

CONSULTATION PAPER

Views and opinions about  
Ethics in Astrophotography  
from leading international  
astrophotographers &  
astronomy communicators.

Version:

FINAL

By:

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This document accompanies the conference poster presentation "*A critique into the ethics of astrophotography, with a focus on Beth Moon's book: "Ancient Skies, Ancient Trees". A cautionary tale.*" 12-16 September 2022, at the "Communicating Astronomy with the Public" (CAP2022) Conference, Sydney, Australia.

**Cover photograph.**

An illuminated statue featuring an Aboriginal man of the Badimia language group, Mount Magnet, Western Australia. Photographed at “The Granites”, Western Australia. This image was achieved via a collaboration by Western Australian astrophotographers James Athanasou and Dr John Goldsmith, in 2021. Image © James Athanasou & Dr John Goldsmith.

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## 1. Introduction / background

### Purpose of this document

This document presents the results of consultation conducted in 2022, with a select group of international astrophotographers, astronomy communicators, gallery managers and curators, on the topic:

***“A critique into the ethics of astrophotography, with a focus on Beth Moon’s book: “Ancient Skies, Ancient Trees”. A cautionary tale”.***

The invited consultation was specifically for the CAP2022 international Conference **“Communicating Astronomy with the Public”** (Sydney Australia, September 2022). Inclusion of comment is based on informed consent and informed attribution.

### Participation

This document presents a record of input and comments received from:

- Gernot Meiser / Germany, Member: The World at Night. Audiovisual Media Studio PartG,
- Bettymaya Foott / USA. The International Dark-Sky Association (Director of Engagement)
- Mike Simmons / USA. Affiliate Research Scientist, Blue Marble Space Institute of Science. Board of Directors, International Dark-Sky Association.
- Valentin Grigore / Romania, President. Romanian Society for Meteors and Astronomy, Member, AWB.
- Bernd Pröschild / Germany. [www.sternstunden.net](http://www.sternstunden.net) Member: The World at Night.
- Tunc Tezel / Turkey. Member: The World at Night.
- Christoph Malin / Austria. Member: The World at Night.
- Juan Carlos Casado / Spain. Member: The World at Night.
- Alan Dyer / Canada. Member: The World at Night.
- Kerry-Ann Lecky Hepburn / Canada. Member: The World at Night.
- Yuri Beletsky / Chile. Member: The World at Night.

The following individuals were invited to provide input, however no acknowledgement or response was received:

- Beth Moon, author, “Ancient Skies, Ancient Trees”.

### Scope

The scope of this topic and consultation is in relation to astro-landscape photography, NOT deep space imaging such as that generated by the Hubble Space Telescope, James Webb Space Telescope, deep space images produced by professional observatories and others. However, both fields of astrophotography can involve similar or the same ethical aspects.

### Emphasis is on Ethical Issues

The emphasis of this record is in relation to ethical issues, however, other topics have been raised by contributors including technical issues, aesthetics (including personal opinion), philosophical perspectives, scientific imaging, technology and process. These topics have

been retained in this record as they relate to, inform and provide context to the ethical dimensions of this subject.

### **Views, not consensus**

The feedback, input and discussion recorded in this document, is not intended to, and does not represent, a consensus view on any issue. This record details the individual views received. Further, none of these views constitutes “advice” to others, it is simply a record of views expressed. Input has also been included, with the consent of the writers, of some online forum discussion.

### **Clarification / correction**

Where clarification or context has been necessary, this is shown as non-italicised text in brackets, to clearly indicate that such text is explanatory. Comments are presented as supplied, with spelling corrections, personal contact details excluded, and non-relevant comments excluded. Please note that English is not the first language of all respondents, which accounts for some of the phrasing expressed.

### **Inclusion does not imply endorsement**

The inclusion of views in this document does not imply that any such views are endorsed by the author of this document, Dr John Goldsmith. As expected, some significant differences exist regarding ethical views and other matters.

