused the beginning of the universe?
What made the Big Bang?

Space and Time began with the Big Bang
Doesn't make sense to talk about "before"
There wasn't space-time for anything to happen in
So it doesn't make sense to talk about a cause.

Nothing caused the beginning of the universe.
Nothing made the Big Bang.

Cool Moon

Lyrics by David Haines

No flowers, no trees,
No water in the dusty seas,
No clouds in the sky,
Nothing ever lives, nothing dies,

No air, no sound,
No breezes blowing leaves across the ground,
No joy, no fear,
Nobody there to shed a tear,

On the moon...

Once thought bone dry,
Ice crystals from the comets passing by
And wind from the sun
Bring water to the surface by the ton,

Not once, but twice
Our spacecraft have discovered water ice
With dust combined
And in craters where the sunlight never shines

On the moon.

93 Million Miles

Lyrics by David Haines

Ten, twenty, thirty, forty, fifty,
Sixty, seventy, eighty, and a ninety

Ninety-three million miles away,
That's how far the sun's away that gives us light and warms the day.
Ninety-three million miles or so,
That ain't a long way for the light to go.

Riding on a light beam, if we could, it wouldn't take us very long.
Riding on a light beam, we'd be there by the time
We'd finished singing this song if we took it slowly...

Ninety-three million miles away,
That's how far the sun's away that gives us light and warms the day.
Ninety-three million miles or so,
That ain't a long way for the light to go.

If the sun went out we'd not last long, we couldn't live without its glow.
But that isn't very likely 'cause the sun's quite young.
It's got another six billion years or so to go...

Ninety-three million miles away,
That's how far the sun's away that gives us light and warms the day.
Ninety-three million miles or so,
That ain't a long way for the light to go.

Is it waves, is it particles? Nobody quite knows.
It's the ultimate speed limit anything can go.
At a million miles every five seconds, no,
It ain't a long way for the light... to...
Go to go to go, go to go to go, go to go to go, go to go to go, GO!

Planets

Lyrics by David Haines

Bang in the middle there's an ordinary star we call The Sun
Over ninety-nine percent of the solar system's mass is in that one.

Four inner planets orbit relatively close, Earth's third
Then comes a belt of rocky asteroids so we've heard

Four outer planets, gassy giants each encircled by a ring
Then the Kuiper Belt of objects mainly made of ice is orbiting
Poor old Pluto no longer is a planet
Astronomers got together and decided to ban it

It's a dwarf planet now, unlike before
Ceres and Eris are one-two more
Way out beyond in deep, deep space
Trillions of other bodies orbit in that lonely race.

It's our solar system, it's our solar system,
It's our solar system, solar system home.

Eight Planets (round)

Lyrics by David Haines

Eight planets orbiting the sun
What are their names, one by one?

Mercury is the first we see,
Venus second and the Earth makes three,

And then there's Mars, Mars, the god of war
Jupiter and Saturn make one, two more.

Uranus is the seventh planet
Neptune is last and completes the set.

Red Supergiant

Lyrics by David Haines

Take one star far bigger than our sun
Getting very old, running out of helium,
In less than a second the core implodes
Brighter than a galaxy that star explodes.

Red supergiant in a black sky
Might any moment blow sky high.
Red supergiant time bomb,
Supernova blowing now so,
Let's be gone!

When a big star grows very old,
It swells up big, gets relatively cold,
Then at any time explodes
Into a supernova!

Straight Lines

Lyrics by David Haines

Three hundred thousand kilometers
Just in a second that's how far light speeds
One hundred and eighty-six thousand miles
Nothing in the cosmos is faster indeed

Look up at the sky on a clear, clear night
Andromeda the galaxy is floating there
Nearly three million years since the photons began
Their lonely journey from Andromeda into your eye.

Whizzing past a massive black hole or star
Light appears to bend
But light always travels in a straight straight line
It's really space itself that's curved, my friend,
Really space itself that's curved, my friend, and...

Light travels in straight lines
Sunlight, lasers, colored or white
Light travels in straight lines
And nothing travels faster than the speed of light.

