



TVIW 2019 UPDATES

INTRODUCING: SEMINARS AND INVITED SPEAKERS

The 6th Interstellar Symposium and Advanced Interstellar Propulsion Workshop, presented by the Tennessee Valley Interstellar Workshop (TVIW) in collaboration with the National Aeronautics and Space Administration (NASA), and hosted jointly by Wichita State University and Ad Astra Kansas Foundation, will be held in Wichita, KS on November 10-15, 2019.

The symposium will include a special two and a half day NASA Propulsion Workshop focusing on Beamed Energy Propulsion and Highly Energetic Nuclear Processes for Propulsion (Fusion and Antimatter). This will be a new addition to our regular symposia, a workshop focusing on a specific aspect of interstellar exploration. It will be a part of the overall symposium and will not require special registration. We hope and expect to learn much about the current state of the art and future directions for many varied propulsion methods that may one day take us to the stars!

(...continued on page 2 with seminars and invited speakers)

THE HISTORY AND PURPOSE OF TVIW

TVIW was conceived by Les Johnson, Greg Matloff, and Robert Kennedy, on a sunny Wednesday morning, July 13, 2011, on the patio of a charming little hotel (which no longer exists, regrettably) in the ancient city of Aosta in the Italian Alps, at the conclusion of the IAA's 7th Biennial Symposium on Realistic Near-Term Scientific Space Missions.

The first TVIW, in November 2011, planned to be a one time event, was a chance for like-minded people to get together and talk about how to move humanity into space, to promote interstellar exploration, travel, and communications. As Les Johnson eloquently put it:

"The Tennessee Valley Interstellar Workshop is an opportunity for relaxed sharing of ideas in directions that will stimulate and encourage Interstellar exploration including propulsion, communications, and research. The 'Workshop' theme suggests that the direction should go beyond that of a 'conference'. Attendees are encouraged to not only present intellectual concepts but to develop these concepts to suggest projects, collaboration, active research and mission planning. It should be a time for engaging discussions, thought-provoking ideas, and boundless optimism contemplating a future that may one day be within the reach of humanity."

Although the original TVIW concept was explicitly intended to be regional (viz., the American Southeast), the meetings are now, in fact, internationally recognized events, with major speakers and attendees coming from all over the world. International Participation has grown, for example, with the involvement and support of the prestigious British Interplanetary Society, as well as the Initiative for Interstellar Studies and the International Space University.

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A MYTHOLOGY FOR AN INTERSTELLAR SPECIES

BY DOUGLAS LOSS AND J. N. NIELSEN

Philosopher and critic Nick Nielsen recently wrote about interstellar flight in a surprising way, asking whether we are creating, or could create, a mythology around the human expansion into space. TVIW's president Doug Loss engaged with Nielsen in an email dialogue on the subject, the first of what we hope will be a series of dialogues on matters of interest to interstellar enthusiasts. Is science fiction already creating precisely this kind of mythology?

Doug: As TVIW is an advocacy organization for interstellar exploration, I was wondering how we might be able to use the insights in your essay to work toward our goals. Is there such a thing as applied philosophy? Is it possible, do you think, to construct a mythology that would be useful to that end? I suspect not, as it seems to me that mythologies of whatever type grow organically from the cultures they are attached to. So my question is: How can we become the mythological exemplification needed by a future spacefaring civilization?

Nick: If we take philosophy to be the science of all sciences, then philosophy is the very definition of a discipline that seeks to understand, only without trying to influence anything. Applied philosophy, then, would be some technology or some engineering derived from philosophy that seeks to attain some end not incorporated into the philosophical analysis.

I believe that it is possible to create a myth to some end—or, better, to facilitate the creation of a myth—but that there is no method (as yet) for doing so. An instructive story that Joseph Campbell liked to tell was how he discovered that schizophrenics were being overwhelmed by archetypal images; that they were drowning in waters in which the mystic swims. It takes a gifted individual, who feels as much as understands how to fashion a myth from archetypal materials, to converge on a true myth. I don't doubt that someone will come along who will possess the right sensitivities to construct a myth for the spacefaring age.