## 2. Responses

### 2.1 Gernot Meiser / Germany

Member: The World at Night / [www.twanight.org](http://www.twanight.org)

Atelier für audiovisuelle Medien PartG /

Audiovisual Media Studio PartG,

Key quotes:

***“With the advent of digital technology in photography and the rapid development of image processing software, it is now possible for almost everyone to manipulate images and, with the help of social media, to spread these images as the truth”.***

***“As an image reporter and astrophotographer, I myself am one of those photographers who deal with image documentation on the one hand and artistic photography on the other”.***

***“Unfortunately, (...designed and edited photographs...) suggest to the viewer a nature that cannot be found anywhere on our planet and convey an ideal world to the viewer that does not exist.”***

***“However, image processing in the classic sense of image development is an important tool with which the information contained in the image can be made optimally visible”.***

***“...the desire to see and photograph a perfect starry sky can often only be fulfilled with elaborate air travel.... ...We all know by now that our excessive behaviour, whether conscious or unconscious in relation to our environment, is accelerating the climate change that is now becoming increasingly evident. Unfortunately, air traffic is one of the main causes of CO2 production. As a traveling astrophotographer, I also belong to the nature photographers and therefore bear a great responsibility towards nature”.***

Comments in detail:

Many thanks for your inquiry. I am very happy to hear from you and to learn that you are working on a great and important project again.

With regard to a certain ethics in photography or astrophotography, it seems to me to be extremely important in our "modern" time to discuss this topic.

Since its invention in 1839, photography has always had a controversial credibility. Fake images influenced politics and society again and again. But forgeries were rare because they demanded great "skill" from the forgers.

On the other hand, authentic and true images brought about the course of war and uncovered human crimes and were, so to speak, credible evidence in criminal investigations.

With the advent of digital technology in photography and the rapid development of image processing software, it is now possible for almost everyone to manipulate images and, with the help of social media, to spread these images as the truth.

As an image reporter and astrophotographer, I myself am one of those photographers who deal with image documentation on the one hand and artistic photography on the other.

Manipulated images are not a problem in art, quite the contrary, they are even a creative enrichment.

Manipulation has no place in the field of astrophotography. Neither as art and certainly not in science. However, image processing in the classic sense of image development is an important tool with which the information contained in the image can be made optimally visible.

In recent years, cameras have come onto the market with which it has become very easy to capture night landscapes with the starry sky above. The international network of photographers TWAN has motivated thousands of photographers to devote themselves to this form of photography through their impressive publications around the globe.

In particular, the Milky Way has become the largest subject in the night sky. One shot is more beautiful than the other. From the faint glow of the Milky Way's faint band at night, images have become ever more colorful and brilliant. People are draped under the starry sky as posing figures and the shot is directed and planned.

This again raises the question of the credibility of the photograph. Such designed and edited photographs in no way reflect nature as we experience or see it. They are pure art, which without a doubt represent a perfect aesthetic.

Unfortunately, these recordings suggest to the viewer a nature that cannot be found anywhere on our planet and convey an ideal world to the viewer that does not exist. I feel

there is a certain need for photographers to point out in their work that the camera can 'see' more than humans.

A major problem of modernity is that any photographer or artist can easily be copied or robbed, and other people claim to be the authors of their work, or their work is used unsolicited and without a fee. This is regulated by copyright law in most countries around the world, but of course it also requires us creative people to rethink. Each of us publishes images on social media and websites and can of course be copied and redistributed from there.

...another topic that is very close to my heart: astrophotography and travel. I know I'm addressing a very difficult and sensitive subject here, as I'm also a travel photographer myself....

As an astrophotographer I like to take images where the night is still dark. My guess is that most astrophotographers live in regions where urban and industrial lights brighten the sky so much that you can only see the brightest astronomical objects, if at all.

But the desire to see and photograph a perfect starry sky can often only be fulfilled with elaborate air travel. Many have little time on their hands due to the hectic modern life and a quickly fly, for example, from Germany to the Canary Islands to spend a relaxing short astronomical vacation. Those who have a little more time and money fly regularly from Europe to Namibia to spend a week or two there on a farm with astronomical instruments and the appropriate infrastructure, where they can devote themselves completely to the starry sky with their cameras. Others fly quickly into the shadow of the moon for two days to capture impressive images of a total solar eclipse.

We all know by now that our excessive behaviour, whether conscious or unconscious in relation to our environment, is accelerating the climate change that is now becoming increasingly evident. Unfortunately, air traffic is one of the main causes of CO<sub>2</sub> production. As a traveling astrophotographer, I also belong to the nature photographers and therefore bear a great responsibility towards nature. Since a few years I have therefore reduced my travel activities to less than 50% and looked for motifs relatively close to my home and I almost completely avoid short trips.