Red, orange, yellow, green and blue,
Indigo and violet too.
Rainbow colors are a glorious sight,
Mix 'em all together and you'll make white light
White light!

Light travels in straight lines
Sunlight, lasers, colored or white
Light travels in straight lines
And nothing travels faster than the speed of light.

Light travels in straight lines
Sunlight, lasers, colored or white
Light travels in straight lines
And nothing travels faster than the speed of light.
Nothing travels faster than the speed of light.
Nothing travels faster than the speed of light.

Black Hole

Lyrics by David Haines

Don't take me near that black, black hole.
Don't take me near to that place.
If you go there, leave me at home.
I'm too young to die in space...

Once you're near to that hole there's no resisting its pull,
So if you're determined to still go there,
Go there alone, you mad fool.

Picture a star so big and old it can't support its own weight,
Shrinks and collapses into a hole, an irreversible fate...

Gets so small it ain't there, just gravitational pull,
So if you're determined to still go there,
Go there alone, you mad fool.

As you get nearer you'll fall and you'll fall, faster and faster you'll go.
As you approach velocity of light time will slow down and will grind to a halt.

So... don't send a postcard 'cause it won't come,
Even FedEx won't get here.
Don't try to phone, you won't get through, not in a billion years.

Now listen, vacuum cleaners can't compete with what that black hole can do.
It swallows electromagnetic waves and soon it will swallow you!

Noctilucence

Lyrics by Andrea Gaudette

When sun falls, flash of tepid green,
Ghostly whispers glow in the western sky.

In the mesosphere electric blue white clouds
Linger in the realm 'tween precious air and space.

Are you the wings of feathered angels
Come to us epiphany,
Kissing us goodnight into peace of sleep

When stars appear, tiny prickled gems
Scintillating white against the cold dark blue,

Noctilucent clouds ice encrusted dust
Hover in our fragile husk, a mystery

Tendrils of Greed's tangled hair,
Prophet child of poisoned air,
Are you the frigid breath of our kiss of death?

Auroras

Lyrics by Andrea Gaudette

Clear October northern night,
Sun stretches tongue,
Flickering a swirling flame,
Goddess of the dawn.

Twisting turning ripples dance,
Pinwheel spinning light,
Cascades colors from the sky,
Aurora Borealis.

Wavy veils of tourmaline
Swaying in the sky.

Ninety three million miles
Blows the solar wind.
Paints a liquid drape of green
In the ionosphere.

I'm Your Moon

Lyrics by Jonathan Coulton

They invented a reason
That's why it stings
They don't think you matter
Because you don't have pretty rings

I keep telling you I don't care
I keep saying there's one thing they can't change

I'm your moon
You're my moon
We go round and round
From out here, it's the rest of the world that looks so small
Promise me you will always remember who you are

Let them shuffle the numbers
Watch them come and go
We're the ones who are out here
Out past the edge of what they know

We can only be who we are
It doesn't matter if they don't understand

I'm your moon
You're my moon
We go round and round
From out here, it's the rest of the world that looks so small
Promise me you will always remember who you are
Who you were long before
They said you were no more

Sad excuse for a sunrise
It's so cold out here
Ice and silence and dark skies
As we go round another year

Let them think what they like, we're fine
I will always be right here next to you

I'm your moon
You're my moon
We go round and round
From out here, it's the rest of the world that looks so small
Promise me you will always remember who you are

Total Eclipse (from *Samson* by G.F. Handel)

Lyrics by Newburgh Hamilton

Total eclipse! No sun, no moon,
All dark, all dark amidst the blaze of noon.

Oh glorious light, no cheering ray
To glad my eyes with welcome day.

Total eclipse! No sun, no moon,
All dark amidst the blaze of noon.

Why thus deprived thy prime decree?
Sun, moon and stars are dark to me.
Sun, moon and stars,

Sun, moon and stars are dark to me.
Sun, moon and stars,

Sun moon and stars are dark to me.

Syzygy 1

Lyrics by Bobbi Katz

Moon and the Earth orbit at their own pace,
Moon around Earth, Earth around Sun
Eclipses occur when they line up in space.
Syzygy, syzygy syz...

