

Curriculum Vitae (December 2020)

Jayanne English

Home Institution:

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Citizenship: Canadian.

Highlights

Research Interests:

Origin of structure within galaxies, including the formation of halos and other features around galaxies; galaxy kinematics; scientific data visualization.

Positions Held

Professor Positions:

University of Manitoba,	- Associate Professor	Since Apr. 2005
	- Assistant Professor	July 2000 - Mar.2005
University of Zurich (UZH)	- Guest Professor	Sept 2017 - June 2018

Post-Doctoral Positions:

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|-------------------------------------|--|-----------|
| • Space Telescope Science Institute | • coordinate the Hubble Heritage Project | 1998-2000 |
| | • independent research in astronomy | |
| • Queen's University | • Canadian Galactic Plane Survey | 1996-2000 |
| | • collaborative research in astronomy | 1994-1998 |

Education

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|--|--|-----------|
| • Australian National University | Ph. D. (Astronomy and Astrophysics) | 1989-1994 |
| • University of Toronto | B. Sc. (Physics & Astronomy Double Specialist) | 1984-1989 |
| • The Ontario College of Art (and Design University) | • Diploma -A.O.C.A. (General Studies) | 1980-1984 |

Visiting Scholar (Research Leaves):

• University of Zurich (UZH)	• Institute of Computational Science. • Host: George Lake; Education.	09/2017 - 06/2018
• University of Oxford	• Sub-Dept Astrophysics • Host: Martin Bureau; Astronomy Research	07/2015 - 07/2016
• Nottingham-Trent University	• Dept of Physics • Host: Haida Liang; Visualization Research	06/2009 - 08/2009
• Australian National University	• RSSAA • Host: Ken Freeman; Astronomy Research	02/2009 - 04/2009
• University of New South Wales	• College of Fine Arts • Host: Brad Miller; Visualization Research	01/2009
• Australia Telescope National Facility	• Galaxies Group • Host: Baerbel Koribalski; Astronomy Research	10/2008 - 06/2009

Recognitions

- Distinguished Visitorships:
Visitorships that were invited and financially supported by the institutes are boldfaced in the Visiting Scholar table.
- Art Exhibitions and Music Concert Highlights from 2014-2020:
 - 2019-2020 Jury selected piece “5G + Autonomous Vehicles: Dialogue between the Cloud and the Ground” with Emily Gong in the Bi-City Biennale of Architecture and Urbanism (Shenzhen), held at the Shenzhen Museum of Contemporary Art and Urban Planning
 - Juried shows at Propellor Gallery, Toronto.
 - 2018 “Out of this World”, with students from UZH.
 - Visualization of cosmology data.
 - 2018 “Colour. What Do You Mean By That?”
 - Animated astronomy data video.
 - 2014 “Occam’s Razor”, with Willy LeMaitre.
 - Lenticular of astronomy data.
 - 2018 “La Rencontre, Science Meets Art” exhibition at ETH, Zurich.
 - Visualization of cosmology data.
 - 2014 Juried show at COSMOS 15th International Art-Sci Juried Exhibition New York Hall of Science.

- 2015. Performance in Toronto of “Collide” created with Governor-General Award-winning Nicole Lizée.
- Outreach Image-making:
 - 2006 Winner of National Radio Astronomical Observatory Image Competition.
 - 1980s Scholarships at University of Toronto (Robertson) and OCA, including selected for the New York City Off-Campus Program.

Professional Service Examples

University Service:

- Chaired departmental committees: Colloquium, Outreach, Graduate Studies.
- Additional departmental committees: Hiring; Organizing space; Nominations.
- Faculty Committees member: Interdisciplinary Speakers; Promotion; Hiring.
- Academic committees: Thesis at Masters and PhD levels in Physics & Astronomy and Faculty of Engineering.

Other: Review panel member on telescope time assignment committees, for NASA (Hubble, GALEX), Canadian telescope facilities, and the Atacama Large Millimetre/submillimetre Array. Review panel for NASA fellowships. Contribute to organizing conferences and meetings. Referee professional publications.