## **2.2 Bettymaya Foott / USA**

Member: The World at Night (TWAN) [www.twanight.org](http://www.twanight.org)  
The International Dark-Sky Association (Director of Engagement)

Key quotes:

***“Many places in the western US are inundated with astrophotographers, many if not all of them shine an incredible amount of light on the foreground to light it up, disrupting peoples experience of an otherwise naturally dark environment, and potentially disrupting nocturnal species”.***

Comments in detail:

***What are your key concerns about ethical issues in astrophotography?***

Light painting and accessibility.

***How have you been directly affected by these issues?***

Many places in the western US are inundated with astrophotographers, many if not all of them shine an incredible amount of light on the foreground to light it up, disrupting peoples experience of an otherwise naturally dark environment, and potentially disrupting nocturnal species.

Astrophotography is also a field that is difficult to participate in without access to expensive gear and editing software. There is also a disproportionate amount of men that are represented in the field, for example, TWAN itself only gained its first female members in the last few years, with many years of only males as the official TWAN photographers. There are many other similar programs which only have male ambassadors, for example, the ESO ambassador program, and many of the astrophotography books published.

### **2.3 Mike Simmons / USA**

Affiliate Research Scientist, Blue Marble Space Institute of Science

Board of Directors, International Dark-Sky Association

[www.bmsis.org](http://www.bmsis.org)

[www.astrogeartoday.com](http://www.astrogeartoday.com)

[www.oneskyexpeditions.com](http://www.oneskyexpeditions.com)

Key quotes:

***“Because CAP is all about how the public learns about astronomy (by definition), (CAP2022) is the perfect conference for this poster (i.e. the Ethics in Astrophotography poster) to be presented”.***

***“Astrophotography images that do not represent our sky and celestial objects in a realistic way, and fail to be clear about that in their explanations, are a form of misinformation”.***

***“...images that are processed to make them more beautiful or awe-inspiring, and presenting them as in some way "real", takes advantage of members of the public who don't have the knowledge to know what to expect. Art is great if it's presented as art, a hybrid of photographic imagery and the artist's additions. But when presented to the public in a way that misrepresents the nature of the objects and the science involved, they simply misrepresent the nature of our Universe to the public, contrary to what educators do”.***

***“Outreach astronomers deal with the misinformation in these images all the time, with people asking about what they've seen. And they are usually disappointed to learn that the image that awed them wasn't what they thought. This can affect the whole field of outreach astronomy, leaving the impression in members of the public that what they see can't be trusted”.***

***“The Universe and the view of it from Earth is awe-inspiring enough without the embellished artwork that is sometimes misrepresented to the public”.***

***“This is why I have always loved landscape astrophotography. It shows us our place in the Universe, not just a distance, isolated image... .. Bringing the view of both Earth and sky to the public provides context that is so important to us”.***

***“I received a message once from someone who objected to TWAN images because they weren't real. He asked why we represented the night sky that way since it doesn't really look like that. I could answer that it really does look like that (for the most part) and he should go see for himself. It's a way to show what we've lost to light pollution, part of our natural environment that people don't even know exists. It's a way to educate people and encourage them to rediscover their lost heritage”.***

Comments in detail:

...I think the issue of ethics in astrophotography is also an issue for education. I can only speak to informal education, i.e., public outreach. Because CAP (Communicating Astronomy with the Public conference) is all about how the public learns about astronomy (by definition), this (ie. CAP2022) is the perfect conference for this poster to be presented.

Astrophotography images that do not represent our sky and celestial objects in a realistic way, and fail to be clear about that in their explanations, are a form of misinformation. As outreach astronomers, we do our best to educate the public about the Universe beyond Earth. We show them the brighter objects in telescopes so they can see them for themselves, and we explain the physical nature and physics of what they're seeing. No one would consider putting an image in the telescope for them to view to be ethical, or intentionally misinforming them about what they're seeing.

While astrophotographs don't always appear the same as what we see in a telescope, it's incumbent upon imagers to explain how they may differ. Images of the planets are usually processed to appear as they would in a telescope of sufficient resolution to view them as in the image.

With images of deep sky objects, we're often asked if the colors are real, and the answer is not simple. How is "real" defined? Some would take that to mean what we would see if we were close enough to the object to see it for ourselves with similar resolution. But having used telescopes up to 2.5 meters for visual observing, it's clear that this is rarely the case.