Arguably, this already took place in the Golden Age of science fiction in the 30s and the 40s. Here a great many mythic themes are present in an overarching narrative. The thing is, after this time western society passed into a self-critical phase rather than an expansionary phase, and this is still going on today.

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INTRODUCING: SEMINARS AND INVITED SPEAKERS

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Along with the scheduled presentations, four seminars will be offered at additional cost. The topics covered will be:

Life in Space, People of the Stars

led by Robert Hampson

Preparing for First Contact: Protocols and Implications

led by Ken Wisian, Ken Roy, and John Traphagan

In-Space Manufacturing: The Gateway to the High Frontier and an Enabling Technology for Human Space Exploration

led by Tracie Prater and Matthew Moraguez

Space Law: An Overview, Past, Present, and Future

led by Laura Montgomery

Among those joining us in Wichita, a list that is growing as we speak, will be these invited speakers:

David Brin is a scientist, inventor, and New York Times bestselling author. With books translated into 25 languages, he has won multiple Hugo, Nebula, and other awards. A film was based on David's novel *The Postman*. In *Earth and Existence*, he explores near future trends that may transform our world. With degrees from Caltech and the University of California-San Diego, Dr. Brin serves on advisory panels ranging from astronomy and NASA's NIAC program to others dealing with artificial intelligence, nanotech, SETI, national defense, and technological ethics. As a speaker and on television, David Brin shares unique insights – serious and humorous – about ways that changing technology may affect our future lives.

Geoffrey Landis was born in Detroit, Michigan. After going to college at MIT and graduating with degrees in Physics and Electrical Engineering, he worked in the Boston area for five years. After receiving his Ph.D. in physics from Brown University, Dr. Landis worked as a postdoctoral researcher at the NASA Lewis Research Center (now renamed NASA Glenn), then worked as a NASA contractor, and finally as senior scientist at the Ohio Aerospace Institute, before accepting his current job as a civil-service scientist in the Photovoltaics and Power Technology Branch at NASA Glenn Research Center in Cleveland, where he works on Mars exploration with the Mars Exploration Rovers. He currently lives Berea, Ohio with cats named Azrael and Tyrael, several teddy-bears, more books than you can count in a year, and no goldfish. He is married to science fiction writer Mary A. Turzillo.

Philip Lubin is a professor of Physics at UC Santa Barbara whose primary research has been focused on studies of the early universe in the millimeter wavelengths bands as well as applications of directed energy for planetary defense and relativistic propulsion. His group has designed, developed and fielded more than two dozen ground based and balloon borne missions and helped develop two major cosmology satellites. He is director of the NASA Starlight program, currently in a Phase II whose goal is to use directed energy for humanity's first interstellar missions. He is also concept director for the Breakthrough Starshot program whose goals are also to achieve relativistic flight with miniature spacecraft. He is co-recipient of the 2006 Gruber Prize in Cosmology along with the COBE science team for their groundbreaking work in cosmology as well as the 2018 Gruber Prize in Cosmology along with the

Planck science team for their determination of fundamental cosmological parameter.

Toni Weiskopf is an American science fiction editor and the publisher of Baen Books. She is an alumna of Oberlin College, from which she graduated in 1987, and was immediately employed by Baen Books, where she served as executive editor until the death of founder Jim Baen in 2006, at which point she took over as publisher. She has edited a number of their anthologies under the name T.K.F. Weiskopf, and won the Phoenix Award in 1994 for excellence in science fiction, the Rebel Award in 2000 for lifetime achievement in Southern Science Fiction Fandom. Weiskopf was the editor guest of honor for the 2010 North American Science Fiction Convention, ReConStruction, and twice been nominated for a Hugo Award for Best Editor, Long Form.

