In the Next Issue of PULSAR:

We'll have the second part of John Stoke's explanation about how Hubble makes its pictures, a special feature on Mars, modeling three-dimensional objects like planets (and rovers!), and much more.

We'll run a great deal of commentary on the issue of traditional vs. digital art, so be sure to check out what members are saying.

Beginning with the Mar-Apr 2004 issue, we'll also return to the **Artist Profiles**, so you can get to know your IAAA colleagues a bit better. Names will be pulled randomly, so be prepared for an email or postal letter asking for images and a little curriculum vitae information.

In Future Issues:

We've put out the call for artwork before, in the pages of PULSAR and online, and this time is no different. We're catching up to the plans from 2003 for special feature art, and the next few issues will cover the following topics (so send your digital files or slides or prints):

Mar-Apr 2004: Mars (switched with gas giants). Exploration by probes and/or humans, Wet Mars, Mars today, volcanoes, canyons, Mars airplanes, habitats.

May-Jun 2004: Gas Giants. Gas giants and their moons, here in our solar system or postulated gas giants elsewhere in the Milky Way.

Jul-Aug 2004: Exotic Objects. Neutron stars, black holes, supernovae, Big Bang, anything weird and energetic.

Sep-Oct 2004: Comets. Seen from a distance with log flowing tails, seen up close as dirty snowballs, landing missions, impacts, comets around other stars.

Nov-Dec 2004: The Moon. Early lunar formation, cratering, lava, human exploration, the moon's future.

We're also exploring ideas like a year-end annual art issue or portfolio, so stay tuned and stay involved in **your** IAAA.

INTERNATIONAL ASSOCIATION OF ASTRONOMICAL ARTISTS

IAAA POINTS OF CONTACT

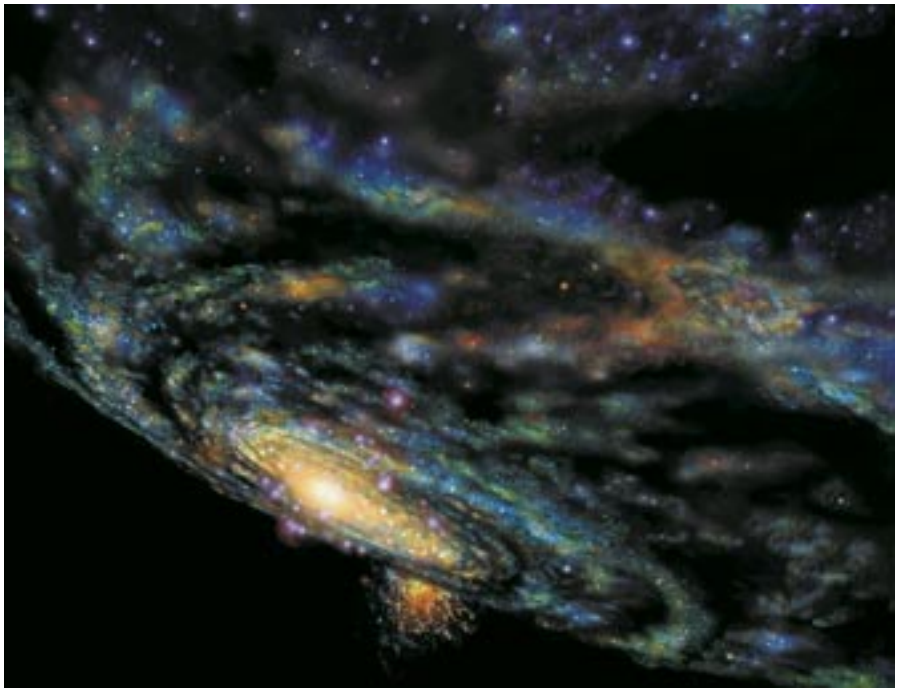
MEMBERSHIPS/US SUBSCRIPTIONS:
Walt Barrows
8139 Lesia Circle
Orlando, FL 32835 USA
Tel: 407-578-2373
email: wabarrows@juno.com
Annual rates by member type, $40, $45, or $50.
Make all payments out to "IAAA"

VICE PRESIDENT, EUROPE & UK SUBSCRIPTIONS:
David A. Hardy
99 Southam Road
Hall Green, B28 0AB, England
Tel: (44) 121 777 1802
email: Dave@astroart.org
Annual rates by member type, 26, 28, or 31 GB Pounds.
Make all payments out to "IAAA"

Jan-Feb 2004
Incorporating Catch-Up Material from Nov-Dec 2003

PULSAR

The Official Newsletter of the
INTERNATIONAL ASSOCIATION OF ASTRONOMICAL ARTISTS



"Galaxy South" by Don Dixon ©2003

Editor: Rick Sternbach IAAA Website: http://www.iaaa.org

The Official Newsletter of the
INTERNATIONAL ASSOCIATION OF ASTRONOMICAL ARTISTS

From the Editor –

A New Year, New Discoveries, Old Questions

The twin Mars Exploration Rovers Spirit and Opportunity have landed safely on opposite sides of Mars and have been producing amazing images for the benefit of scientists and other interested parties — like space artists — since the beginning of January. At least 11,000 pictures have been snapped by the Pancams, Navcams, Hazcams, and Microscopic Imagers for transmission to Earth, where we have been treated to views of the rocks and soil of the Red Planet. Orange Planet. Salmon-y Russet and Grayish Brown Planet. However you characterize the color, Mars is surprising us every day, as JPL releases new press images and makes the raw picture data available on the internet. We can see Mars in 3-D and in different parts of the electromagnetic spectrum, and we are learning of the mineralogical content of the landscape and samples examined around the landing sites. Before long we may learn about the role of water in the creation and alteration of the terrain.