Camera sensors don't have the same spectral response curve that our eyes do. Most planetary nebulae look blue-green to us because of the eyes' sensitivity to that region of the spectrum but the flatter response curve of cameras reveal reds that we don't usually see. So is a flattened response curve that weights each wavelength equally "real"? It's not what we see but to scientists it's still real data that's calibrated properly for comparative studies. So what do we tell the public about these images? I tend to say that the color is real -- evenly weighted across the spectrum -- but the camera "sees" some colors that our eyes don't pick up well. The data is real but saying we'd see the same thing would be unethical.

Deep sky objects are often imaged and processed in different ways to bring out particular details that aren't what our eyes would see if we were close to them. Using narrowband filters with monochrome cameras to record small regions of the spectrum is an example. H-alpha is often a band that's used but our eyes don't see it very well. More to the point, if only a few narrow bands are recorded then it's very far from any definition of "real". But these images reveal detail we might not otherwise see, such as where the H-alpha emission is coming from, which might indicate new stars forming or other phenomena. The data is real and useful but to present such an image without explanation is unethical.

Then there are images of radio and other sources that we can't see at all. The colors are added as an aid to interpretation but that needs to be explained. The public hears "false color" and thinks the image isn't real (whatever that means). We create illustrations of all kinds to show things graphically, and false color images are just one type such illustration.

But images that are processed to make them more beautiful or awe-inspiring, and presenting them as in some way "real", takes advantage of members of the public who don't have the knowledge to know what to expect. Art is great if it's presented as art, a hybrid of photographic imagery and the artist's additions. But when presented to the public in a way that misrepresents the nature of the objects and the science involved, they simply misrepresent the nature of our Universe to the public, contrary to what educators do. We wouldn't do that with a telescope or a description of what's seen there, so why would we do it with images? Outreach astronomers deal with the misinformation in these images all the time, with people asking about what they've seen. And they are usually disappointed to learn that the image that awed them wasn't what they thought. This can affect the whole field of outreach astronomy, leaving the impression in members of the public that what they see can't be trusted.

The Universe and the view of it from Earth is awe-inspiring enough without the embellished artwork that is sometimes misrepresented to the public.

Additional comments #1 submitted to TWAN online discussion:

1. I completely agree with Bernd's point that images and text are both representations of reality that must be interpreted appropriately. That's why I referred at times to data, which is what both images and text are. Everything we take in is data. This gets into cognitive science and even philosophical such as existentialism but in fact there is no reality that we

all experience, just as we have different reactions to images and stories. We perceive them in different ways.

2. Really good points that I completely agree with. The first time I met Frank White, author of *The Overview Effect* about the change in paradigm experienced by some astronauts when they view Earth as a planet in space surrounded by stars, he was speaking at the International Space Development Conference. He asked the audience, "How many of you would like to go to space?" Of course, almost all (all?) raised their hands. He then said, "Congratulations. You made it." He went on to explain that we are in space, crew members on Spaceship Earth as Buckminster Fuller said. Astronomy shows us that what we see above us is where we are, part of our environment, just as the desert or forest we're standing in. No one would point to a place they can see on Earth and refer to it as something separated from where they are other than by distance or accessibility. Our environment above us, though, seems somehow different. Astronomy shows us that it's not. Most of us can't access it, just like the bottom of the ocean or the top of Mt. Everest, but it's still part of our environment. When we share that sky from different places on Earth we can see the truth of Fuller's statement. We are seeing the same sky at different times. It's as if we are on a bus traveling along a road, each looking out the window they're seated next to. On the right side, passengers may see a desert, while passengers on the left side see a mountain. When the bus turns around, they each see what the others had previously. There's no disagreement about the environment they're traveling through. They recognize that it's a matter of perspective, the direction they're viewing it from at the time. It's no different on our revolving planet. This is why I have always loved landscape astrophotography. It shows us our place in the Universe, not just a distance, isolated image. I argued this with Neil DeGrasse Tyson once when he talked about how people respond to images from Hubble. I didn't disagree with the impact of those images, but they are like seeing a photo of a place that could be anywhere on Earth. It's out of context. Bringing the view of both Earth and sky to the public provides context that is so important to us.

Additional comments #2 submitted to TWAN online discussion:

...It's true that to be skilled at anything you need to master the fundamentals. It doesn't matter what field you are in. Some learn on their own, bypassing the basics, and get good at some techniques but they'll never master the skill or art until they learn what they skipped initially. John's example of trying to sharpen an image in processing when the original is out of focus is a good example. In the old days of photography when I learned, you had fewer options when you recorded the image on film. You were forced to produce the best negative or positive image you could. I had to relearn driving after years of driving sports cars (almost all I've ever driven) when I started racing. I didn't really know what I was doing (it's similar to Chris' mountain biking analogy with weight balance, cornering, surface, and other considerations).