Recent Examples of Service:

- | | | |
|-------------------------|--|-------------------|
| • Committee Member | • CASCA Awards, Committee | 10/2020 - |
| • Review Panelist | • NASA | 12/2019-01/2020 |
| • PhD External Examiner | • Queen’s University, On., Canada | 09/2019 |
| • Committee Member | • UM hiring committee in Computer Science. | 01/2019-03/2019 |
| • Co-lead. | • UM visualization for Canadian Initiative for Radio Astronomy Data Analysis (CIRADA) | 07/2018- |
| • Committee Member | • VLA Sky Survey (VLASS)
• Expert community member at large | 11/2018- |
| • Co-chair Committee | • VLA Sky Survey (VLASS)
• Education and Outreach
• Member of Science Survey Group | 01/2017 - 11/2018 |
| • Review Panelist | • Space Telescope Science Institute
• Hubble Space Telescope | 11/2014 - 06/2015 |

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|-------------------------|---|-----------|
| • Review Panelist | • European Southern Observatories | 06/2011 - |
| | • Atacama Large Millimeter/Submillimetre Array (ALMA) | 06/2015 |
| • Review Panelist | • University of Manitoba, Canada | 08/2012 - |
| | • Promotion and Tenure | 02/2013 |
| • PhD External Examiner | • University of Victoria, B.C Canada | 05/2012 - |
| | • Dept of Physics and Astronomy | 08/2012 |

Research Collaborations

• *Canadian Collaborative Team:*

- University of Manitoba co-lead on information and data visualization for the Canadian Initiative for Radio Astronomy Data Analysis (CIRADA).¹

• *International Collaborative Teams:*

- Current lead on the Atacama Large Millimetre/submillimetre Array (ALMA) observations acquired for the CONTINUUM HALOS IN NEARBY GALAXIES: AN EVLA SURVEY;
- Contributed to accepted proposals the Australia Square Kilometre Array Precursor (WALLABY) and the MeerKAT (MHONGOOSE);
- Visualizing VLA Sky Survey (VLASS) data for the CIRADA - Canadian Initiative for Radio Astronomy Data Analysis, both for the public and as catalogue advanced products for astronomers.
- Initiated collaboration with The Inter-University Institute for Data Intensive Astronomy Visualization Laboratory at the University of Cape Town.

• *International Research Projects:*

- “Kinematics of Rotation Curves of Late Type Galaxies”, Oxford University
- “Rotation Curves and Simulated Galaxies”, University of Zurich.
- “Visualization in 3D immersive Virtual Reality”, RIKEN, Japan.

Grants

- Most Recent (2015-2017): UM University Collaborative Research Program (\$25K) and Interdisciplinary/New Directions Research Collaboration Initiation Grant (\$10K) for “3D visualization of astronomical data using immersive displays”.
- Held National Science and Engineering Research Canada (NSERC) grants.

¹ CIRADA will comprise the infrastructure, computing capability, and expertise needed to convert the enormous raw data streams from next-generation telescopes into sophisticated digital products.

Development of Academic Programs and Teaching

University of Manitoba: UM teaching responsibilities cover the year 2000 to the present time. Typical course load: three to four courses per academic year. The introductory astronomy courses have up to 250 students and the upper year courses a few to a dozen scholars.

- Co-developed the UM's first undergraduate and graduate astronomy stream. On-going engagement in curriculum development. Currently developing an advanced observational astronomy course.
- At UM have been responsible for one graduate course in astronomy (Galaxies), 4 undergraduate courses in astronomy (Galaxies, General Astronomy courses), and 2 undergraduate courses in physics (Non-calculus Physics; Optics).
- Responsible for one 250-student, Online Distance Education class (Life in the Universe.)
- Supervision: 1 research associate, 1 PDF, 1 PhD, 2 MSc, several summer interns.

University of Zurich: Taught two courses.

- "The Art of Scientific Visualization." Graduate level; Included workshops and studios. (Invited to teach this at Ruhr University, Germany in Spring 2020.)
- "Galaxies and Cosmology." Undergraduate level; Co-instructor taught Cosmology.

