Nahks Tr'Ehnl — *Curriculum Vitae*

Multimedia Specialist
Department of Astronomy & Astrophysics
The Pennsylvania State University

email: nahks@nahks.com
URL: http://nahks.com

Objective

Advance the cause of human space exploration by bolstering public understanding, support, and excitement for the sciences through teaching, outreach, writing, and art.

Education

The Pennsylvania State University, University Park, Pennsylvania
BA in Art with Japanese language minor, May 2001
BS in Astronomy and Astrophysics, May 2003

Research and Teaching Interests

Science communication:
Constructing visualizations from data, and speculative "space art"; explaining the tools and methods of science and reporting discoveries in manners meaningful and exciting to the public; scientifically-informed art (visual, performance, *etc*.) as teaching and learning tools

Interactive Multimedia in Education and Public Outreach:
Using web-based/interactive technologies to engage learners; educational game development; laboratory-style investigations to reinforce education in the philosophies and methods of science

Astrobiology:
Habitable planets; biological evolution, phylogenetics, and extremophiles; cosmochemistry and evolution of habitable environments in a galactic and cosmological perspective

Astronomy / Astrophysics:
Extrasolar planet detection, characterization; planetary system evolution

Geological / Planetary Sciences:
Earth system science, human impact; paleontology and mass extinction events

EXPERIENCE

Multimedia Specialist, Instructional Design & Teaching Assistant, *Fall 2006 – Spring 2007*
Department of Astronomy and Astrophysics, *Spring 2012 – present*
The Pennsylvania State University, University Park, Pennsylvania

Co-developed *Astronomical Universe* (ASTRO 001; video-game-based course): visual assets, user interface, game environment & level design using the *Unity* game engine; 3-D modeling, illustration; interactive-dialogue system programming; story/lesson writing for a video-game non-major introductory astronomy course; provided technical support for instructor and students, with office hours and through the *ANGEL* online course management system and *Piazza* online discussion boards

Co-developed *The Big Bang Universe* (ASTRO 120; web-based section): web interface and graphic design for an online multimedia non-major course on galaxies and cosmology; continued to provide technical support for instructor and students, in the *ANGEL* online course management system

Co-developed *Astronomical Universe* (ASTRO 001; web-based section): web design, 3-D art, illustration, and story/lesson writing for a web-browser-based multimedia non-major introductory astronomy course

TA for *Elementary Astronomy Laboratory* (ASTRO 011): non-major introductory astronomy laboratory lab centered on critical thinking, problem solving, scientific method (1 section)

TA for evening astronomy activities (ASTRO 001/005/006): led night-sky-introduction labs involving planetarium shows and telescope observations (serving multiple sections)

Graduate Teaching & Research Assistant, *Fall 2007 – Fall 2011*
School of Earth and Space Exploration,
Arizona State University, Tempe, Arizona

Conducted research in model star evolution and supernovae calculations over a grid of high-mass stars (8-120 solar masses) using the "Saguaro" cluster at ASU's High Performance Computing Initiative

Completed graduate-level coursework in stellar physics, galaxy dynamics, planetary geology, cosmochemistry, paleontology, and earth-system/sustainability sciences

Instructor for *Geologic Disasters Laboratory* (GLG 111): non-major laboratory course on geological disasters and hazards (1 section)

TA for *Earth, Solar System, and Universe I-II* (SES 101, 102): two-semester introductory major course in astronomy and geology (1 section of each)

TA for *Earth, Solar System, and Universe Labs I-II* (SES 103, 104): astronomy-related labs to accompanying SES 101 and 103 lectures (1 section of each)

TA for *Introduction to Stellar and Planetary Astrophysics* (AST 321): tutoring outside of lecture classes (1 section)

EXPERIENCE (*continued*)

Research Assistant, *Summer 2003*
Department of Geosciences,
The Pennsylvania State University, University Park, Pennsylvania

Research into and computer modeling of early Earth atmospheres

OTHER EMPLOYMENT / COMMISSIONS

Department of Astronomy and Astrophysics,
The Pennsylvania State University, University Park, Pennsylvania

Developed notes and slide presentations for summer teachers' workshop on black holes (for Dr. N. Brandt), *Summer 2007*

Illustration for press release to accompany "Exotic Earths: Forming Habitable Worlds with Giant Planet Migration" (S. Raymond, A. Mandell, S. Sigurdsson), *Fall 2006*

Designed publicity posters for the 2000-2001, 2001-2002, and 2006-2007 Friedman public lecture series

Center for Gravitational Wave Physics,
The Pennsylvania State University, University Park, Pennsylvania

Led web and graphic design for the Center for Gravitational Wave Physics (CGWP) and Institute for Gravitational Physics and Geometry (IGPG), *Fall 2001 – Fall 2002, Fall 2004*

SERVICE

Penn State Department of Astronomy and Astrophysics, *Summer 1999 – present*
Penn State Astronomy Club

"AstroFest" (*co-founder and presenter*) and "AstroNight" (*presenter*), Summers 1999–2001, 2006–2007, 2012–*present*: event planning, advertisement design, stargazing coordinator, space art exhibit, educational video game demonstration, presentation on the history of "space art," and "3-D tour of Mars." "AstroFest" is a 4-evening open house concurrent with the Central Pennsylvania Festival of the Arts; attendance averages >1600. "AstroNight" is a single-evening event held during the Fall semester; attendance averages ~300