At times like these, space artists are glued to the internet and are in contact with scientist colleagues, as well as being on scene at facilities like JPL. Some of our IAAA members are even connected with the Mars exploration program directly, and can share their experiences and discoveries with us. As with the heady times of Voyagers I and II reaching Jupiter and Saturn in 1979-1980, space artists are studying the terrain, atmosphere, and processes that shaped Mars, and are creating new views of the planet. We are able to present Mars from new vantage points, fueled by orbital camera views, new digital tools, and imagination.

The old questions involve the continuing debate over traditional media versus digital art tools. Some artists prefer one over the other and some use both. Some common misconceptions persist about the use of the computer, as you'll read inside this issue; people who don't understand the digital side feel that the computer is a cheat, producing results with very little effort. Nothing could be further from the truth. Some of the best digital space art has been achieved only after many hours of experimentation with color, lighting, and texture layering. It still takes an artist's eye. Not every digital painting reflects the exact style the artist might get with, say, acrylics and a gessoed masonite board, but recognizable digital styles have emerged, from crisply photoreal to more painterly. Digital space art isn't meant to replace traditional drawing and painting, though the requirements of some book and magazine art directors might convince one otherwise. The computer is simply another tool to be applied where it works best. Member Bob Eggleton, well known for sparking spirited discussions, posed the online question about another technological tool, the airbrush: "What's cooler? Impressionist work or 'anal detail'?" Of course, it can all be cool, and often depends on how the art is used (Bob, a proponent of the former, agrees). While the debate goes on, it's nice to know that the IAAA accommodates graphite, paint, brushes, airbrushes, photons, and inkjet printers. And lots more.

Rick Sternbach

Cover: "Galaxy South" by Don Dixon
Founding member Don Dixon, art director at the Griffith Observatory since 1991, writes: "The disk of the Milky Way Galaxy, a cosmic crepe with one trillion suns' worth of stars, dust and gas, prevents us from viewing a fifth of the universe. Among the hidden objects is the Sagittarius dwarf galaxy, here shown peeking out from behind the central bulge of the galaxy at the bottom of the picture. Our Sun would be a star too faint to see about one inch left of the red supergiant Betelgeuse, just above and to the right of the center of the picture." ©2003 Don Dixon.

PULSAR Submission Guidelines

We're always looking for news and images for PULSAR. Feature articles generally run 500-1500 words; news bits can be as short as a few lines. Even in this age of internet email lists, if you have anything of interest to the space artist, you can share it here.

Hard copy, mailed: Text should be typewritten, double-spaced. Images can be photographic prints, sketches, or photocopies suitable for scanning, either black & white or color. Mailing address: Rick Sternbach, IAAA/PULSAR, 12417 Hesby Street, Valley Village, CA 91607 USA.

Email and Other Web Options: email all text to rsternbach@earthlink.net. Text files can be saved in any format which can be opened by Microsoft Word. Text files can also be placed on a website for downloading; please furnish the proper URL. Images should be roughly 1800 pixels wide or better. Images can be PSDs, JPGs, GIFs, or PNGs. Other formats, like QuickTime, are also acceptable; please check with your editor first. If emailed, please keep file size to 2MB or zip-compress larger files. Large images can also be placed on websites for download; again, please furnish a URL. Please provide credit and copyright information for articles and images. If no copyright information is provided, a © notice will be placed with the artist's name and current year. For images, please provide a real title and a sentence or two about the subject; a file name like "jup345.jpg" won't tell us what we need to know.

The Colors of Space, Part 1 continued

"Yes. If our eyes could do Fourier analysis on-the-fly the way our ears can (picking out the oboe from the orchestra, for example), this wouldn't be necessary--that is, assuming that we could come up with a delivery medium that would convey all of the original light the way a compact disc delivers most of the original sound. Because our eyes are practically tone deaf, or at least 'timbre deaf' AND because we ultimately have to distribute these images via media that have only a few colored dyes (typically cyan, magenta, and yellow) to represent a broad, rich spectrum, we need to do this to show what is really happening. That's also why 55% of our research data isn't even imaging at all, it's spectroscopic."

"OK, but what about way you map the colors? Isn't it... forgive me, isn't it a bit *perverse* to simply assign colors to red, green, and blue, when the original spectral colors might not have been, in fact, red, green, and blue?"

"Let's take a simple example. There are spectral lines of Hydrogen and Sulfur that can be very helpful in puzzling out the structure of planetary nebulae. It just so happens that those spectral lines are both shades of red, shades so close that to the human eye they appear as the same color, or nearly so. It isn't that the hydrogen or the sulfur *in their entirety* are the same color (I'm not really sure what color the glowing sulfur gas looks like), but these spectral lines certainly are. Now, one might argue that it would be more 'accurate' in a narrow sense to make a picture in which both spectral bands are represented as red... but such a picture would HIDE information rather than REVEAL it, as happens when we assign each spectral band it's own representative color."