Example of Project Management

Coordination and facilitation of the Hubble Heritage Project at Space Telescope Science Institute for 2 years. The time consisted of 7 members. My responsibilities included implementing policy (e.g. negotiating which institutions got credit and in which ranking), coordination and negotiations with the Office of Education and Public Outreach, and engaging the scientists whose data were used in the images and who were involved in image-making contests. I authored the website, designed the logo, and produced contests for acquiring telescope time. As well as making astronomy images and art directing images, I trained the team in visual techniques.

Examples of Recent Invited Professional Presentations

- *"Cosmos versus Canvas: Using Art to Reveal Science" with hands-on workshops:* Royal Military College, Kingston, Canada (2019), University of Cape Town, South Africa (2019), University of Western Cape, South Africa (2019), Ruhr University, Germany (2018, 2016), University of Zurich, Switzerland (2015), University of Ottawa, Canada (2014), ASTRON, The Netherlands (2014). This has also been delivered via *zoom* on the internet in 2018.
- *"A Constellation of Results from the Continuum Halos in Nearby Galaxies an ELVA Survey."* Oxford University, UK (2016)

Examples of Education and Public Outreach

- *Presentations:*
 - *“Cosmos versus Canvas”*
These talks on astronomy visualization are customised for each occasion. The audience ranges from a dozen attendees to a couple of hundred when live (and double that online).
 University of Manitoba Virtual Learning for Life Program (2020), Manitoba Museum Planetarium (2020), Royal Astronomical Society of Canada, Edmonton Chapter (2018); University of Zurich (2017); Modern Art Oxford (2017); Green Templeton College, U. Oxford (2016); 7.4 Limited, Oxford (2016); Wadham College, U.Oxford (2016); Rutland Astronomical Society, Oakham, UK (2016); Canadian Space Society, Winnipeg, Canada (2015). Also numerous presentations to visiting high school students.
 - *“Fundamentals of Imaging for Optimizing Graphics”*
 Fiege Collective, Winnipeg, Manitoba (2017);
 - *“Space Time Art!”*
 Leonardo Art Science Evening Rendezvous (LASER) Zurich (2018).
- *Engagement with the Public:*
 I was the astronomy columnist on the Canadian Broadcasting Corporation’s (CBC) high profile “Quirks and Quarks” radio show (2000-2002).
- *Media Examples:*
 - *CASCA/DIAA/CRAQ Discover the Universe on-line talk (2020)* to 8-12 year olds.
 - *The Intergalactic Space Travellers Journal, Episode 6* by TTG Music Lab.
 - *CBC TV News “Eye on Manitoba” Mar. 26, 2019*
 - *Voices from Oxford (2016) video of Cosmos vs Canvas — <http://voicesfromoxford.org/are-images-of-space-realistic/>, plus two followup interviews.*
 - *Several podcasts (e.g. 2019 South Africa “the cosmic savannah” <http://thecosmicsavannah.com>), google hangouts, TV and radio interviews (2019: CBC Radio One “Up to Speed” interview, FMR 101.3 South Africa “Looking Up”); image-making videos on YouTube (2009),*
- *Interviews for Articles:*
 “Fields of Dreams”, in SkyNews (2020); “Seeing Is Not Believing: Dr. Jayanne English talks visual grammar and the real art behind astrophotography” in “ARTpublika Magazine”, Vol. 12, The Art of Astronomy (2020), “The art and science of making images from space”, The Manitoban (2020); “Sketching the Stars: How Art Can Advance Astronomy”, in Undark (2019).
- *Interactions with artists:*
Emily Gong [We produced a collaborative installation with for the Bi-City Biennale of Architecture and Urbanism, Shenzhen Museum of Contemporary Art and Urban Planning] (2019); *Aleksandra Mir* [I provided a workshop and have an interview in her book for shows at Tate Liverpool and Modern Art Oxford] (2016); awarding-winning new music composer *Nicole Lizée* [I produced visuals and animations incorporated into “Collide”] (2015); on discussion panels with *AceArtInc* and the *Winnipeg Symphony Orchestra* (2015).

- *Press and Image Release Highlights:*

Some of these images have modest views (hundreds) since they are frontier images that are challenging for science media outlets. However others, that are promoted by NASA have more than a million views.