To keep up with the most current information about the 2019 Symposium and to learn how to submit an abstract for consideration, please consult our website, where new participants will be listed as we confirm them and the agenda will be filled out. <https://tviw.us/tviw-2019/>

Complete registration information for the 6th Interstellar Symposium and Interstellar Propulsion Workshop is available at the site, along with the necessary information for hotel reservations.

A MYTHOLOGY FOR AN INTERSTELLAR SPECIES

BY DOUGLAS LOSS AND J. N. NIELSEN

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You're right that there is a difference between myth making and just writing more science fiction. Science fiction can be a component of vision, but it's not the vision itself.

A key issue: How do we get from the organic cultural expressions of a people to a fully articulated mythology? As it happens, you have some personal knowledge of a particularly interesting example of folk culture, and that is the folk culture of Appalachia. Appalachia was mostly settled by Scots after the more desirable coastal areas were settled first by the English and other peoples. The Scots brought their hauntingly beautiful folk music to the region, but what else? What traces or echoes of former European high culture can be found in the folk traditions of Appalachia? I have only read about the region (and I've seen the film "Deliverance"), but I haven't traveled there, so it's all abstract to me so far.

Doug: I would tend to think of the various social experiments (the Amana community, the Shakers, even the Anabaptist groups, as well as the many communal groups from the 60's, etc.) as forms of "experimental philosophy." They were all predicated upon accepting some philosophical belief and creating societies based on it. Some have been more successful than others, obviously. But I don't see history generally as being a form of experimental philosophy, as the study of history tends to be more explanatory than predictive.

The transition from an expansionary to a self-critical phase seems to have occurred at roughly the time when there were no longer any unincorporated "frontiers" to expand into. Might it be the case that a technological capability to live long-term (eventually permanently) off-Earth would allow and even require

some human society (not necessarily western society) to change back into an expansionary phase?

Some SF authors have consciously tried to write future mythologies, notable Roger Zelazny and Mike Resnick. Zelazny based his on various existing mythologies, while Resnick seems to have tried to create new ones. You might look at *Lord of Light*, and *Santiago: A Myth of the Far Future*. Arguably, Robert Heinlein did some of this too, with *The Moon is a Harsh Mistress* and *Stranger in a Strange Land*, as well as Dan Simmons with his *Hyperion Cantos*.

Nick: What were once called "communes" and what are now called "intentional communities" are examples of applied philosophy. This is a social implementation of attempting to live out one's ideas. Communities formed around a strong mythology are also living out the ideas of the mythology, but in the more recent (by which I mean 19th century) communities formed around ideas, the philosophical application to the real world is more obvious and explicit, often consciously formulated in the works of someone like Saint-Simon.

In the ancient world, Plotinus tried to convince the Roman Emperor to found a city to be called Platonopolis and to be administered on the principles of Plato's Republic and The Laws. It didn't work out because the emperor was murdered, but this would have been an explicit implementation of philosophical principles in political life. One could argue that the influence of Montesquieu, Locke, and Hume on the Founders makes the US an exercise in applied philosophy.

I will grant that history to date has been more explanatory than predictive. I don't think that a philosophical history would be necessarily predictive, but I do think that it would be elucidative (is that a word?). The next question is what a philosophical history ought ideally to be. If properly formulated, should it be predictive? If so, we go down the path of Asimov's psychohistory (*Foundation* was written at a time when psychology, especially Freud's psychodynamic psychology, was very much in the news). We find something like this (not exactly like this) in the contemporary school of thought known as cliodynamics.

For my part, an ideal philosophical history would make it possible to understand where we have been, what we are doing, and where we are going. That's not necessarily going to be predictive, but I think prediction is probably illusory. I'm more interested in seeing with clear eyes what exactly we're about.

I assume that when prices are low enough that the average Joe can go into space with his family, that a new frontier will be opened and then the most successful individuals and groups will be those that act with the least reflection and the most vigor. Science also will benefit from a period of less theory and more practice. I have often written about the return of "adventure science" which will be made possible by a geologist wielding a hammer on Mars or some other body in our solar system. Getting there first will, for a time, be more important than having a good idea.

