

Edited by **JON RAMER & RON MILLER**

# THE BEAUTY OF SPACE ART

AN ILLUSTRATED JOURNEY THROUGH THE COSMOS

 Springer

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# The Beauty of Space Art

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Jon Ramer • Ron Miller  
Editors

# The Beauty of Space Art

## An Illustrated Journey Through the Cosmos

Second Edition

 Springer

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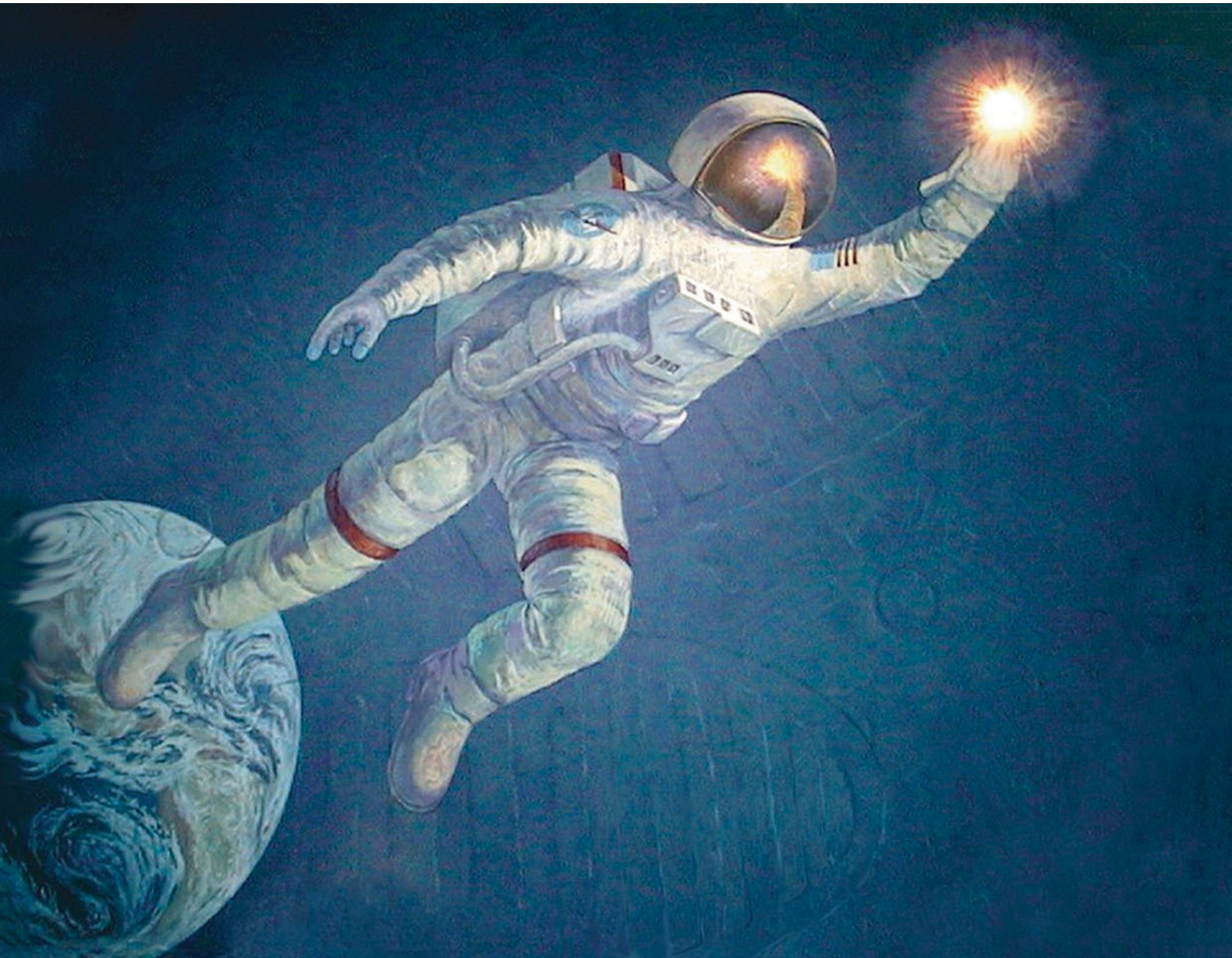
Cover image credit: *Cosmic Conception - Immaculate Star* by Michael Turner

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## Foreword

By Alan Bean, Apollo 12 Astronaut  
(written before Alan's passing on 29 May 2018)



**Fig. 1** Photograph of mural at the Astronaut Hall of Fame painted by Alan Bean, photo by Jon Ramer

Most of the art that we see around us, and hangs in the world's great museums, are what we would see if we lived at the time of the artist on Earth. A record from the distant past to the present, we can see what animals and humans looked like, and what they were doing centuries ago, decades before, and yesterday.

For example, all of us seem to enjoy seeing what life was like in France as painted by Impressionist artists the likes of Claude Monet, August Renoir, Edgar Degas, Alfred Sisley and others at turn of the 20th century. I love that period of time.

Others are entertained by seeing what it was like at the time of the opening of the American West, painted so brilliantly by Fredrick Remington and Charles Russell, among others. I know I do.

The artists' work you will see in this amazing and tradition-breaking book are all about our future. What our descendants will see, as the centuries unfold and they travel the vast distances to distant worlds, we can view right now through the eyes and imagination of the Artist.

These paintings are not just a simple flight of fancy, but are based on thorough scientific research and study. The artists visualize the world that probably exists, not that might exist. These are worlds our children's, children's, children's, children will explore someday in future generations.

I am one of twelve lucky human beings to have ever experienced the breathtaking awe of stepping onto the shores of an alien world. That world was hauntingly familiar because of art that I had seen over the years created by some of the great artists in this magnificent book. I am forever in their debt for making me feel more comfortable in a dangerous and distant world.

The twelve of us that moved about on the Moon's surreal terrain acknowledge a spiritual beauty in the mysterious rocks and craters. We had been sent to this cratered rocky and dusty world and left our footprints where there is no wind, nor rain to erase them. They will remain as they were when we first made them for the next thirty million Earth years.

I went as an Astronaut, but with the heart of an Explorer and the eyes of an Artist. The most incredible adventure of our generation left us somewhat transformed when we returned home.

I now paint pictures of what we humans did, and will do, when we first encounter worlds other than our own. When we go to the distant worlds depicted in this wondrous book, these same activities will be repeated because they are the best way discovered so far that allow us to understand how these new worlds were formed, and if they can be of value to the people on Earth.