"Alien AstronoMysteries: Is Anyone Out There?" Penn State's "Science U" summer camp, Summers 2012–2014: program cover design, signage, and achievement button designs; also gave a short presentation on speculative space art and illustrations informed by scientific knowledge

SERVICE (*continued*)

Penn State Astronomy Club, Fall 1998 – Spring 2001, (president, Fall 1999 – Spring 2000): coordinated free public stargazing events, clear Friday nights during the regular school year, planned trips to observatories, meteor shower viewing parties, arranged for guest speakers, and coordinated programs for monthly meetings, open to the public

Penn State Kokikai Aikido (Penn State Aikido Club) *Spring 2013 – present*

Volunteer coach

Penn State Belly Dance Club *Fall 2012 – Spring 2013 terms*

Student organization Faculty/Staff Advisor, drummer

Discovery Space of Central Pennsylvania, State College, PA *Winter – Spring 2012*

Assisting in planning, creating, and installing new astronomy exhibits at a nonprofit children's science museum; painted a wall mural for the museum's astronomy corner

School of Earth and Space Exploration, Arizona State University, Tempe, AZ *2007 – 2011*

Presenter at "Earth and Space Exploration Day": 3-D show, "Mars through the Rovers' Eyes" (*designed by Marvin Simkin*); estimated attendance: ~150 over 6 shows (~1200 for the overall event); 3 November 2007, 1 November 2008, and 24 October 2009

SESE Colloquium Committee: a committee made up of graduate students, responsible for arranging visitors and presentations for SESE's colloquium series (member Spring 2008; vice-chair Fall 2008-Spring 2009)

Cover illustration and figure compositions for SESE/ASU's proposal for membership in the NASA Astrobiology Institute, 2009-2014

Web design for ASU Astrobiology group

Trevor Brown and **Metro Tech High Schools**, Phoenix, Arizona *9, 16 June 2009*

Presented planetarium shows to local high school students using the portable, inflatable "StarLab" planetarium

Arizona Science Center, Phoenix, Arizona *14 March 2009*

Staffed astrobiology exhibit and information table during an outreach event for the International Year of Astronomy

Conference / Workshop Presentations

N. Tr'Ehnl, F. X. Timmes, M. Turnbull, P. A. Young, and S. Schmidt (2010). Constructing an Updated Catalog of Nearby Habitable Stellar Systems with Elemental Ratios; poster presented at the 2010 Astrobiology Science Conference, League City, TX, 26-29 April 2010.

P. A.Young, F. X. Timmes, and **N. Tr'Ehnl** (2010). The Turbulent Origin of the Elements: Dynamical/Chemical Evolution and Explosions of Massive Stars and Implications for Astrobiology; poster presented at the 2010 Astrobiology Science Conference, League City, TX, 26-29 April 2010.

Palma, C., J.C. Charlton, K.A. Herrmann, A. Narayanan, and **N. Tr'Ehnl** (2007). Results from Penn State's Interactive, On-Line, Scifi Version of Astro 001; 2007 American Astronomical Society Meeting 211, poster #06.09. *Bulletin of the American Astronomical Society* **39**, 737.

Palma, C., J.C. Charlton, **N. Tr'Ehnl**, K.A. Herrmann, and A. Narayanan (2006). Astro 001 through an interactive, multimedia science fiction story; 2007 AAS/AAPT Joint Meeting, American Astronomical Society Meeting 209, poster #170.09. *Bulletin of the American Astronomical Society* **38**, 1144.

Conferences / Workshops

2010 Astrobiology Science Conference, "Evolution and Life: Surviving Catastrophes and Extremes on Earth and Beyond." Conference held 26–29 April 2010, League City, TX, USA.

2010 Sagan Exoplanet Summer Workshop, "Stars as Homes for Habitable Planetary Systems." Workshop held 26–30 July 2010, CalTech, Pasadena, CA, USA.

2011 Center for Astronomy Education Mesa Workshop, "Improving the College Introductory Astronomy General Education Course Through Active Engagement: A Tier I (Introductory) Workshop." Workshop held 22–23 October 2011, Mesa Community College, Mesa, AZ, USA.

2012 Symposium for Teaching and Learning with Technology, "Embracing Change and the Culture of Teaching and Learning." Symposium held 24 March 2012, State College, PA, USA.

2012 Penn State Educational Gaming Commons, "Game Day." Workshop held 22 May 2012, State College, PA, USA.

2013 Symposium for Teaching and Learning with Technology, "Unlocking Our Potential and the Culture of Teaching and Learning." Symposium held 16 March 2013, State College, PA, USA.

Game Developers Conferences, 2013 & 2014. Video game industry conferences held in San Francisco, CA, USA.

Unite Conferences, 2014-Seattle & 2015-Boston. *Unity* game engine developers' conferences held in multiple locations.

MEMBERSHIPS

Artist Member, International Association of Astronomical Artists (*http://iaaa.org*)

LANGUAGE PROFICIENCIES

Japanese (3 years' study), intermediate reading and speaking
German (3 years' study), intermediate reading and speaking