If we manage to crack the space frontier, we will have to re-visit the Frederick Jackson Turner essay on the closing of the frontier, and ask what it means for a frontier to be re-opened at a time when the idea of the frontier has atrophied to a point of being nearly unrecognizable. But the American frontier is also vividly present at times, because this is an integral part of the American foundation myth. I suspect that, given the right conditions, people could imaginatively re-insert themselves into

an expanded frontier myth that extends this foundation myth into outer space.

Doug: Yes, when moving the family to a space habitat or to another planet is both financially possible and has a reasonable chance to improve their lives, I expect we'll see a bunch of new pioneers, who will likely be looked at as uncouth and uneducated by those unwilling, unable, or afraid to do so themselves. Thus it ever was. So, the ET diaspora as the New Appalachians? They can't be sodbusters, with no sod to bust, but I'm sure some equally disparaging term will develop.

I see what you're talking about, about moving between the frontier and "civilization" easily, but I don't think it's likely that it will be much easier for our ET diaspora to do that than it was for our 19th century forebears. Not for physical reasons, but for financial and probably physiological ones (disease resistance, micro-gravity adaptation maybe, etc.). And probably also for psychological reasons--after all, they would have made positive decisions to separate themselves from so-called "civilization" and might feel that returning to it would be an admission of mistake on their parts. From the culture I grew up in, I must say, never underestimate the power of stubbornness.

Nick: Psychohistory, like sociological history, was in vogue for a time in the 60s and 70s, but it turned out to be something of a dead end. By "psychohistory" I don't specifically mean Asimov's version, but simply the application of psychology to history. However, Asimov was arguably on the cutting edge of understanding the impact of psychology on society, and his psychohistory extrapolation was insightful in its time. As I wrote about in my recent newsletter, I didn't read Asimov's *Foundation* in my youth, but I just listened to the book last week, and, in retrospect, there were passages that my younger self would have thrilled to, and I imagine I would have read a lot into the possibilities of psychohistory as a science.

The early settlers beyond Earth won't be sodbusters, but they will be farmers and agriculturalists. We can boost food from Earth to feed a dozen people in the ISS, but when hundreds or thousands of individuals are living and working off the surface of Earth, producing air, water, and food for them will be a significant industry. There are already several companies looking into this, mostly because they are interested in space exploration, but they also would like to make money from off world expansion, and those who manage to be first to market with a workable solution will be important companies if they can prevent themselves from going bankrupt after the initial rush to invest. All of the first movers in trans-Atlantic trade went bankrupt, and it was generally the next generation of investment that produced returns. It took time to figure out what New World commodities would be viable in the market. It turned out to be tobacco and sugarcane.

At first, at least, a lot of resources and effort will have to go into just keeping people alive. It won't be glorious or heroic, so, as you point out, there will probably be unflattering terms to describe those who accept the hardship as the price for taking one-time historical opportunity. The initial movement of human beings into space will be the most consequential—more consequential than the next wave, which will be from our solar system to other stars. By that time, the technology and techniques of keeping people alive in space will be familiar.

I like your observation that space settlers, "...might feel that returning to [Earth] would be an admission of mistake on their

parts." This is suggestive of a whole range of psychological, social, and moral considerations that will divide populations on Earth from populations that have left Earth. There is so much that goes unsaid when people make great decisions, as well as when they retreat from great decisions. A few people have left records of what they thought and felt (the Puritans were great diarists, and left a substantial literary corpus), but much was never recorded, and it is only with difficulty that we can excavate the feelings of pride, shame, anger, triumph, disappointment, and so on that were key motivators for individuals throughout history.