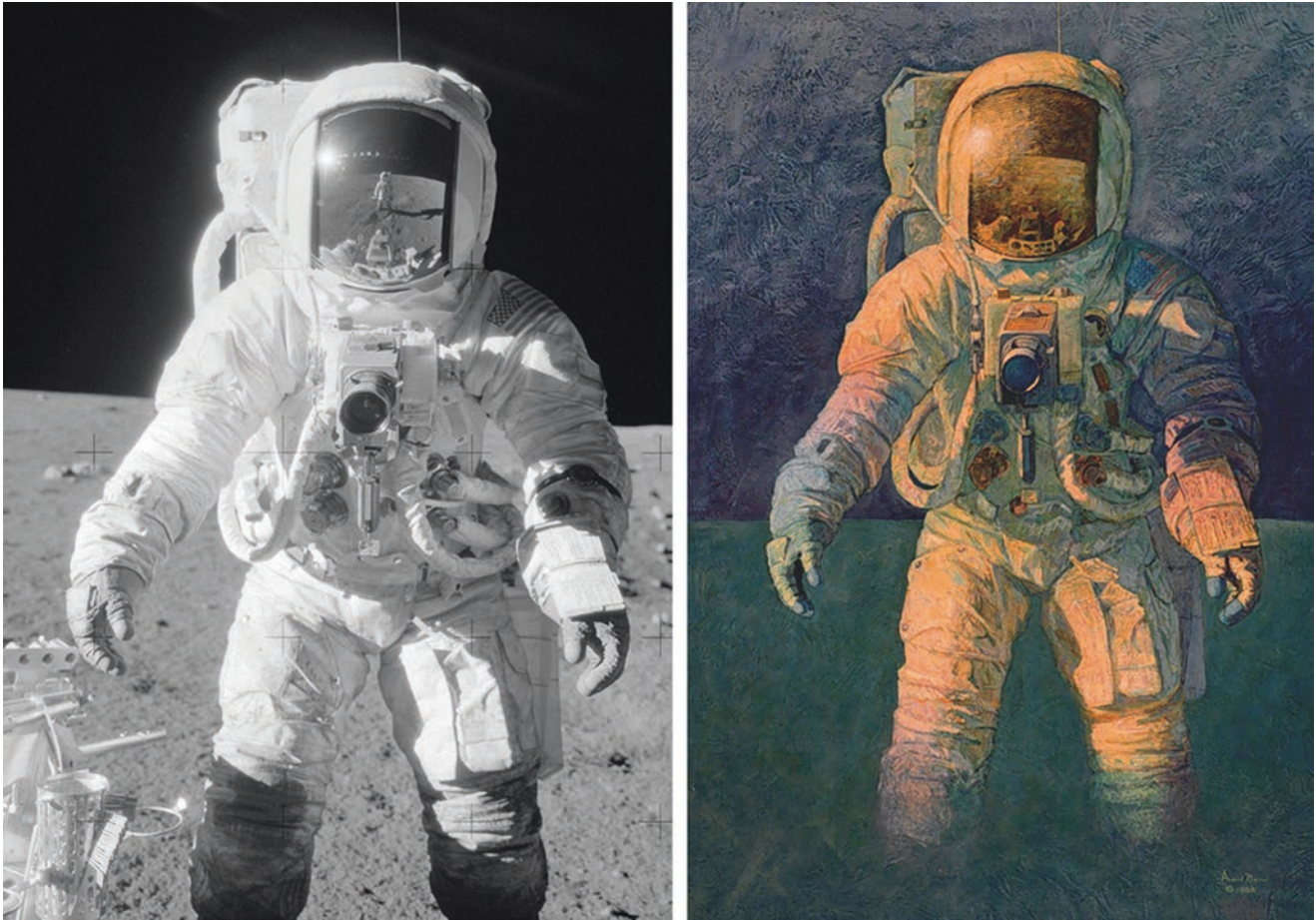
I include artifacts from my spacesuit, still retaining magical sprinklings of dust from the Ocean of Storms, and from the spaceship that carried me there. I have embedded these sacred objects in my paintings. It is my dream that these first paintings of another world created by an artist who has actually been there, will document experiences that can be forever shared by humanity.

I hope this book, *The Beauty of Space Art*, will enlighten the general public of the islands beyond our atmosphere and gravity, and will create an intense desire to go there.

As centuries unfold, we will surely visit other planetary neighbors around our beautiful star, the Sun. We will then travel out to nearby stars, a few of the hundreds of billions of worlds within our Milky Way Galaxy.

We artists bring dreams to life; and we've only begun to dream.

Alan Bean  
Fellow IAAA  
Reston, VA, USA



**Fig. 2** *That's How it Felt* by Alan Bean, Fellow, International Association of Astronomical Artists

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## Preface



**Fig. 1** Photograph of aboriginal cave painting in northern Australia, photo by Jon Ramer, FIAAA



Humans are visual creatures. Yes, we have five senses, but some 75% of what the human brain learns comes from what we see. Most of the modern alphabet you are looking at right now was permanently set when the first printing press was created around 1440 AD, but the origins of using letters to make an alphabet can be traced all the way back to a mnemonic symbol form of proto-writing developed around 7000 BC. “Writing” in some form or another has been used by humans for more than 9,000 years.

Walls of caves in the south of France, such as those of Chauvet Cave, are covered in visions of animals that are more than 35,000 years old. Rock paintings in Australia have been dated to over 40,000 years old. There are pictograms and images in every place across Earth where people have lived that are thousands of years older than the written word.

Long before humans wrote, we painted.

A painting can cross not just the gulf of years, but any and all language barriers. What did ancient Proto-Canaanite sound like when spoken? What words did Cro-Magnon people use when talking about deer or mammoth? We will never know. But we know they talked about those animals because they painted pictures of them – pictures which depict their subjects so accurately that thousands of years later, a viewer instantly recognizes what the artist was thinking. Such is the power of art.

Those artists from millennia ago painted with simple implements, like sticks and tufts of animal fur. The pigments they used were made from natural resources: colored mud, animal fat, ash, and plant extracts. Yet if one of those long-gone artists were miraculously transported to today, they would have no problem painting with the tools we now use. The “art” of making “art” hasn’t changed much. The subjects of what we paint, though, have changed considerably.

Over the centuries, our mastery of our world has advanced to where we are sending mechanical proxies to explore other worlds of the Solar System, machines that return digital images every bit as amazing to us as a tube of paint would have been to that ancient cave artist. But as incredible as these achievements are, human imagination has gone even farther.

“Space” or “astronomical” art is the embodiment of that leap in human imagination. It is a genre of artistic expression that strives to show the wonders of the universe. Inspiring, uplifting, mesmerizing, space art helps to fulfill a deep-set need in the human spirit to go and see. We are a species of explorers; it is in our very nature to wonder about what is over the hill, across the river, beyond that mountain – or on the next planet. And when we can’t go and explore ourselves, we send the imagination of an artist.