"So you're really saying that what Hubble pictures are all about is showing more than the eye can see."

"Yes, that's been the purpose of telescopes all along. Originally, telescopes just improved on the eye's optics. With time exposure photography we began to improve upon the optics AND the detectors. (About a quarter of the cost of the next generation space telescope will be spent in the development of detectors.) We're just continuing that trend. Even today, amateur astronomers are becoming increasingly adept at astrophotography using narrowband techniques where appropriate -- that is, for emission sources. Grayscale hydrogen alpha exposures are swapped in for the luminance channel (in Photoshop LAB mode) of a broadband RGB exposure and suddenly there's a lot more to see. Is it what the human eye would see? No. Is it therefore deceptive? No, it's revelatory."

Part 2 next time

The Colors of Space, Part 1 continued

2) The comments & opinions that follow are my own and do not represent STScI, AURA, NASA, etc.

First, I can tell you that one of the more common inquiries we receive here with respect to the press release images that we produce is: "Is that what it really looks like?" One can imagine a dialog that might ensue, and what follow is, in fact, a sort of amalgam of discussions I've had:

"No. To see what it really looks like, go outside, and look up in the sky in the direction of the object. What you see is what it really looks like."

"But I'd see nothing, or next to nothing. What I really mean is: If I could be in orbit with Hubble and if Hubble had an eyepiece that I could look through, would I see what your picture shows?"

"No, because your retina doesn't integrate light; it continually refreshes."

"OK, but if I could somehow gather light, time-exposure fashion with my eyes, is that what I'd see?"

"No, because your eyes, even if they could integrate light, still don't have the dynamic range of Hubble's detectors. Nor do you have the ability to direct your eyes to stretch or compress a given dynamic range to fit the dynamic range of your perception, much less that of external media by which you might wish to share an image so that others can perceive it."

"But, if somehow my vision could be so controlled, such that I could interpret images on the fly, somehow selecting the dynamic stretch for each color channel that would reveal the most interesting aspects of the subject, would what I'd see then resemble your pictures?"

"No, but you'd be on the right track. As you suggested, there is an element of **interpretation** involved in any image of something, because the image is not the thing and cannot encompass its entirety."

"So what else do I have to do to my eyes to get there?"

"Well, you need to throw away those crude broadband RGB detectors. They suit their primary purpose of looking at reflected color under a broadband solar spectrum, but have you ever considered their limitations?"

"You mean, the way we can't see infrared, ultraviolet, etc?

"No, I didn't mean that--but you do raise a good point: An object's infrared or X-Ray appearance is every bit as much a part of what it 'looks like' as its broadband RGB appearance; we shouldn't be too anthropocentric. What I really meant was the limitations of having broadband RGB detectors in your eyes."

"It seems to me that I can perceive a pretty wide range of colors."

"Yes, but there are some big limitations. Consider how much better your ears are at picking out sounds than your eyes are at picking out colors."

"How so?"

"Imagine a clarinet and an oboe both playing an "A" at 440Hz. Would you be able to hear the difference between the two?"

"Sure. The clarinet sounds like a clarinet, and the oboe like an oboe!"

"Precisely. That's what we call the timbre of the instrument. Your eye has no comparable capabilities with regard to waves of light. That's why a 'buglite,' which is a broadband incandescent light painted yellow, *appears* (to your eyes) identical to a low pressure sodium lamp, which emits light in only a very few narrow slots of the spectrum. The two are very different but your eyes represent them as the same."

"So there can be a lot more information embedded in light than our eyes can see?"

"Certainly in the astronomical realm, where you're dealing with all sorts of non-thermal, and therefore non-broadband emissions, this is very true. It's not so important on the Earth, where you're looking at broadband colors that are selective reflections of a broadband source, sunlight."

"So that's why you take pictures through narrowband filters, to separate out the details because our eyes can't?"

continued on p.15 →

MEMBERSHIP OPS

Word comes from U.S. Membership Secretary Walt Barrows:

It's time once again to remind everyone that your current 2004 membership dues are now overdue!

There have been several changes to the structure during the past year that are reflected in this year and will continue in effect each year after that. These changes will help us keep track of who has and hasn't kept current and also alleviates the burden for you of trying to remember when you made your payment last year. From this point forward, all membership dues are payable on January 1st of each following year. The amounts vary for the first two years, but we'll walk you through it.

For those **first-time members only** who join mid-year, the following percentages are applied to your particular membership level:

Date Joined First Time	**Percentage of Dues Applied First Year**
January 1st to March 31st	100%
April 1st to June 30th	75%
July 1st to September 30th	50%
October 1st to December 31	25%

Example of how this works now: Let's say you join in May at the Artist level. **You pay the full $45.00 dues on joining.** Seventy-five percent of your $45.00 ($33.75) is applied to your first year's membership. That carries you through to January 1 of the next year. At your **first renewal**, you pay $33.75, because $11.25 (25%) of your initial join-up dues covers the first quarter of the second year. On January 1 of the **third** year (second renewal), you pay the normal $45.00, and each year after that. See? Simple.