Thinking about space settlement analogies from terrestrial history, it's important to keep in mind that those who left their native lands were almost always in a small minority, but once they settled, like most agriculturalists, they had large families, and so the populations didn't take long to approach parity with the lands they left. Multi-million population cities on Earth would not even notice a few thousand people leaving to start a new life elsewhere, and the planet as a whole would not notice the departure of several million. However, when massive immigration is combined with some kind of disaster (e.g., Irish immigration during and after the famine), that tends to be burned into collective memory, and the diaspora of daughter populations tends to have a distinctive culture because of the awareness that they left their homelands under duress.

 Doug: There have been some interesting studies on just how many resources are required to support an individual in a permanent space habitat. The amounts are surprisingly low (well, they're all speculative at this point, but still...). It's probably worth noting that in commercial space as it exists now, SpaceX and Blue Origin were far from the first companies trying to get a start. I actually applied for employment at Deke Slayton's (well, Gary Hudson's) Space Services back in the 1980's, figuring my Pershing missile experience might have been desirable. I didn't get hired, which was probably a good thing for me. :) But there were a number of small companies trying and failing to become successful non-governmental launch providers.

I've thought about space settlement analogies a bit myself. The terrestrial analogy that seems most likely to me to be close to what might happen is the Polynesian diaspora. There, when an island got more or less filled to its carrying capacity, a family or two would set out in their boats looking for another island to colonize, taking all the requirements for success with them (chickens, etc.). When they found and colonized a new uninhabited island, they settled for a number of generations till that island's carrying capacity was reached, and then the cycle repeated. It didn't take too long for the entire south Pacific to be inhabited. It's my belief (and hope) that something similar might happen in humanity's solar system breakout.



THE HISTORY AND PURPOSE OF TVIW

(...continued from page 1)

TVIW Incorporated began as a non-profit corporation (501c(3)) with an official founding date of January 18, 2014, selecting the first TVIW Board of Directors from the original Oak Ridge enthusiasts: John Preston, President; Martha Knowles, Secretary/treasurer; Ken Roy; David Fields; and Robert Kennedy. Les Johnson agreed to be our advisor.

Current Board Members are Doug Loss, President; Paul Gilster, Secretary; Martha Knowles, Treasurer; David Fields; Marc Millis; Jim Moore; and Joseph Meany. Les Johnson chairs our Advisory Board, one that includes professionals in aerospace, publishing, and academia.

Five very successful TVIW Interstellar Symposia have been held. We have grown in size and agenda. Our first Symposium, held in Oak Ridge, TN, in 2011, was a one day, jam packed day of talks from across the board of interests, from the keynote by Dr. Claudio Maccone, to talks from scientists, historians and artists on subjects ranging from geoengineering to propulsion and colonization. We were treated to an opening reception at the home of Robert Kennedy.

We moved to Huntsville, AL, in 2013, for the second Interstellar Symposium. Here we expanded to two days, with a tour of the United Launch Alliance plant, in Decatur, AL, on the third day. We again had an opening reception, sponsored by Baen Books, offering a chance for attendees to meet informally before the symposium started. Dr. Jan Davis opened the event with her keynote speech. We also added a public meeting at Calhoun Community College, with a panel of experts to talk about interstellar possibilities for the near future.

In 2014, we were back in Oak Ridge for a two day conference, with the addition of seminars on Sunday on Terraforming and Space Propulsion. These were so well received that we have kept them in our plans for future symposia. Dr. Sara Seager was our keynote on Monday. This year, our innovation was workshops in the afternoons to discuss specifics of space safety and security, life sciences, communication, and an engineering-oriented design workshop. Our public outreach event was a panel of Science Fiction Authors and Publishers and a book sale.

We were off to Chattanooga, TN, in 2016 to meet at the Chattanooga Choo Choo. We maxed out the facilities. We had the usual seminars on Sunday, the Baen opening reception, with an art showing from the collection of Naomi Fisher. Dr. John Lewis was our keynote speaker, and we had a presentation by Lt. Gen. Steven Kwast of the Air University at Maxwell Air Force Base. Our working tracks included 'Homo Stellaris', Life System Engineering in the Worldship, Space Solar Power, and Space Mining. A banquet was added to allow for an extra presentation by Dr. Kelvin Long of the Initiative for Interstellar Studies. Our public event was again a panel of science fiction authors with an accompanying book sale.