This book documents the birth and development of the genre of space art, tracing what humanity has artistically depicted in the skies above. As we evolved and grew, so too did our artistic expressions. And believe it or not, many of the great leaps of human understanding came about because of the imagination and skills of artists.

In the first part of this book, we explore how humanity slowly but surely began exploring the heavens through art, as we traverse chronologically from ancient times to the industrial revolution. New scientific discoveries and instruments were developed at an ever-increasing pace from the Victorian Era through World War II, bringing new expressions of astronomical art. The war wrought devastation and loss on a massive scale, but spurred scientific development to a profound degree. In just a few short decades, airplanes flew higher and faster than ever before, and rockets reached into space to deliver probes to other worlds – and humans to our own Moon. Space art made even more dramatic leaps during this period, becoming a movement large enough to form an international guild of artists.

The second part of this book delves into the techniques and the various subgenres of astronomical art, where you will learn about terminology and topics like rocks and balls, hardware art, and cosmic expressionism. It then goes on to discuss how powerful computers have revolutionized our observations and artistic representations of the universe, providing new topics and places for artists to depict, as well as fostering a rich field of digitally created art. Finally, we’ll look at who has supported astronomical art through the years and where the genre is going in the future.



**Fig. 2** *Proxima* by Mark Garlick, FIAAA

Words are fantastic, but an image can instantly explain the unknown, move you to tears, or lift your soul to the stars above. We invite you on this journey of human imagination from the deep past to the far future, from the small blue world we call Earth to the far reaches of the universe. Join us in admiring *The Beauty of Space Art*.

Jon Ramer  
President and Fellow, IAAA, 2019  
Mill Creek, WA, USA

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## About the Authors

**Judy Broome-Riviere** Judy Broome-Riviere (wife of Kara Szathmáry) holds an MFA from the University of Florida. She is a visual arts instructor with fifty years' teaching experience. She is International Baccalaureate certified and is an Associate Member of the IAAA.

**Michael Carroll** Writer, lecturer, and artist, Michael Carroll has over thirty books in print. He is a Fellow and founding member of the International Association for the Astronomical Arts, and recipient of the Lucien Rudaux award for lifetime achievement in the astronomical arts. He was a fellow in the 2016–17 Antarctic Artists and Writers Program of the US National Science Foundation. One of his paintings is on the surface of Mars – in digital form – aboard the Phoenix lander.

**Matt Colborn** Matt Colborn is a self-taught artist with an academic background in cognitive science who also enjoys modelling. He has been a keen amateur astronomer since childhood, has done work on SETI and consciousness and writes speculative fiction. His favored space art topics are alien landscapes and planetary geology.

**Don Davis** Don Davis is an artist and animator whose subjects have included the Ancient World as well as the fruits of space exploration. Events, life and scenes from the history of the Earth and Moon are among the subjects of his art. Many of his space paintings were made because the information needed for detailed accurate portrayals was brand new.

**Mark Garlick** Mark Garlick is a freelance illustrator, writer, and artist specializing in space and paleo art. His original background was in astrophysics, for which he earned a PhD in 1993. He followed this with three years' postdoctoral research, but he left academia in 1997 to pursue a more creative path. Since then he has written and illustrated numerous books on astronomy and astrophysics.

**Steven Hobbs** Dr. Steven Hobbs is a peer-reviewed author of planetary geomorphology and published space artist. Steven has pursued a life-long interest in space, with artworks and reprocessed historical spacecraft imagery appearing in numerous books and publications. One of Steven's scientific publications was used in part to determine a safe landing site on Mars for NASA's Curiosity Rover.

**Ron Miller** Ron Miller has been specializing in astronomical illustration for nearly 50 years. He is the author of numerous articles and papers on the subject as well as books such as *Space Art*, *The Art of Space*, and the Hugo Award-winning *Art of Chesley Bonestell*.

**Jon Ramer** Jon Ramer is a career military officer and avid world traveler who uses his experience as a landscape photographer, both aerial and underwater, as source material for his paintings. He works in both acrylics and oils and is a Fellow member and the President of The International Association of Astronomical Artists. His works have been seen in several astronomical and scientific art shows and books, and he has written numerous treatises on the topic of astronomical art.

**Pat Rawlings** Pat Rawlings has over 40 years as a space illustrator and designer. His realistic views of both human and robotic exploration provide a chronology of the plans, hopes, and desires of the planet's best space visionaries. His works have been reproduced in and on hundreds of magazines, books, television programs, films and murals in both in the US and abroad. Rawlings is a Fellow and former Trustee of the IAAA.

**Lois Rosson** Lois Rosson is a PhD candidate at U.C. Berkeley. She was the 2018–2019 Guggenheim Predoctoral Fellow at the Smithsonian's National Air and Space Museum in Washington, D.C., and worked at NASA's Ames Research Center before starting graduate school. Her work focuses on the history of astronomical illustration and the visual culture of space exploration.

**Aldo Spadoni** Aldo Spadoni is an aerospace engineer with over 35 years of experience supporting advanced programs for NASA and the DoD. He created an award-winning visualization team at Northrop Grumman and is a Fellow and Board Member of the International Association of Astronomical Artists. He is an accomplished illustrator, concept designer, and Hollywood technical consultant.

**Nick Stevens** Nick Stevens studied Astronomy at University College, London, and is a former board member of the IAAA. He works 100% digitally, for stills and animation, and his main tool is Lightwave 3D. He specializes in unbuilt projects and spacecraft of the Soviet Union, and is coauthor of the book *N-1 For the Moon and Mars*.

**Kara Szathmáry** Kara Szathmáry holds a Bachelor's of Science degree in Physics and Mathematics from McMaster University and a Master's of Science in Astrophysics from the University of Western Ontario. In 2005, he made a presentation regarding the impact of space art on modern culture to the National Hungarian Science Academy in Budapest, Hungary. His paintings are impressions of scientific knowledge that spiritually impacts the human mind at the threshold of space travel.