Even visual astronomy has the same issue in the argument about whether beginners should start with go-to to encourage them to observe or learn the hard way like we did before computers. We learned the sky first and how to navigate to the objects we wanted. Is that necessary? To really know what you're doing, absolutely! But for many, the shortcut is

perfectly adequate for what they want to do. I think of it like using GPS to navigate a city you don't know. It will get you there and if that's all you want to do, perhaps on a short visit, then that's fine. If you want to live there then you're better off learning the layout of the city to find your way around.

This is different when the images are shared with the public. It's not necessarily journalism where we are showing people a scene that is part of the story. Art for art's sake is OK. A journalist who changes the photos he took in any way is asking for trouble if he's found out. The same is true for filmmaking. If it's a documentary, your goal is to give people the best view of the real scene as possible. For Hollywood blockbusters, as in Yuri's example, no one believes Wes Anderson's movies represent reality. If a nature photographer chooses to accent or change the colors of flowers or forests he images for dramatic or artistic effect, we recognize that they're not trying to show us what we would see but using the object as a starting point for something more.

So what about these landscape astrophotos? Some might be considered to be someone's own interpretation of reality, their own artwork. It's not meant to be "real", just what they see or want to show.

The problem here is unique, very different than movies, in that most people don't know what the Milky Way actually looks like. If the skin tones are off in a movie you recognize it. Blue skin in Avatar tells us they aren't human. No one believes they are. If someone's skin color is off and there's no reason for it, it looks bad. If the sky is darker than we know it would be in real life, we accept that as an intentional manipulation meant to give us a sense of foreboding -- dark sky like with a coming storm is menacing. We get it, and we accept it because that's what the filmmaker intends. With astrophotos, as I mentioned before, the question about whether or not the colors are "real" comes up all the time, and the explanation is something along the lines of this discussion, i.e., there is no "real" answer when considering these distant objects and how the electromagnetic radiation of all wavelengths received from them is processed and presented to us.

But these representations of the Milky Way don't go through those discussions. We look at them and recognize that they don't look right for many reasons. We know if the contrast between regions is way off. Even with the colors, which we can't see, we know they're wrong if they don't match our knowledge of the emission from the stars and gas of the Milky Way. The public doesn't know any of this, though, and in their minds these images put the Milky Way into the realm of the deep sky objects that can't be seen, just like images from Hubble or JWST (James Webb Space Telescope). No one is going to look at them and say "I want to see that for myself." They don't represent a natural phenomenon. The image may inspire awe but not the object of the image because it's artwork.

I received a message once from someone who objected to TWAN images because they weren't real. He asked why we represented the night sky that way since it doesn't really look like that. I could answer that it really does look like that (for the most part) and he should go see for himself. It's a way to show what we've lost to light pollution, part of our natural environment that people don't even know exists. It's a way to educate people and encourage them to rediscover their lost heritage. Like showing someone a planet in a telescope, after

which they can always look into the night sky knowing they can see other planets. I can't do that with images like this. Whatever their goal, if they are not describing what they're doing, they are misinforming people and giving what I think is a harmful impression of the night sky as something that exists only in fanciful images.

So to those who say that they're not doing any harm, I agree to the extent that they tell people what they are doing and even educate them that this is nature. Otherwise, when all the public sees is nature represented unnaturally, I do think they're doing harm.

## **2.4 Valentin Grigore / Romania**

President, Romanian Society for Meteors and Astronomy. [www.sarm.ro](http://www.sarm.ro)  
Member, AWB.

Key Quotes:

***“We need an international code of ethics in astrophotography that is voluntarily adopted by real astrophotographers. Thus, a true astrophotographer will adopt and promote this ethic. Thus, the astrophotographer will gain credibility”.***

***“Fake astrophotography has been on the rise lately. What's worse is that there are astrophotography contests that credit such achievements and even end up winning prizes. This happens because either the jury does not have specialists in its composition, or the marketing interest prevails”.***

***“Astrophotography is ruined by light pollution, and from now on, by the thousands and tens of thousands of orbiting satellites. Natural dark skies disappear or become harder to find. With it disappears our right to this heritage of humanity: the dark night sky. Humanity does not know what it is losing! Technology is advancing, but the dark night sky is disappearing! We urgently need global action to save the dark sky”.***

Comments in detail:

1. With the technological advancement in astrophotography, many imposters have appeared who manipulate images in Photoshop that they present as real. But that has nothing to do with reality. Fake astrophotography has been on the rise lately. What's worse is that there are astrophotography contests that credit such achievements and even end up winning prizes. This happens because either the jury does not have specialists in its composition, or the marketing interest prevails. We need an international code of ethics in astrophotography that is voluntarily adopted by real astrophotographers. Thus, a true astrophotographer will adopt and promote this ethic. Thus, the astrophotographer will gain credibility.