Second example: You join up as an Associate in September. **You pay the full $40.00 dues on joining.** Fifty percent of that initial dues ($20.00) gets you to the next January 1; you then renew for $20.00 because the other $20.00 covers the first half of the second year, and on January 1 of the **third** year you send the full $40.00. (**Ed. Note:** By George, even I understand it. You pay full dues, then a piece to sync up, and then full dues from then on.)

Your membership dues help to produce PULSAR, create and maintain our website, pay for the shipping and insurance for our traveling exhibit, sponsoring our workshops, and much, much more. Without your timely support, these benefits for all of you would surely suffer. With an international membership numbering over 175 individuals, your membership payment helps ensure these benefits for all, while allowing our organization to grow and become an even greater force for our art, our voice, and our vision!

Any inquiries or questions concerning you membership can be directed to me at: **wabarrows@juno.com** or to our UK Membership Secretary at: **bizleyart@lineone.net**

As before, there are three tiers of membership:

Associate - For non-artists: collectors, publishers, anyone who is interested in space art and keeping up with our news. $40/£26

Artist - For artists/illustrators who produce space art in any form. Artists get first choice for places at workshops, etc. $45/£28

Fellow - This is an honour to which a member in good standing must be elected by a Committee of Fellows. Fellow members may place the designation FIAAA after their signature on works that they produce, indicating their position of stature. $50/£31

THE IAAA HALL OF FAME

Dear Colleagues of the IAAA,

The Voting process conducted by the Jury of Fellows has not managed to elect any new Fellows this year. However, we know that there are great artists out there within our ranks so the Fellows will regroup in the Spring 2004 to review the talent pool. Meanwhile the Voting process for a Double Majority from the Jury of Fellows and the Board has yielded two outstanding artists who have successfully been elected this years 2003 Rudaux Memorial Award recipients. I congratulate both of our new Grand Masters, Don Davis and Ron Miller in their election to our IAAA Hall of Fame. I also wish to thank Dave Hardy, our UK Vice-President, who has put together a brief review of Don and Ron for your convenience.

Kara Szathmary
IAAA President and Chairman of the Board
December 22, 2003

Don Davis

Donald E. Davis was born in 1952, and in 1968 began working for the US geological Survey's branch of Astrogeological Studies. Here he created maps showing the Moon's early development, and he has become an expert on impacts and cratering processes, producing many widely-used illustrations of these subjects. He has produced many book and magazine illustrations, including a series of books on the bodies of our Solar System for Facts on File. He worked at the Hansen Planetarium in Salt Lake City, and has moved from working in acrylics to digital art, including very advanced and highly realistic 3-D work and animations. A founding-member and Fellow, he has worked tirelessly for the IAAA, and has been on its Board for many years. He has attended a number of workshops, including the 1991 eclipse in Hawaii.

Don is also our Director of Fellows, so the vote for the Rudaux Award had of course to be held *by stealth, without his knowledge*!

Ron Miller

Born in 1947 is a charter member of the IAAA, one of its first wave of Fellows, and has spent time on its Board of Trustees. He is co-author, with Bill Hartmann, of the well-known and acclaimed series of books for Workman Publishing: GRAND TOUR, OUT OF THE CRADLE, and CYCLES OF FIRE. He also wrote SPACE ART (1978) and has co-authored two books on Chesley Bonestell with Frederick C. Durant III: WORLDS BEYOND: THE ART OF CHESLEY BONESTELL and THE ART OF CHESLEY BONESTELL. He is currently producing a series of books for Twenty First century Publishing, each on a separate planet or other Solar System body, such as the Sun. These are produced mainly using the computer program Terragen, as he has moved into 'CG'.

Ron has attended a number of IAAA workshops, including the original Death Valley one and Iceland in 1988, and was active in the so-called Soviet-American exchanges, culminating in the production of IN THE STREAM OF STARS (Workman, 1990).

Ed. Note: I couldn't be more pleased to see two such fine space artists, colleagues, and friends receive the Rudaux Award. It is a treat for the eye and mind to see their works in print and yes, on computer monitors. We offer a small sample of their efforts on the next page. →

Exhibition & Gallery News

The IAAA travelling exhibit, The Artists' Universe, has returned to the United States and is undergoing updates. From Joy Day, IAAA Exhibit Director, comes the following:

"I am revamping the Artists' Universe Travelling Exhibit to continue it's journey of exhibitions. Most of the artists involved have elected to keep their works in the show, and some works have sold and are going to their new owners. This creates some openings in the show for new artworks!

Since the show must fit into the two crates that have been specifically designed for it, I am limited to filling the openings with pieces that are framed and of similar size. You must be able to ship the piece to me upon acceptance. It need NOT be available for sale, but better if it is.

For information about the Artists' Universe, visit: **http://iaaa.org/exhibit/**

If you would like one or more of your works to be considered to join the Artists' Universe travelling exhibit, please send me (privately, NOT to the list) a jpeg of the piece(s), or slides. Deadline for entry is March 20.