**Part I**

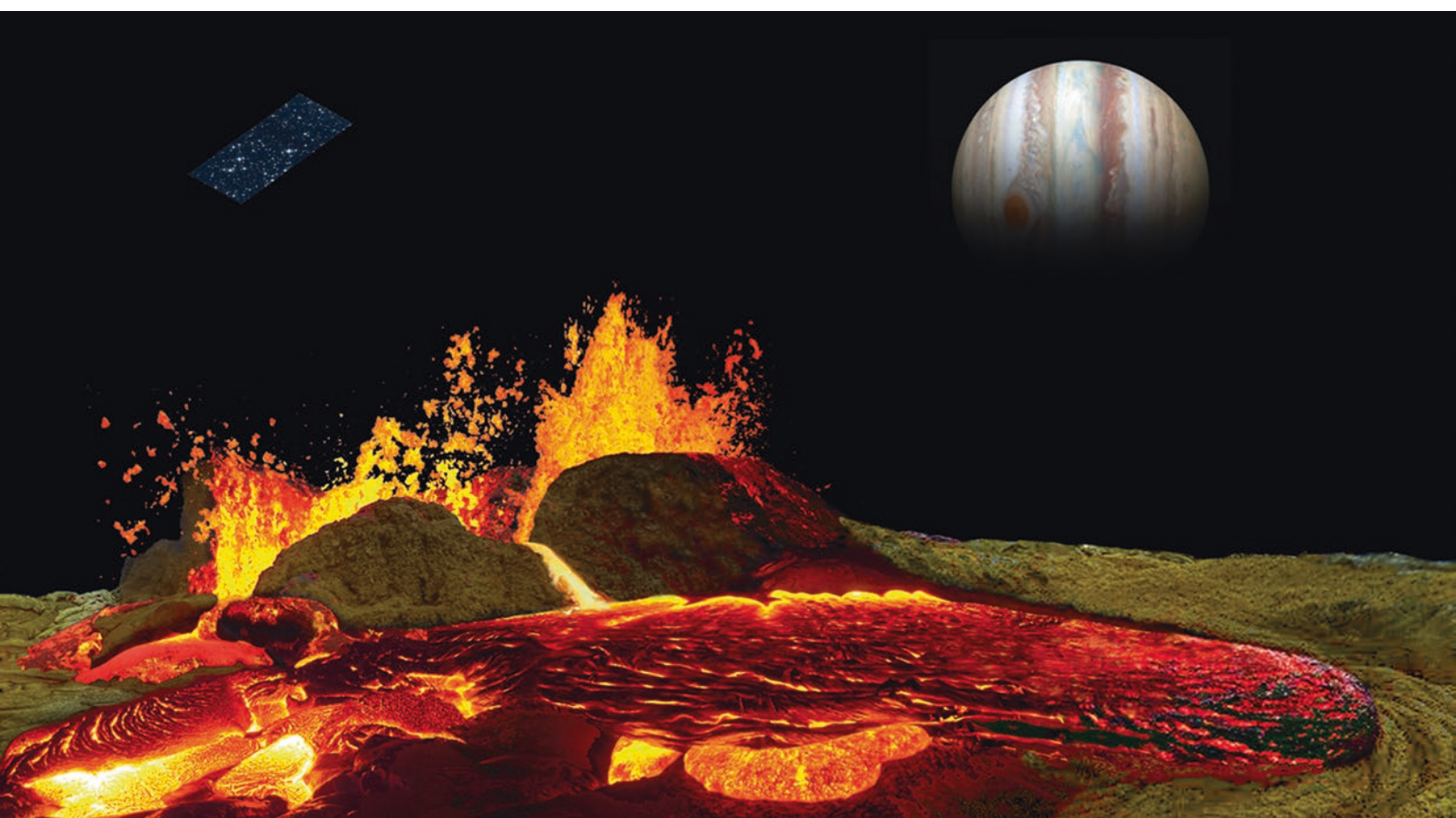
**The History of Space Art**

# Introduction to the Beauty of Space Art

# 1

Jon Ramer

*Astronomical art reaches from right here on our home planet all the way to the farthest expanses of the universe. As humanity learned just how incredible the universe really is, our artistic depictions of cosmic objects expanded in equal measure.*



**Fig. 1.1** *New Eruption* by Jon Ramer, FIAAA

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J. Ramer (✉)  
Mill Creek, WA, USA



“– oh my God – it’s full of stars!”

Astronaut Dave Bowman in *2001: A Space Odyssey* by  
Arthur C. Clarke

The universe we live in is a breathtakingly complex and astonishingly beautiful place. More than just the one little world we occupy, our universe is a vast region some 93 billion light-years across that contains trillions of galaxies, each of which holds hundreds of billions of stars. It is indeed “full of stars.” Some 13.7 billion years ago though, it was an infinitely small point that exploded into existence, then expanded into the vastness we see in the skies above. We weren’t there to witness that event, or the 13.69999 billion years that followed. But we are here now, and we can’t help but look up into the night sky and wonder.

As far as we can tell, humans are the only species on the planet that does this. We are also the only species that tries to create images of things we may not actually be looking directly at or perhaps cannot even see. We call this “art.” From all archaeological indications, humans have been creating art for as long as we have been humans. We have found tools, jewelry, and even paintings that are tens of thousands of years old – and older. It seems that everything we have looked at we have made artistic representations of in some form or other. It was only a matter of time before we started painting the night sky and the fascinating objects we found there. In earlier times, such imagery was most likely and often religiously based. Today, science and imagination are the prime sources of inspiration for a genre of artistic creation called *astronomical art* or *space art*.

So, exactly what is “Space Art?” The term *astronomical art* is often used interchangeably with the term *space art*, which has grown to encompass not only visions of strictly astronomical subjects – planets, moons, stars and galaxies – but scenes on other worlds and the hardware, spacecraft, vehicles, and people sent into space. The roots of the genre lie deep in our history and psyche.

Human beings are naturally curious, inquisitive creatures. We want to know what is over the horizon, how we got where we are, where we came from, where we are going, and how we are going to get there. The human mind is constantly examining the world around us, collecting information, trying to figure out the puzzle of our universe. The irony is that answers to the greatest questions of our collective existence are all above our heads, just waiting for us to reach up and discover their secrets. Even the simplest act of curiosity has a tremendous history of discovery behind it.

Look up into the night sky with a telescope or even a pair of binoculars. Find the darkest, blackest spot you can see, and imagine what you might

find if you were able to zoom in. Then imagine zooming in again. And again. And again. What would be there? Astronomers running the Hubble Space Telescope asked and did exactly that, and what they found were *galaxies*. Lots and lots of galaxies. The results were rather surprising, as was their unexpected beauty.

The astronomers actually were expecting to see some galaxies, but not *three thousand* of them in such a tiny area of the sky. A composite picture was assembled from 342 images exposed over 100 hours of observation time by the Hubble Space Telescope. This was famously called the Hubble Deep Field. It was such a scientific boon that two more deep field images were created, resulting in

the Hubble Ultra Deep Field image. These pictures literally show the state of the universe all the way back as far as light can be seen, revealing galaxies, quasars, and mega-stars that are nearly 13 billion light-years away. In fact, we can't see galaxies older than this in visible light. To see farther back in time, we need to observe in the infrared.

The Hubble Ultra Deep Field image was an amazing benefit to space artists as well. Never before had we seen such a dazzling array of colorful galaxies. Besides giving insights into the shapes and structures of the infant universe, it showed artists entirely new ranges of colors that could be added to their pallet when depicting deep-space objects.