Eclipses occur when they line up in space.
Syzygy, syzygy, syzygy!

Orbiting, orbiting in an ellipse,
Sometimes they block light from the Sun
Then we'll see a solar or lunar eclipse.
Syzygy, syzygy syz...

Then we'll see a solar or lunar eclipse.
Syzygy, syzygy, syzygy!
Syzygy, syzygy, syzygy!

Sun and Moon: A Dialogue

Lyrics by Bobbi Katz

Sun: I am the Sun. I make the day.
Earth turns toward me, night fades away.

Moon: I am the Moon, and since my birth
My orbit takes me 'round the Earth.

Sun: I'm quite different than you are. **Moon:** Ah...
I'm heat and light, I am a star.

Moon: I am cold and dark. I'm only bright
Both: When I/you reflect your/my distant light.

Sun: I am the Sun.
Moon: You are the Sun.
Sun: I light the day.
Moon: You light the day.
Sun: Earth turns toward me, night fades away.

Moon: I am the Moon.
Sun: You are the Moon.
Moon: I charm the night.
Sun: You charm the night.

Moon: I am the Moon, Earth's satellite.
Both: I am (You are) the Moon, Earth's satellite.

Lunar Eclipse

Lyrics by Bobbi Katz

Like a dark old penny placed on top of a bright new one,
Earth's shadow slowly slips over the copper moon,
Hiding it completely.

Then slowly, slowly it slides off
As if pushed by an invisible finger.

Day Turned to Night

Lyrics by Bobbi Katz

What is the lesson we learn from birth?
The Sun is the source of life on Earth.
The boundless power of the Sun
Enables the life of ev...

The boundless power of the Sun
Enables the life of ev'ryone.

The Sun inspired many stories.
We study it with observatories.
About once a year there's an amazing sight,
Day suddenly turns...

Somewhere on the Earth there's an amazing sight,
Day suddenly turns into night!
Day suddenly turns into night!

Solar Eclipse

Lyrics by Bobbi Katz

When the moon blocks the sunlight, its shadow dims the light of day.
The sun's corona, its shining crown, is all we see.

It's a solar eclipse, it's a solar eclipse,
It's a total solar eclipse
It's a solar eclipse!

Adults: When the moon's Cold dark shadow Speeds across A swath of Earth,	Kids: One minute, one minute and a half Two minutes, two minutes and a half Three minutes, three minutes and a half Four minutes
Birdsong stops, Flowers fold their petals, The world holds Its breath.	Five minutes, five minutes and a half Six minutes, six minutes and a half Seven minutes, seven minutes and a half The world holds its breath.

All: It's a solar eclipse, its a solar eclipse
It's a total solar eclipse!

The sun returns, the sun returns.
The sun, the sun.

Syzygy 2

Lyrics by David Bass

Four and a half billion years ago.
Our Moon was born, and since her birth
Her orbit has grown as she wanders away
Farther and farther from the...

Effect of the tides make her wander away
Farther and farther from our Earth!

For the first time after so many years
Sun and the Moon, fin'lly appear
To be the same size! How lucky are we?
Syzygy, syzygy, syz...

Spectacular eclipses for us to see,
Syzygy, syzygy, syzygy!
Syzygy, syzygy, syzygy!

Between Points A and B

Lyrics by Bruce Lazarus

Worlds beyond counting, vastness beyond measure.
Worlds beyond counting, vastness beyond measure.
Countless worlds and size without end - it never ends.
Immensity... worlds and size without end
Even if... Even if we use the largest measuring rods
The space between points A and B reliably is still astounding.
Boundless, endless.

Space without boundaries, time without ending.
Space without boundaries, time without ending.
Boundless space and time without end - it never ends.
Remarkably... space and time without end
Even if... Even if we reached the speed of light
Our travel time between points A and B conceivably
would take a hundred million lifetimes.

Journey outward, spanning miles.
Leaving Earth and moon and planets behind,
Leaving Sun and solar system behind,
Towards immensities of space and time, on and on...