Our fifth Interstellar symposium was back in Huntsville, AL, in 2017. We collaborated with Starship Century and the Tau Zero Foundation to bring speakers in from the Breakthrough Initiative, NASA facilities, the US Congress, and the military sector. We expanded to three days to fit all the speakers in. In addition to the Seminars, the Baen opening reception, and the working tracks, we added an art reception to honor our program book

artist and provide another evening of informal interactions. We had a talk by Dr. Andrew Siemion at the U.S. Space and Rocket Center, where we were able to enjoy their Biergarten for dinner (under a Saturn 5 Rocket!). And Friday night, we had a public SF Writers Panel, including Larry Niven, Allen Steele, and Greg Benford.

In 2018, we collaborated with Dr. John Rather, of RCIG, Inc., of Oak Ridge, to present 'TVIW: The Power of Synergy', three days of exploring four themes to create a decadal plan to jumpstart the space program, using technologies presently available. Dr. Rather was able to get the New Hope Center for the event, a very nice facility in Oak Ridge. He gathered a stellar collection of speakers to fill the three days, including NASA scientists, propulsion experts, development managers, and SF writers to inspire our future aspirations.

Why should we gather to discuss the challenges and opportunities of interstellar travel? Because we must. We are compelled by our nature to think positively about the future of humanity in a beautiful yet extremely hostile universe. Life on Earth is wonderful and we should do what we can to protect and preserve it here, but there is more. Among the billions of galaxies, stars and planets, we sense a call to explore. A call to disperse ourselves and settle a multitude of worlds in order to preserve and protect what must be very rare indeed: a bipedal species of intelligent tool users who dare to dream, to love, to create and to aspire for more than mere survival.

Humanity is a race of intelligent, curious tool users. We don't know how rare or how common such a thing is in the universe. We are beginning to understand our abilities, to address our failings, and to accept our responsibility to preserve and protect life on this planet. And now we are standing at the start of a grand adventure, one that will test us in unimaginable ways, but one that will make us better and more capable. As humanity expands into the universe, we will take Earth's life with us to live and thrive on distant worlds under alien suns long after our planet's biosphere has died due to an inevitably expanding sun.

TVIW's mission is to dream and plan for the first steps of this grand adventure. Come join us.

For more information on previous symposia, go to tviw.us/symposium-archive

SEEKING INPUTS FOR UPCOMING ISSUES OF HSWT

We invite your contribution to this newsletter of nominally 200-500 words, written on an Interstellar topic that you think is of compelling importance.

Please send your submissions in MSWord format to Abby Sherriff, TVIW Newsletter Editor, and to Paul Gilster, TVIW Director at Large.

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UPCOMING INTERSTELLAR AND SPACE EVENTS

June 5-9 (Arlington, VA). International Space Development Conference 2019, National Space Society. Website: isdc2019.nss.org

June 27-30, 2019 (Gloucestershire, UK). 2nd Foundation of Interstellar Studies Workshop, I4IS. Website: i4is.org/

July 20, 2019 (Earth). 50th Anniversary of the Apollo 11 Moon landing and first humans on the Moon. Website: nasa.gov/specials/apollo50th/

September 13-15, 2019 (San Diego, CA). Starship Congress IV: Bend Metal, Icarus Interstellar.

September 14-16, 2019 (New York City, NY). The Interstellar Initiative: 2019-2020, Japan Agency for Medical Research and Development and the New York Academy of Sciences.

September 24-26, 2019 (Wales, UK). UK Space Conference 2019. Website: ukspace2019.co.uk/

October 21-25, 2019 (Washington, DC). 70th International Astronautical Congress 2019.

November 10-13, 2019 (Wichita, KS). TVIW's 6th Interstellar Symposium. Website: tviw.us/

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