**Fig. 1.2** The Hubble Ultra Deep Field image, STScI gallery, image 1427a

How do we know these facts? How do we know those tiny smudges of light are actually 13 billion light-years away? Because of something we call the *cosmic distance ladder*. It's a series of measurements developed over centuries of scientific study that extends our understanding of the size of the universe from Earth all the way out to the edge of seeable space.

We can determine the distance to nearby stars with simple *parallax*. Measure where a star is in January, measure where it is again in June when the Earth is on the opposite side of the Sun, then use some math invented over two thousand years ago to calculate how far away the star is. For more distant stars we use *main*

*sequence fitting*. Stars age in the same way and change color in the same way as they age. How much light they emit is measured as the *magnitude*. Astronomers have developed an extraordinarily accurate formula that calculates the distance to a star just from its color and magnitude. The final step on the cosmic distance ladder is something called *redshift*, or the *Doppler Effect*. In the same way that the sound from a firetruck siren gets higher in pitch as it approaches you and lower in pitch as it moves away, light from an object will be red- or blue-shifted by its speed away or towards you. Astronomers can examine the spectra of stars and measure the amount of that shift. How far it has shifted will tell how far away the star is.

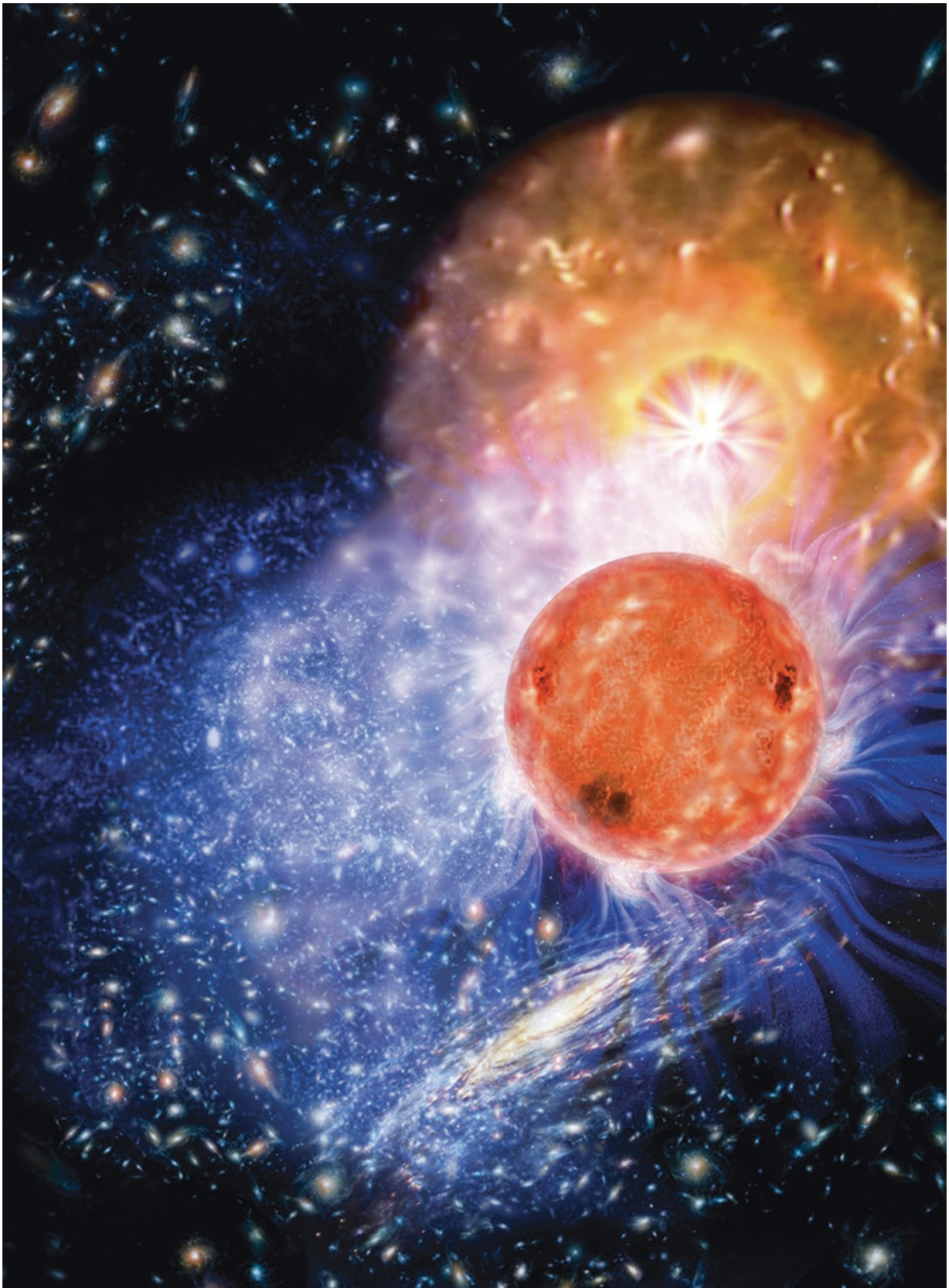


**Fig. 1.3** *Cosmic Conception - Immaculate Star* by Michael Turner

Why is the cosmic distance ladder so important to an astronomical artist? Because an artist can do the one thing a camera cannot: they can traverse the eons, leap across the light-years, and, using data from telescopes and probes, show us what those galaxies, quasars, and mega-stars of the early universe might have looked like up close. An artist can apply human imagination to the realities of our cosmos to create images of things so far away they are impossible to see clearly, yet actually exist. As humanity ascended the cosmic distance ladder, our perceived universe became larger and larger, and we discovered strange and exotic new objects. Not only were artists able to convey the enlarged sense of scale of the universe to the viewer, but they were able to present new, incredible scenes. “Wandering stars” became planets with surface features and views unlike any on Earth, one Sun in the sky became possibly two or

more, a smudge of light became a galaxy of billions of stars, then the darkest spot of night became a blazing menagerie of colors and shapes across billions of light years.

When we look into the sky, we are peering into the past, seeing the light emitted by stars millions or billions of years ago. Physics and chemistry work the same across the cosmos and across time. Because of this, we can logic out the history of galaxies, stars, and planets anywhere in the universe and figure out what they might actually look like to a visitor. An artist is often tasked with conveying scientific information and this enlarged sense of scale to the viewer, realistically depicting what a planet orbiting another star might look like just from knowing the basic parameters such as distance from the star, star color and type, and planet size. Armed with such knowledge, artists can create images that tell an incredible story.