(**Ed. Note:** As this PULSAR has been slightly delayed, hopefully for the last time, please email Joy directly about getting your art into the show if it's past the March 20 deadline.)

Approximate sizes requested: (this is *OVERALL FRAMED* size, not image size)

24.5" x 26"
10" x 20"
21" x 25"
21" x 27"
15" x 20"
21.75" x 18.75"

Your FRAMED pieces need to be this size or slightly smaller to be eligible. Please direct any questions my way. When you send me your slides or jpegs, will you please include the dimensions of the framed piece. --Joy" Email: **joy@glassnebula.com**

Joy Day
P.O. Box 3939
Carmel-by-the-Sea, CA 93921

The Colors of Space, Part 1

Some time back, an email discussion developed on the types of images sent back from instruments such as the Hubble Space Telescope. Questions arose as to why there weren't more images acquired that more closely matched what might be seen with human eyes. John M. Stoke of the Space Telescope Science Institute heard the call and provided some answers. By the way, he's also an IAAA member. John wrote:

"I work for the Space Telescope Science Institute (STScI), in the office where Hubble press release images are created. I'd like to address a few of the points that have been raised in the discussion about Hubble images. Let me preface my remarks by saying...

1) I wish there were something like a "National Astronomical Portrait Telescope" whose entire purpose was to gather beautiful images of the universe, including broadband RGB images; and

continued on p.14 →

WORKSHOP NEWS

The May 23-30 2004 workshop at Mt. Vesuvius and environs in Italy has been cancelled, primarily due to lack of interest. Workshop coordinating member Jon Ramer (**ramerj@worldnet.att.net**) remarked: "Hopefully we'll have another one someday and more folks will attend."

As IAAA President Kara Szathmary stated previously, "The whole point of our Workshops is to meet our colleagues in landscapes that emulate strongly and/or nearly the geology of the worlds we are creatively painting. It's also an opportunity to be together in one place, travel, work and get to know each other as we can. I have attended nine previous workshops and have met a great number of our members in this fashion. The bonding between colleagues is a life long benefit. And I recommend it each and everyone of you, to give it a try. Certainly we will all learn and teach each other about our individual art approaches and forge friendships at the same time."

The following potential workshops continue in the planning stages (repeated for the benefit of new members):

• **Late 2004 — Death Valley**. **Contact:** Rick Sternbach (**rsternbach@earthlink.net**). We have received the following information from the Furnace Creek Ranch, our possible headquarters for a one week event; this was sent out over the IAAA general email list but is repeated here for those who might have missed it as well as for our members not online: "We are delighted that you are considering a return trip to Death Valley for your Workshop (after only 21 years). We can offer you the following dates and rates:

Arrival: Early to Mid November. Ranch Room Rate: $110* per night (Regular 2003 rate $137)

Arrival: November 15 - 22; November 28 - December 20, 2004. Ranch Room Rate: $95* per night (Regular 2003 rate $137)

Number of Rooms: 20-30 Meeting Room: $150/day

*Rates are net non-commissionable based on single or double occupancy and subject to sales tax, currently 9% and a $2.50 energy surcharge. Third person in a room with existing bedding is $20.00 per day. Rollaway beds are $20.00 per day. Suggested porterage is $4 per person and maid gratuity is $1 per person per day."

Ed. Note: While some possible attendees have expressed a desire to camp out to save money, it should be noted that in order to get the room rates, do art and computer work, as well as conduct meetings and talks, we need to commit to a minimum number of rooms or look for another location. If anyone has any better ideas, I'd certainly like to hear them. A great deal has been said about getting information out to IAAA members who do not have internet access. A greater effort will be made to provide those folks with "breaking news" by traditional postal means. For our non-wired members, I can be contacted at:

Rick Sternbach
IAAA/PULSAR
12417 Hesby St.
Valley Village, CA 91607 USA Tel: 818-761-7768

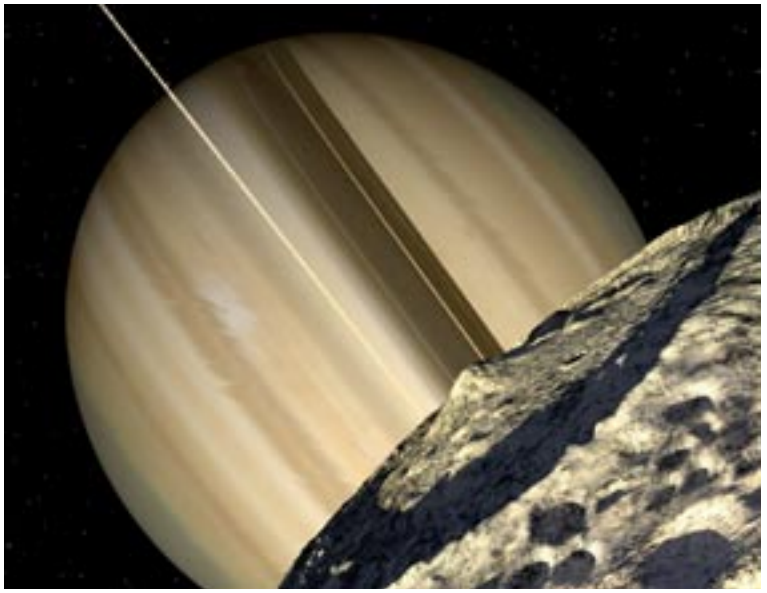
• **May 2005 or 2006 — Columbia Ice Fields**. **Contact:** Paul Hoffman (**paul@digitalspaceart.com**)

Member Phil Smith offers this Cool URL: "Please visit http://www.astrazoic.com/Astrazoic16.htm is you're interested in seeing a scale model of a space station."