Voyage outward, spanning light-years.
Say "goodbye" to constellations,
Likely cause some consternations
How line A to B has vanished to submicroscopic levels
Intergalactic space surrounding...

Space surrounding.
Vastness beyond measure,
Time without end.

Countless worlds and size without end - it never ends.
Infinity... space and time without end
Even if... Even if we try to stretch our minds
To gauge the space between points A and B
emphatically is still astounding.
Boundless, endless.

Space surrounding.
Vastness beyond measure,

Time without end.

Our World

Lyrics by Bruce Lazarus

You and I share a single place,
A private universe, tiny point in space.

Complex world of water, stone and air...
Necessary water, stone and air.
Turning while we whirl around the sun...
Spinning as we whiz around the sun.

You and I share a biosphere.
Terrestrial abode - all we have is here.

Filled with life, filed up with strife - the human comedy.
Insulated, isolated, eons old - a fragile home called Earth.

You and I share a blue-green place,
A private universe, our own realm in space.

Complex world of water, stone and air...
Necessary water, stone and air.
Turning while we whirl around the sun...
Spinning as we whiz around the sun.

Spinning on our axis while we orbit 'round the sun.

An Immensity of Others

Lyrics by Carl Sagan

We live on one world,
On one world
Amidst an immensity of others
We live on one world.

...and Made of Diamond

Lyrics by Carl Sagan

I know a world with a million moons

There are atomic nuclei a mile across
That rotate thirty times a second

Solo: I know of a sun the size of the earth
And made of diamond, made of diamond.

Selections from Space Opera

Lyrics by David Bass

The Battle 1

Rebels: Our fleet is off and away.
Our most courageous comrades enter the fray.
The finest pilots that can be found in the galaxy
Now risk their lives, so that one day we may all be free.

There is little time to complete our mission.
We must put the Death Star out of commission,
Or in a few minutes, when it will arrive,
It will blow us to pieces, and none will survive.

We must find a way to destroy the Death Star.
We must destroy the Death Star now.

Our fleet has now reached its objective.
As predicted, the Death Star's defenses are ineffective.
But now, the TIE fighters give us a reason to worry.
They're swarming down on our fleet with unbridled fury.

Our X-wing craft is no match for the TIE.
Their fighters are blasting us out of the sky.
They've already blown half our fighters to bits,
And sev'ral R2 units also were hit.

C-3PO: *<spoken> What? Oh, no! Not R2-D2!*
Oh dear, oh dear, oh dear, oh dear, whatever shall I do?
I won't forgive myself if something happens to R2.

Leia: *<spoken> Will somebody please turn that thing off?!*

C-3PO: You're far too small and delicate to be out in a war.
R2-D2, what do you think they make humans for?

<A Rebel turns off C-3PO.>

Leia: *<spoken> Thank you.*

Chorus: Only one ship has made it so far,
To reach the target region of the Death Star.
Alas, his missiles landed just wide of the vent,
Exploding harmlessly, barely making a dent.

Looking Up: Wonders of the Night Sky

Now Luke Skywalker is our final hope,
But Darth Vader's ship has come up on our scope.
Luke's nearing the target, and he must not fail,
But Lord Vader's ship is right there on his tail.

Luke must find a way to destroy the Death Star.
Luke must destroy the Death Star now.

The Battle 2

<Enter Luke and Vader in their ships.>

Luke: I'll reach the target in two minutes, at this clip,
But there's a TIE fighter fifty yards behind my ship.
I think he's drawn a bead on me.

Vader: My TIE fighters are ravaging the puny Rebel fleet.
We're destroying almost ev'ry Rebel fighter that we meet.
The Force is strong in this one. Only I possess the might
To defeat this one in battle, and I have him in my sights.

<Enter Han and Chewbacca in the Millennium Falcon.>

Vader: What was that? How can this be?
How could this happen to me?
I've been hit and thrown off course.
Why did I not detect that ship through the Force?

Could it be that Obi-Wan was right:
Now that he's dead, he has vastly greater might?
I cannot fight what is beyond my ken.
Curses, I have been foiled again.