**Fig. 1.4** *Ancient Suns* by Don Dixon, FIAAA

We know the universe began some 13.7 billion years ago in a titanic burst of energy we now call the Big Bang. Math and observation show us that less than 500 million years after that event, galaxies had formed, including one that became our own galaxy, the Milky Way. We can see through our telescopes how over the billions of years since, countless stars have formed, lived, and died, and we can surmise that somewhere, sometime, a star must have gone supernova near a cloud of interstellar dust. The shockwave from the explosion slammed into that cloud of dust, causing it to collapse. In about ten million years, the cloud swirled into a disk, coalesced, and burst into

the fusion-driven light of a new star. Debris in the disk clumped together in mini-swirls around the star, and in just a few million more years, formed a batch of rocky and gaseous planets. One of those rocky planets was just the right distance from the star for liquid water to collect on the surface. A storm of comets and asteroids crashed into the planet, including one object so large it was almost a planet in its own right. The impact blasted a massive blanket of debris into orbit and nearly destroyed the small world. In less than 10,000 years, the orbiting debris coalesced into a large satellite that would affect everything about the planet for billions of years to come.



**Fig. 1.5** *New Moon* by Gary Harwood, FIAAA

After 300 million years, the hail of fire and ice from the heavens slowed, leaving a vast ocean of water that harbored the perfect conditions. The right chemicals combined in just the right way to duplicate themselves, and something in the waters of that ocean became “alive.”

Now a long quiet set in. For the next three billion years the only living things on the planet were single-celled organisms. Mountains rose, continents drifted. Then one day, the first step of evolution began. Two cells stuck together and became more than either were apart.

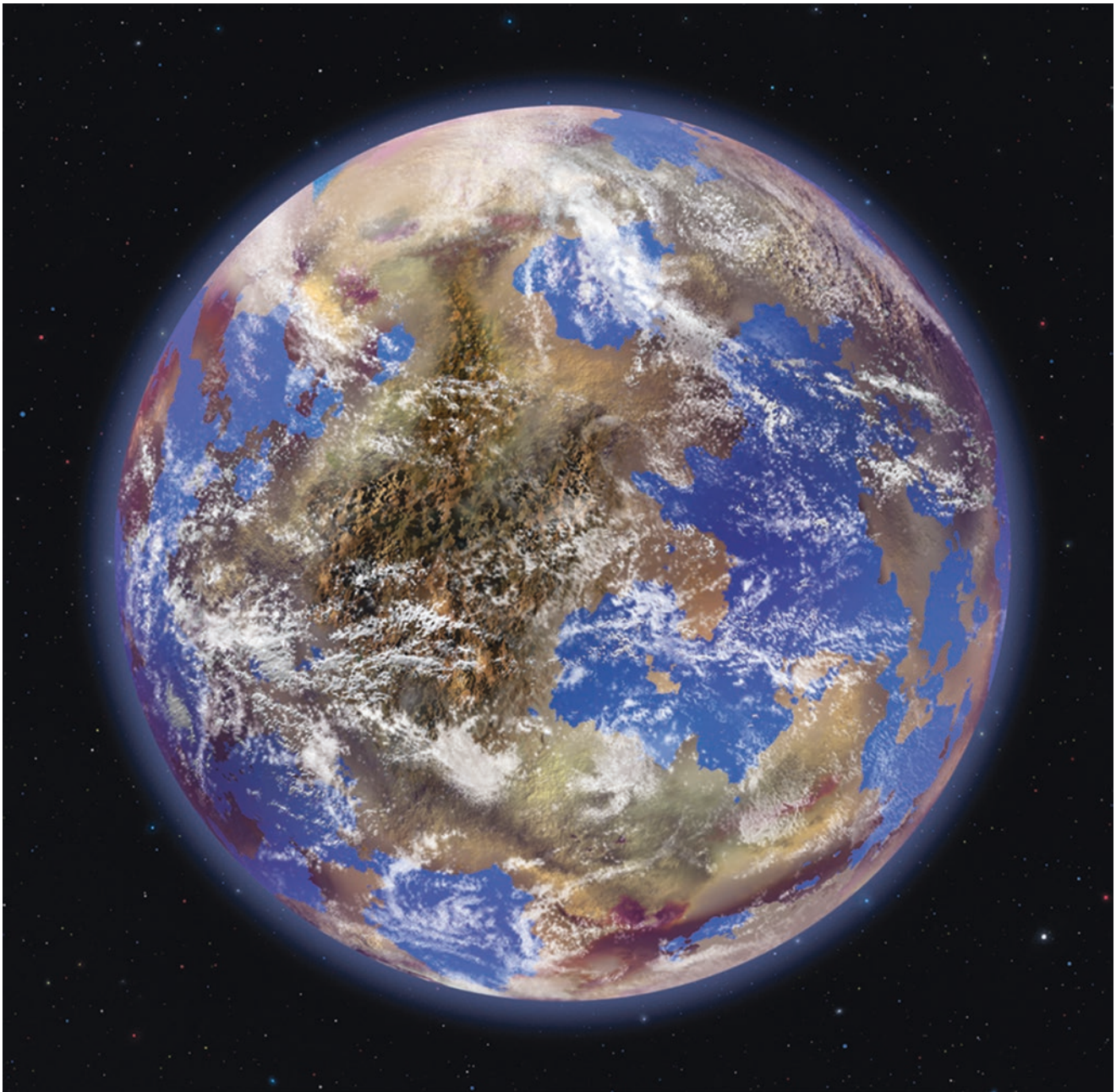


**Fig. 1.6** *Early Life* by Richard Bizley, FIAAA

Life exploded into a dizzying array of species, becoming ever more complex, filling the oceans. Another 100 million years passed before life evolved the ability to live on dry land. The speed of evolution sped up. Different forms of life quickly filled the continents, adapting to take advantage of whatever resources could be found. With each passing generation, life adapted and grew, developing new and better abilities. Occasionally debris from the formation of the star system fell from the sky again, wiping out entire species, but opening up room for

more adaptable species to evolve and take their place. Where life once took billions of years to develop a single new strategy, now new possibilities came into being in millions, even thousands of years.