2. Copyright breaches have ramped up.  
Some take advantage of images taken without copyright, without indicating the author, and make an audience and earn money....

3. Astrophotography is ruined by light pollution, and from now on, by the thousands and tens of thousands of orbiting satellites. Natural dark skies disappear or become harder to find. With it disappears our right to this heritage of humanity: the dark night sky. Humanity does not know what it is losing! Technology is advancing, but the dark night sky is disappearing! We urgently need global action to save the dark sky.

## 2.5 Bernd Pröschold / Germany

www.sternstunden.net

Member: The World at Night, www.twanight.org

Key quotes:

***“When talking about ethics in landscape photography and astrophotography, we should consider in which context an image is published... ..The audience is expecting different levels of authenticity depending on the exact context of publication”.***

Comments in detail:

A very interesting issue and a great contention of the Beth Moon case... ..My approach as a communication scientist might sound a little bit theoretical – four general remarks...

- When talking about ethics in landscape photography and astrophotography, we should consider in which context an image is published: Is it appearing in social media? Is it hanging on a museum wall? Is it published in a journalistic magazine? Which kind of magazine? The audience is expecting different levels of authenticity depending on the exact context of publication. Journalistic work is probably demanding the highest degree of authenticity.
- The credibility of imagery is facing rather the same challenges as written texts: Usually we can not check personally if a message is reliable or not. Therefore we trust in certain media or persons. Some people tend to believe certain messages from a user at TikTok, others believe in Fox News and others in the New York Times. Traditionally we expect photographs to be more honest than written reports, but today we have to learn that they can be as easily manipulated as written texts.
- The idea that photography can be compared to signs and to language has been put forward by French philosopher Roland Barthes. Same as texts, images do not reproduce reality but they represent reality. A text about a conference can focus on the opening speech, it can deal with the posters presented or it can be about the audience. Images in general and astronomical images in particular are no exception from this practice: They can emphasize certain aspects of reality, for example H-alpha emissions or infrared. Depending on how texts represent reality we distinguish different genres: news, reports, opinion pieces, novels and so on. The same is true for photography, but we are just about developing the visual genres and how they refer to reality: B&W photography, blendings, montages etc. I completely agree that it is necessary to precisely label the kind of image we are looking at. After all nobody would present his novel as a news piece.
- Beside educational argument there is also philosophical argument for an image to be honest. Astronomical images are about oneness: One people, one sky. If we

overcome the border between earth and sky, which has been culturally shaped over millennia, earth is becoming a planet, terrestrial landscapes become extraterrestrial landscapes, humans become aliens. Shooting and processing landscape and night sky as different spheres however, does not help to overcome this border. A stacked and stitched Milky Way is always appearing to me as a foreign body over a landscape. Eye-catching Milky Ways separate the celestial sphere from us; they present heaven as something different. In order to convey a feeling of oneness, I prefer to shoot alien looking landscapes with discreet presence of astronomical objects.

## 2.6 Tunc Tezel / Turkey

Member: The World at Night / [www.twanight.org](http://www.twanight.org)

Key quotes:

***"Astrophotography has advanced a great deal, especially after the availability of digital cameras around mid-2000s. Many more people are now familiar with astrophotography and nightscape photography, and a higher number of people record and process this kind of work. Even with these increased numbers, it is important to acknowledge the planning and effort to produce this kind of work, and respect the good, honest work of photographers."***

Comments in detail:

.... I can easily say that I agree completely upon reading it all.....

(i.e. referring to "A critique into the ethics of astrophotography, with a focus on Beth Moon's book: "Ancient Skies, Ancient Trees". A cautionary tale." 9 November 2021).