And as always, the IAAA critique site: http://members.aol.com/iaaarts/

THE IAAA HALL OF FAME

"Early Earth" by Don Davis ©2004



"Herschel Crater" by Ron Miller ©2004

NEWS BITS

Another Astronomy Day is approaching (Saturday, April 24th). The members of my local astronomy club are organizing our usual public star-gazing event, sharing the enthusiasm of discovering the night sky and expanding public awareness beyond the horizon of our immediate planet. Along these lines, I am planning to host a three-day Astronomy Day art event in my open studio/gallery here in Montreal. The working title for this project is "The Painted Universe".

From Friday 23rd until Sunday 25th April I'll be inviting the general public to come to my studio and participate in the creation of a 22' x 8' artwork depicting various night sky objects. Each participant will be given a 12" x 12" piece of paper (or carton, canvas, tracing paper,...) and a range of art materials to choose from. I'll also provide source material such as images of planets, galaxies, globular clusters and the like. Once the participant has finished his/her artwork it will be added to the 22' x 8' grid. Over the three days the grid will slowly fill up, creating a mosaic of night sky images - a painted universe. At the end of the event I'll take a photo of the assembly before taking it down on Monday, 26th April. The participants can then come by to pick up their painting along with a printout of the final installation.

Alongside the "Painted Universe" I'm planning to put up general hobby astronomy information, promote my local astronomy club and also promote the IAAA. I was thinking of printing out some of the IAAA promotional literature in poster-size and print out some member application forms from the web that visitors could take home. I'd also like to invite IAAA members to participate in this event. If you're interested, please send me ahead of time a 12" x 12" artwork (computer printout, drawing, oil-sketch, whatever you like) which I will then put up on the grid at the beginning of the first day. This will also make the process less intimidating for the visitors - no one wants to be the first artist up on the wall... You can also send with your artpiece a one-page info sheet about yourself which I would put with the IAAA display. If you'd like to participate, please send me your artwork before the 22nd April. I'll then send it back to you after the 26th April, along with a printout of the photo of the final assembly.

I think this would be a fun way to make the public aware of the artist's role in astronomy and to promote the IAAA and the RASC (my astro club). Please let me know if you'd like to participate, or if you have any questions or comments. If you'd like to see what my studio space looks like, you can see some photos of it on my website at http://www.bettinaforget.com/artist-atelier.html.

Have a nice day,
Bettina

PS: Is anyone else doing anything for Astronomy Day? If so, let me know and I'll put your event up on my website. The more, the merrier!

Atelier Bettina Forget
460 rue Ste-Catherine Ouest, local 933
Montréal, Québec H3B 1A7
phone: (514) 878 3663
www.bettinaforget.com

Breaking News — Congratulations to new IAAA member Kees Veenenbos on his Mars cover and interior renderings for the January 2004 National Geographic! Kees is an accomplished Terragen artist who has produced many still images and animations of Mars as it is today, as it might have looked under flood conditions, and under numbing sheaths of ice and snow. See his work at **http://www.space4case.com**.

COMPUTER OPERATIONS

And now back to our coverage. As you may recall from Part I, the discussion about terrain generators involved your editor, Ron Miller, David A. Hardy, and Paul Hoffman. We had previously talked about the different settings for texture layers, as well as DEMs, or Digital Elevation Models, and grayscale heightfield maps. We pick up the action talking about assembling skies and landscapes.

Rick: How do you handle the compositing? Photoshop?
Paul: Photoshop! And yes, I will use some filters (particularly sharpening, blurring), plus "hand drawing" and "cloning". Of course, for my "sketch & watercolor" style, there's a LOT of filtering. And many, many layers.
Ron: Yes.

Rick: And do you use various filters and plug-ins to create different effects to get you to the final look?
Ron: Rarely.
Dave: See my previous answers. At the outset I realized that I had to do something to lose that giveaway "Terragen look" (or just that "computer-generated" look) and make my work look (hopefully) still like a Hardy, so I do use some PS filters. I was a bit shocked when I discovered that Paul does something very similar, but I guess great minds think alike!