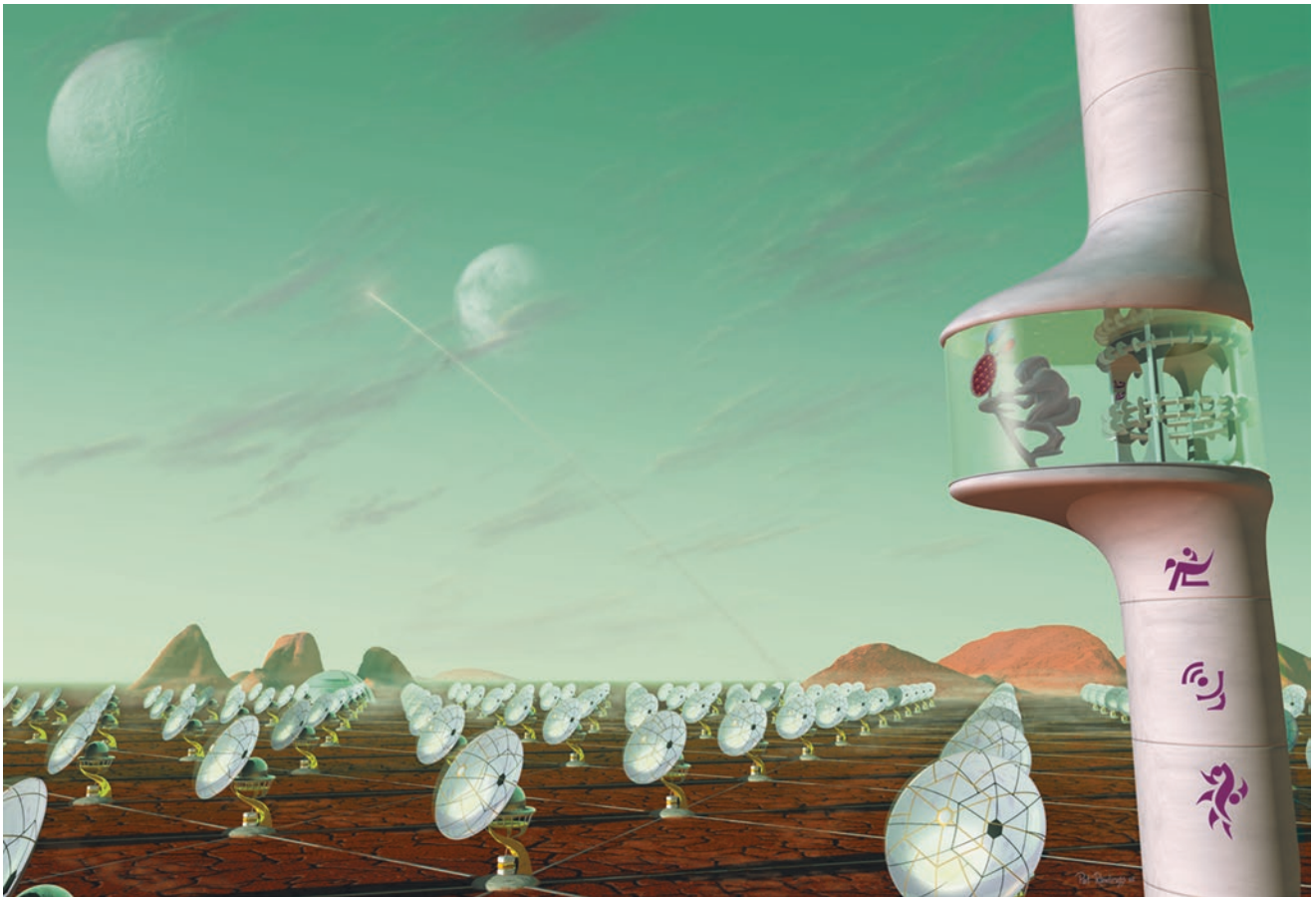
Eventually, one species evolved that looked up at the night sky and wondered, “What is that?” An incredible, improbable, nearly impossible story, the odds against it happening are, well, astronomical. This story, however, is all the more amazing because the planet in it is *not* called “Earth.”



**Fig. 1.7** *Earthlike Planet* by Lynette Cook, FIAAA

Where is it? What does it look like? What do the beings living there call themselves? Those are questions the people of Earth can't answer – yet. But in some not-too-distant tomorrow, we will encounter our “star-cousins” and possibly learn to communicate with them. Then we'll share our story, our knowledge, and our art. In fact, sharing our art might be the most important thing we could do. To appreciate a written or spoken word, you first have to understand the language and perhaps even the culture. Art however, may have a better

chance of transcending those limitations. We can look at ancient murals on a cave wall and surmise what the artist was thinking, or observe a 500-year-old painting by an artist who lived in a different place, spoke a different language, and had completely different cultural values, and get some sense of what the image is about. A thousand years from now, people will be able to look at a painting made by a one of the first humans to walk on the Moon and know he is talking to them across the millennia. Art is a window into the soul of humanity.