"Astrophotography has advanced a great deal, especially after the availability of digital cameras around mid-2000s. Many more people are now familiar with astrophotography and nightscape photography, and a higher number of people record and process this kind of work. Even with these increased numbers, it is important to acknowledge the planning and effort to produce this kind of work, and respect the good, honest work of photographers."

## 2.7 Christoph Malin / Austria

Member: The World at Night / [www.twanight.org](http://www.twanight.org)

Key quotes:

***“Like many elsewhere there’s a FB Group in Austria on Landscape- and Landscape Astrophotography (3500+ members). Scrolling through the postings it seems that everyone is just stacking the hell out of it, single images are rare, and if so, they are often so false colored it’s gruesome.***

***And, if you comment someone’s super-duper stacking inferno “why always stacking? wouldn’t a single image do?” people are like super surprised about the idea of a single exposure astrophoto, like they never thought about that in the first place.”***

Comments in detail:

“thanks for the interesting input/discussion on Ethics in Astrophotography....  
Question on a topic that has been discussed before...

Like many elsewhere there’s a FB Group in Austria on Landscape- and Landscape Astrophotography (3500+ members).

Scrolling through the postings it seems that everyone is just stacking the hell out of it, single images are rare, and if so, they are often so false colored it’s gruesome.

And, if you comment someone’s super-duper stacking inferno “why always stacking? wouldn’t a single image do?” people are like super surprised about the idea of a single exposure astrophoto, like they never thought about that in the first place.

Am I so oldschool, or did I miss some developments over the past years?

What would you offer as advice?”

## 2.8 Alan Dyer / Canada

www.amazingsky.com / www.amazingsky.net

Member: The World at Night / www.twanight.org

Key quotes:

***“Fabricating a scene by placing the Moon or the Milky Way in the scene where they never existed, or could never appear, is one example of what I feel is misleading and unethical nightscape photography”.***

***“They (i.e. great photography masters) chose to enhance reality, not to fabricate it. They chose to retain their reputation for authenticity when recording the wonders of nature. Nightscape photographers should strive for similar ethical standards”.***

Comments in detail:

(derived from supplied “artist’s statement”).

In nightscape photography we are always working at, if not behind the limits of what our equipment is capable of recording. To overcome those limits, we often stack multiple images (to reduce noise), or blend different exposures (to compensate for the large variation in brightness between earth and sky), to name two common techniques.

In some cases these are done to record the sky as our eyes did in fact see it, but that our cameras cannot with a single exposure. However, more commonly, long exposures are used to reveal more than our eyes can ever see at night, such as the colours and structures of the Milky Way. Revealing the invisible is the very essence and attraction of astrophotography.

But how far can you go before entering the realm of the unethical? Fabricating a scene by placing the Moon or the Milky Way in the scene where they never existed, or could never appear, is one example of what I feel is misleading and unethical nightscape photography. Another is using multiple exposures to shift time so much that the stars appear not just where, but also when they could never be visible, such as scenes of a brilliant Milky Way over a landscape still lit by the setting Sun.

In judging where to draw the line between artistic yet accurate nightscape photography and the realm of fantasy “digital art,” I think of what landscape photography masters such as Ansel Adams would have done, and indeed did do in the film era.

By their choice of film, filters, printing paper and chemicals, and their masterful darkroom skills they created dramatic images that do not resemble what your eye might have seen standing there. Adams remarked that every time he made a print of Moon Over Hernandez the sky got darker and darker.

But ... you can trust that the Moon really was there, rising over the cemetery, and masterfully captured during a fleeting moment of perfect light.

The great masters like Adams manipulated and enhanced their prints to create drama and power – images that elicit a “wow!” from the viewer.

But did they place moons into their skies where they didn't belong? Or outright replace a sky with one from another negative? They could have. Even before Photoshop. But they did not. They (i.e. great photography masters) chose to enhance reality, not to fabricate it. They chose to retain their reputation for authenticity when recording the wonders of nature. Nightscape photographers should strive for similar ethical standards.

## 2.9 Juan Carlos Casado / Spain

Member: The World at Night / [www.twanight.org](http://www.twanight.org)

Key quotes:

**“That's why I think it is convenient that TWAN as a world reference group in landscape astrophotography should elaborate some rules of what should be an "acceptable" landscape astrophotograph, even with examples. It is not a decalogue, but guidelines to obtain natural images, in which the physical reality is not distorted”.**

Comments in detail:

It is a very interesting discussion and the truth is that there is no clear or objective limit.

Landscape astrophotography brings together three very attractive components: science/technology, art and education (in a broad sense).