<Exit Vader.>

Luke: Han Solo, what made you stay with us and fight?

Han: I don't know what came over me.

Luke: I'm glad that you did what was right.

Han:
You're clear.
No fear!
I'll cover you from here.
Take your best shot,
and get out of here.

Luke:
I'm clear.
No fear!
I'll switch to high gear.
I'll take my shot
and get out of here.

The Battle 3

Luke: Red five to the Rebel base,
I can see the target. I'll arrive
In just one minute, at my current pace.
I've kicked it into overdrive.

Leia: You'd better hurry, Luke, because we are
Emerging from behind the planet.
We'll then be in range of the dread Death Star
And be blown to scattered chunks of granite.

Luke: I'm powering my proton missile shooter
And activating my targeting computer.

<Enter Obi-Wan as a spirit.>

Obi-Wan:
Use the Force, Luke.
Use the Force, Luke.
Trust your feelings, as I do.
Just surrender to the Force, and
You will find your aim is true.
The Force will always protect you
and keep your hopes aflame,
So close your eyes, and trust your
feelings, and use the Force to
guide your aim.

Luke:
Ben?
Ben?
How can I be hearing you?
I saw you fall.
Can this really be true?
I believe you now. This is
more than just a game.
I'll trust my feelings now
and use the Force to
guide my aim.

<Exit Obi-Wan.>

Leia: Your computer is off, Luke. Are you okay?

Luke: Ev'rything's fine, Leia. My missiles now are away.

Han: What a shot, kid. I saw your missiles enter
The Death Star. They will explode when they get to the
center.
I won't want to be here then, so let's go.
Once we're a million miles away, we'll stop to watch the
show.

<The Death Star explodes.>

Finale

<All rejoin the Rebels and Leia at Rebel headquarters.>

Rebels: It's done! We won!
The Death Star is gone!

We welcome
The new heroes of the Rebellion,
Whose true story we shall tell one
Day to our children, when they ask why we're free.

We're grateful
To those who, upon this most fateful
Day, fought and destroyed the hateful
Death Star. They now inspire
Our desire
To end the Empire
And return to democracy.

We honor those who gave their lives
Fighting our enemy,
But now we celebrate all those who survived
And brought us victory.

Hooray
For the stars of this glorious day.
We sing their acclaim and pray
These heroes will endeavor
To stay forever
With us together,
And they will never
Choose to leave our quest to free the galaxy.

Leia: We recognize our new heroes
For all that they have done.
They flew in the face of fear, o-
Ver came great obstacles, and won.

The intrepid R2-D2
Into danger bravely did go
And brought the Death Star plans back to you
With his sidekick, C-3PO.

C-3PO: *<spoken>*
What do you mean, "sidekick?" He's
the sidekick!
I'm the leading droid!!
Why, I've never been so insulted.

R2-D2:
Bee beep bee beep

Bee beep bee beep
Bee dee bee dee bee dee beep.
Pffth!

Looking Up: Wonders of the Night Sky

Leia: Han Solo and the mighty Chewbacca
Saved me when I was held by the Empire.
Their return to battle gave Luke Skywalker
All the time he needed to fire.

Chewbacca: Raahr!

Han: *<spoken> You said it, Chewy!*

Leia: And Luke, it was just a few days ago,
You were a boy tending a farm.
Now you have destroyed the Death Star and so
Saved the galaxy from harm.

Chorus: Hooray
For the stars of this glorious day.
We sing their acclaim and pray
These heroes will endeavor
To stay forever
With us together,
And they will never
Choose to leave our quest to free the galaxy.

Luke: There's one more hero you forgot,
For Obi-Wan Kenobi was with me when I took my shot,
To guide me and to guide my missile. I know he was there.
You must remember that his spirit is around us ev'rywhere.

All: Dear Obi-Wan Kenobi, are you with us this hour?
Were you behind the miracle that let our freedom flower?
Do you still have the ability to make events amend their
course?
Dear Obi-Wan, we shall always believe in the power of, the
power of the Force.