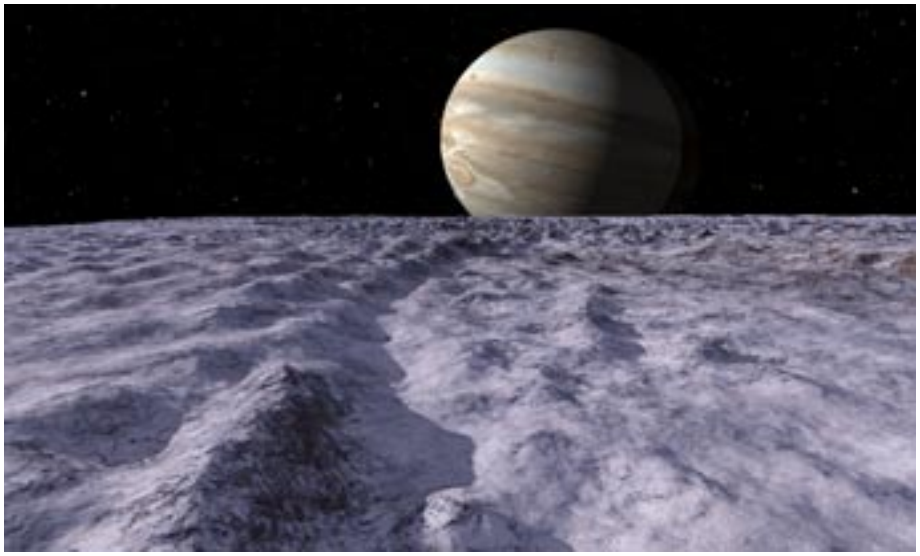
Rick: How do you deal with the fact Terragen doesn't make rocks?
Dave: Paint 'em myself. How else?
Paul: Draw them or grab them from photo resources if necessary. Same thing for man-made structures (as in the Lander & Tractor in my Noctis Labyrinthus panorama.)
Ron: I either paint them by hand (gasp!) or I take digital photos of rocks here and composite them. Sometimes both.

Rick: Do you try to mimic real lighting and atmosphere according to what planet or moon is involved? For example, would you make Pluto's lighting weaker than Mars' lighting, or does art take over from science and you design the lighting to get a visually pleasing image?
Ron: Both. I try to make the lighting to at least appear to be realistic, but sometimes it is necessary to fudge if you want to see anything at all. I have vast confidence in the adaptability of the human eye to accommodate itself to a wide range of conditions.
Dave: I do tend to increase the "power" of the Sun where brighter lighting is required, and so on, but I must say that I usually end up getting the final result using Levels, Brightness/Contrast etc. in Photoshop.
Paul: The human eye is so adaptable, that even under very weak light we tend to see things brighter than they are in "reality." I guess for me art does take the front seat, but I don't think that's doing a disservice to the science.

Rick: Do you use the 3-D Preview function to "drive" around a landscape to search for just the right spot to render?
Ron: The only way to do it. I will often go back and forth from the plan view to the preview scores of times — for hours and hours — until I get precisely what I want. Which is one of the reasons I'd give two pints of my soul for the plan view window to be at least twice as large as is it now.
Paul: I start with locating the camera and viewpoint in the plan view, but almost always do check the preview window. I find it handy to have the preview window render in a "quick & dirty" mode (less detail) to check the basic composition first.
Dave: Sometimes, but I find the Landscape window's Plan View more useful as a rule. I use the 3D Preview more for 'fine tuning'.

Ed. Note: In future issues, we'll cover mapping planets and "star balls." Stay tuned!

COMPUTER OPERATIONS



"Ganymede Snowfield" by Rick Sternbach ©2004

We finish up our initial look at computer-generated landscapes created with applications such as Terragen, but first your editor is going to relate a bit of a communication to Vice President for Europe David A. Hardy from (now former) IAAA member Michael Roe:

"I am sorry to say I will not be renewing my membership of the IAAA. The main reason is that the latest Pulsar magazine seems to have become obsessed with computer art including such awful ideas as terrain generators. To put it simply I think this is cheating. I didn't go into Space Art for it to be taken over by computers. The thought of just pushing a few buttons to create art is deceitful and wrong!"

Dave commented to the IAAA email list in part, "Needless to say, I viewed this letter with a mixture of emotions! Amusement and some anger, plus sorrow at his ignorance. . . The latter is of course evident by his use of the phrase 'just pushing a few buttons to create art'; but this is undoubtedly common amongst the computer illiterate. In my reply I pointed out that I do still paint traditionally as well as digitally, that I enjoy both methods equally, and that my life would be much poorer without my move into digital art. That artists who work digitally put as much thought and effort into creating their work as do others, and that computers cannot create art — only artists can do that. I mentioned that a number of the illustrations in the latest PULSAR are in fact not digital, and asked if he can honestly tell which are which, if it is not stated?"

Continued from Page 2, in a sense: The IAAA listserver lit up with a variety of comments after this, and you will find them in the next issue. The digital revolution is with us, like it or not. And that's just it; if you like it, fine. If you don't, that's fine too. The computer is just another tool; I said that already in my editorial, but I find myself saying it to a lot of people, mostly the folks Dave describes above. I can tell you a few things about how PULSAR will handle the digital vs. traditional business in the future: If members send us digital art, we'll print it. If members send us traditional art, we'll print it. If members send us articles about CGI, we'll print them. If members send us articles about acrylics and oils and gesso and masonite and sable brushes, we'll print them. PULSAR is here to cover the entire world of space art, **driven by member involvement.** This is **your** newsletter. If you don't like what we're publishing, send us something you do like. Perhaps other members will like it, too.