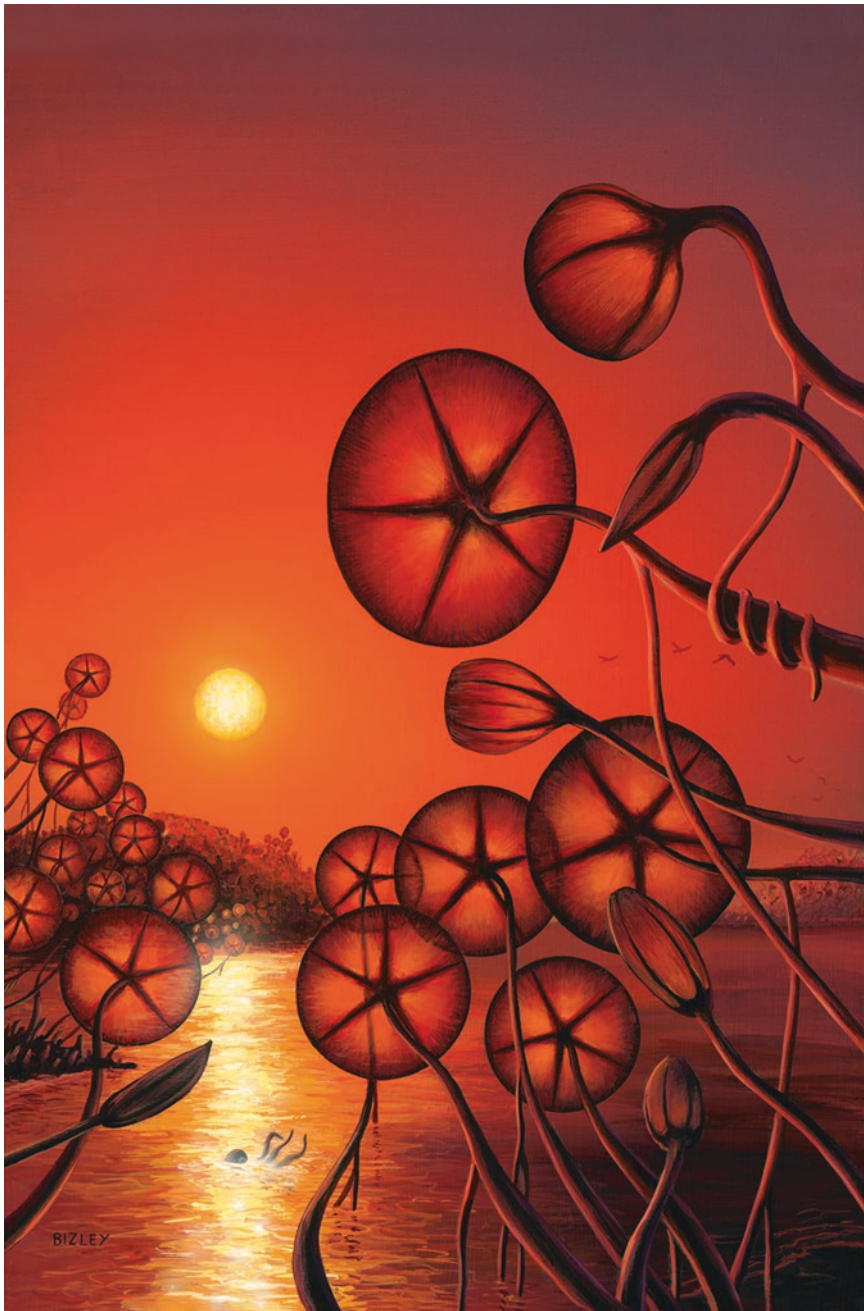


**Fig. 1.8** *Listening* by Pat Rawlings, FIAAA

Until that momentous day when we meet our star-cousins, humanity will have to suffice with thinking and dreaming about what life on other worlds might be like. It's a sobering process.

The questions are endless. What would an alien being look like? How do they communicate? What do they eat? What is their home like?





**Fig. 1.9** *Life on a Tidally-Locked World* by Richard Bizley, FIAAA

We know the physical and chemical laws of the universe are the same everywhere. Astronomers have found complex carbon-based compounds throughout the universe, many of which are the building blocks of amino acids. The yellow, orange, and red colors of Saturn, Jupiter, Titan, and other Solar System locations are all the results of organic compounds. Chemistry has shown that

at least the foundations of life as we know it are everywhere.

Time and time again, we have seen that if there is a possibility of something happening, given enough time and space, eventually it will happen. Intelligent life evolved here on Earth in just 4.5 billion years. The universe is three times older than our Solar System. Using conservative estimates from the lat-

est scientific studies, there could be as many as 38 *septillion* Earth-like planets in the universe. That's a 38 followed by 24 zeros. Written out, it looks like this: 38,000,000,000,000,000,000,000.

In a period three times longer than our planet has existed, on 38 septillion possible planets, in a universe filled with organic chemicals, it is practically impossible to believe that life has evolved only once, here on Earth. But the vastness of space cannot be understated. There could be an intelligent society at the same level of development as is Earth right now,

but on the other side of the galaxy. It would take 50,000 years for signals from that civilization to reach us. That's more than ten times the number of years since the Egyptians built the Pyramids. Will we be here to pick those signals up? Would they still be there to receive our reply another 50,000 years in the future? We thus might not be able to communicate with other intelligences due simply to the physical properties of space. Whatever the case may be, it is overwhelmingly likely that there is intelligent life in the universe beyond that of Earth, and lots of it.



**Fig. 1.10** *Mountaintop Twilight* by Dan Durda, FIAAA

We once believed that the Earth was flat, and that it was the center of the universe, with the Sun and planets revolving around it. The art of our history reflected that belief. Over time, flat maps and a flat world gave way to globes and artistic images of a curved world seen from above. Then the discoveries of Galileo, Copernicus, and others showed us that the universe was bigger than we thought. We learned the Earth was only one of

several planets going around the Sun and how far away those planets were, but for a time we still thought the Sun was the center of everything. Artwork began appearing showing those other worlds as seen through a telescope. Later on, we made the great leap of understanding that those other planets are actual *places* that could be visited, and artists took us to the surfaces of the Moon, Mars, Saturn and more.

Then we stepped up the cosmic distance ladder again and learned the Sun was just one star out of millions of stars in a wide galaxy. Artists began creating scenes of other stars from the surface of other planets. Edwin Hubble made the next great step and showed us our galaxy was but one of trillions in the greater universe. Art made that great leap too, and space artists began depicting a universe billions of years old.

Even as we experienced the world-shaking revelations that accompanied each new step of the

cosmic distance ladder, much of humanity still held dear the belief that we are special – that the universe is here for us and us alone. The day that we conclusively learn life exists outside of Earth will likely be watershed event in the history of the human race and the greatest culture shock we have ever experienced. Accepting and integrating that fact will be difficult for many. But as difficult as it might be, the transition can be made easier. This is where astronomical artists play a positive role in the group consciousness of our race.



**Fig. 1.11** *Life on Mars – Cave Colonies* by Adrianna Allen

We've experienced somewhat similar culture shocks before. When explorers returned to Europe from forays to North America, they brought back tales of strange new peoples, animals, and plants. Importantly, they brought back drawings and paintings of those new wonders, created by artists who were part of those initial expeditions. Such images were immensely popular and fired the imaginations of Europeans. The same thing happened when envoys visited Japan and China. Artists from both cultures created incredibly popular works about the discovery of entirely new worlds, inhabited by strange beings and creatures. It is space artists who fill that role today.

Seeing something, either real or imagined, and translating it into an image that others can relate to is what an artist does best. By combining scientific principles with plausible settings and imagination, artists can create images of what humanity might encounter "out there." Remember, the physical laws of the universe are the same everywhere. Gravity pulls, chemicals react, light reflects. The interaction between rock, atmosphere, and light is the same no matter where in the galaxy the light, atmosphere, and rock are. It is through the imagination of an astronomical artist that we can climb the cosmic distance ladder, cross the light-years, and try to answer those as-yet-unanswerable questions.



**Fig. 1.12** *Foreign Planet* by Michael Boheme, FIAAA

Space artists can show us the "rock and ball" places we are destined to go, the hardwares that we will use to get there, and capture the emotional impacts our herculean efforts will have. We use traditional paint, computer-assisted digital programs, three-dimensional sculpture, music, and forms of creativity yet to be imag-

ined, in order to show distant galaxies, stars, exoplanets, and possible alien life. Space artists open the minds of humanity, showing us a wonder of possibilities, letting us step off of the Earth for a brief moment, marvel at the greater Universe, and prepare ourselves for a not-too-distant tomorrow – today.



**Fig. 1.13** *Warm Lights of Night* by Simon Cattlin



**Fig. 1.14** *Hairtree Falls* by Dan Durda, FIAAA

All it takes to make that first step, that first great leap of imagination, is to do what artists have been doing for thousands of years: pick up a paint brush.

## Astronomical Art: From Ancient Times to the Industrial Revolution

# 2

Don Davis

*Astronomical art has origins almost as old as art and human imagination. This chapter describes the ancient fascination with the night sky and how humans have documented that fascination over the eons.*



**Fig. 2.1** *Milky Way Galaxy* by Don Davis, FIAAA.

Space art has roots deep in the history of art itself. A dark, starry sky has been a universally awe-inspiring sight to all peoples across the world in every era. History is filled with both written and visual stories

in great variety of what people thought the stars really were. The randomness of the stars scattered across the sky simply begs for patterns to be drawn across them in the human mind.

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