I believe that this type of photography should evolve with technology, but I also consider that there are some limits in which photography becomes something more like "digital art" or "graphic design".

We must also keep in mind that human vision and electronic capture are very different systems of seeing the same reality. When taking a "natural" photograph we try to adjust it to our sensory perception, but in reality the camera simply captures reality in a different way.

About image stacking. I think it is reasonable, also for startrails or meteors composition, the use of software like Starry Landscape Stacker or Sequator, that by means of a continuous sequence of images on a static tripod (just like a single photo) the sky and the landscape are aligned later achieving a better final quality.

Another very different thing is to take a photo at twilight for terrestrial details and then long exposure images with tracking and then combine them. It is like taking a photo of, for example, the Orion nebula with a telescope and then combining it with another photo taken during the day or twilight of a natural or artificial element. This is more like digital art (?) than night photography.

I agree with Yuri that the post-processing phase greatly influences the final result of the image. I have seen Milky Way of all colors: red, green, magenta, blue. Anything goes? I think there is a line between what should be photography and something else.

That's why I think it is convenient that TWAN as a world reference group in landscape astrophotography should elaborate some rules of what should be an "acceptable" landscape astrophotograph, even with examples. It is not a decalogue, but guidelines to obtain natural images, in which the physical reality is not distorted.

Babak already proposed some rules, such as the color of the Milky Way, color of stars, etc. that could be the starting point for this.

## 2.10 Kerry-Ann Lecky Hepburn / Canada

Member: The World at Night / [www.twanight.org](http://www.twanight.org)

Key quotes:

***“...the 'crazy' results that some people get are independent of stacking and more due to their post-processing style. You can definitely take more liberties with the stacked data if you want and some may take it too far”.***

Comments in detail:

I'm totally on board with stacking. It makes logical sense to do so when you want to boost the signal to noise ratio. As already mentioned, the 'crazy' results that some people get are independent of stacking and more due to their post-processing style. You can definitely take more liberties with the stacked data if you want and some may take it too far.

I tend to do single exposure images a lot of the time for nightscapes, only because I get impatient with the process but when I do stack, the results turn out so much better and cleaner.

The only thing I struggle with these days is the blue hour blends and composites. After judging many competitions, I notice they are starting to dominate the nightscape category and I have a hard time judging them against your traditional images.

## 2.11 Yuri Beletsky / Chile

yuribeletsky.com

Member: The World at Night / www.twanight.org

Key quotes:

***“The issue of HOW people process their images has nothing to do with stacking technique. The technology is not responsible for the actions of a particular artist / photographer. As an example - HDR imaging. It’s absolutely legitimate technique but it was heavily “abused” by many who did it in absolutely horrendous way. But again, the problem is not the technique itself, but the users who can’t use it properly”.***

Comments in detail:

1. Image stacking is a technique which is essential in modern astronomy, and especially in astronomical imaging. Pretty much 100% of the finally processed astronomical images are the stacked ones. JWST, Hubble, VLT, etc.. - all published images are stacks. There is simply NO WAY in physical universe to obtain a high-quality image without using stacking. I don’t have time to go into technical details, but this is the way it is and it’s defined by physics. No magic here. No conspiracies.

2. The issue of HOW people process their images has nothing to do with stacking technique. The technology is not responsible for the actions of a particular artist / photographer. As an example - HDR imaging. It’s absolutely legitimate technique but it was heavily “abused” by many who did it in absolutely horrendous way. But again, the problem is not the technique itself, but the users who can’t use it properly.

Therefore, my point is. There is absolutely nothing wrong with stacking. This is the only way to obtain high quality result, whether you like it or not. Even 100% QE (Quantum Efficiency) detector won’t give you enough photons at the given amount of time and you must spend more time on stacking your data to obtain acceptable amount of noise.

And the last, about realistic aspect. Silicon detector is not human eye. However, all digital cameras are tuned to represent the captured scenes based on the carefully calculated and pre-calibrated color relation based on real physics. Moreover, each human eye is different (unlike silicon chips which are highly repeatable). Therefore, the whole discussion doesn’t make much sense. What is real for you is not real for another one, or to a color blind person, etc..

Resume: image stacking is the present and the future of astrophotography whether you like it or not. It’s a totally legitimate technique. The fact that some people misuse is a problem

related to a photographer, not to the technique. Correct use of the technique allows to obtain results which are impossible to capture in a single shot, fact.

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