Continued→

Galaxies

A PULSAR Special Feature
Commentary by Malcolm Currie

"Jetting Galaxy" by David A. Hardy ©2003

Spiral Isn't the Only Galaxy Type

The canonical galaxy in space art is the bright classical tight spiral, yet there is a great diversity of galaxy morphologies, especially in the early universe, not being represented. You only have to take browse of the background deep HST and VLT images to appreciate that. You'll see a remarkable variety of colours and shapes.

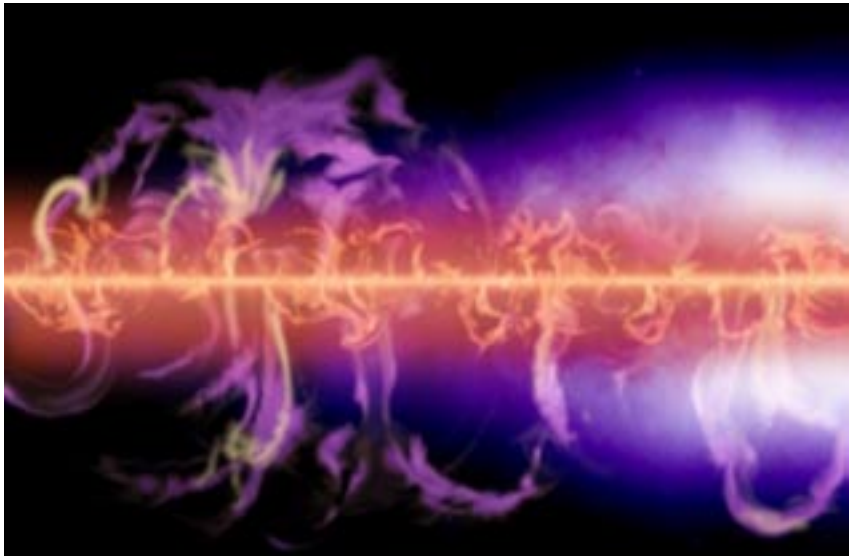
Knowledge of such variety is not all new. A generation ago Gerard deVaucoleurs pioneered a three dimensional tuning-fork diagram, in which the spirals have quite a diversity with bars and rings rarely depicted in art. I can quite appreciate that spirals are the most attractive in the public's eye, but why restrict yourselves to the classical form? To me it's like limiting the painting of planets to ringed beauties.

Even the "boring" ellipticals include in their ranks ones with dust, normally associated with spirals. The deep Schmidt surveys started in the mid-1970s revealed new forms including ellipticals with shells. These are related to a common phenomenon of galactic cannibalism or mergers, seen most frequently in the cores of rich galaxy clusters.

The enigmatic lenticular galaxies — an integral part of clusters — are rarely seen in art. The populace is dominated by the dwarf galaxies, especially the dwarf ellipticals, often lunch for the giant galaxies, but you'll be pressed to find them in space art. Our own Milky Way is currently consuming the Sagittarius dwarf and another recently discovered from the 2MASS infrared survey. Surely there must be some inspiring vistas of such dramatic encounters.

Beyond the "what," there is the "where." There is a tendency to paint galaxies as close-up views as seen from Earth, rather than from some novel perspective near or within the

Galaxies



"Galactic Atmosphere" by Don Dixon ©2003

galaxy. The latter vantage point can be particularly effective for interacting systems. Tidally interacting groups, some in chains, are in my opinion superb objects for art, as are the violent centres of galaxies. Galaxies are gregarious. Isolated galaxies are rare. Most belong to small groups. Yet you'd probably not realize that from space art.

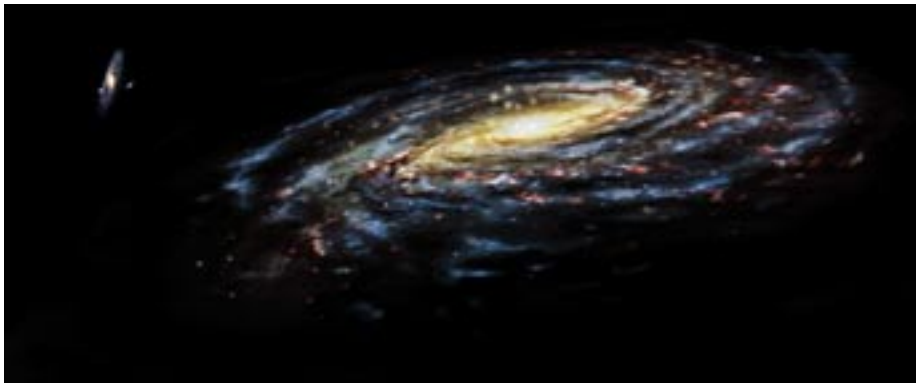
My plea is for space art to reflect more of the incredible diversity and clustering that exists in the cosmos of galaxies. Do a little research. Then let your imagination fly.

Malcolm Currie

"Spiral Metropolis" by Dr. Mark A. Garlick ©2003

"Portrait of Home" by Dr. Mark A. Garlick ©2003

Ed. Note: I realize the title of Malcolm's piece doesn't exactly jibe with the art of the galaxies shown here, since there are many views of — surprise — spiral galaxies. With any luck at all, we'll offer our readers some more unusual galaxies and other exotic celestial forms in upcoming issues.



"SETI Galaxy" by Don Dixon ©2003