ASKAP-EMU “Odd Radio Circle 1” (2020); NRAO “Magnetic Field in Galaxy NGC 5775 -- HST/VLA” (2020; second prize winner in NRAO imaging contest) ; NRAO “Giant Magnetic Ropes in a Galaxy’s Halo” (2019); “NASA’s Fermi Satellite Clocks ‘Cannonball’ Pulsar Speeding Through Space” (2019)², “VLA Observatory Reveals Spectacular “Halos” of Spiral Galaxies” (2015); Surprising image of galaxy UGC 10288 and distant black hole with jets (2013); Hickson Compact Group 31: Interacting Galaxies Aglow with Millions of Young Stars (2010).

Portfolio website: <http://www.physics.umanitoba.ca/~english/astroimages.html>

- *Hubble Heritage Project:*

2000-2002 coordinated, authored website, guided visual direction, lead image-maker on some images.



Hickson Compact Group 31

Made for NASA from HST, GALEX and Spitzer data.



Cygnus Region Made for

CGPS from DRAO radio data & IRAS IR data.



CTB1 “Cannonball Pulsar”

Made for NASA from DRAO and VLA radio data & IRAS IR data

Some Favourite Publications

(* indicates that I supervised the author.)

Journal Articles:

English J. (2016). *Canvas and cosmos: Visual art techniques applied to astronomy data (An Invited Review)*. International Journal of Modern Physics D. 0(1730010): 53.

² As an example, this image had accumulated over a million views within a few months.

Wiegert T, Irwin J and 22 collaborators including English J. (2015). **CHANG-ES. IV.**³ **Radio Continuum Emission of 35 Edge-on Galaxies Observed with the Karl G. Jansky Very Large Array in D Configuration— Data Release 1.** *Astronomical Journal*, 150(3): 81-103.

*Wiegert T, English J. (2014). **Kinematic Classification of Spiral Galaxies.** *New Astronomy*. *New Astronomy*, 26: 40-61.

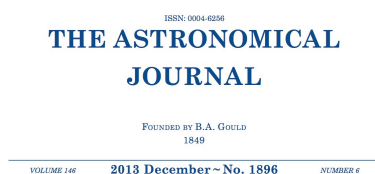
Mullan B, Kepley A, Maybhate A, English J et al. (2013). **Under Pressure: Star Clusters and the Neutral Hydrogen Medium of Tidal Tails.** *The Astrophysical Journal*. 768: 194-222.

Irwin, J, Krause, M, and English, J et al. (2013). **CHANG-ES. III. UGC 10288 -- An Edge-on Galaxy with a Background Double-lobed Radio Source.** *Astronomical Journal*. 146: 164-181.

Irwin J, Beck R, Benjamin R, Dettmar R-J, English J et al. (2012). **Continuum Halos in Nearby Galaxies: An EVLA Survey (CHANG-ES). II. First Results on NGC 4631.** *The Astronomical Journal*. 144: 52-64.

Irwin J, Beck R, Benjamin R, Dettmar R-J, English J et al. (2012). **Continuum Halos in Nearby Galaxies: An EVLA Survey (CHANG-ES). I. Introduction to the Survey.** *The Astronomical Journal*. 144: 43-51.

English, J., Koribalski, B., Bland-Hawthorn, J., Freeman, K. C., and McCain, C. F. (2010), **The Vela Cloud: A Giant H I Anomaly in the NGC 3256 GROUP**, *The Astronomical Journal*, 139: 102-119.



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³ I have contributed to several CHANG-ES papers including three in 2019 and two in 2020.

*Asgekar A, English J, Safi-Harb S, and Kothes R. (2005), ***A Search for Narrow Vertical Structures in the Canadian Galactic Plane Survey***, The Astronomical Journal, 130: 674-697.

*West J, English J, Normandeau M, and Landecker T (2007), ***The Fragmenting Superbubble Associated with the H II Region W4***, The Astrophysical Journal, 656: 914-927.

Rector T, Levay Z, Frattare L, English, J., and Pu'uohau-Pummill, K. (2007), ***Image-Processing Techniques for the Creation of Presentation-Quality Astronomical Images***, The Astronomical Journal, 133: 598-611.

English J, Norris R, Freeman K, and Booth R. (2003), ***NGC 3256: Kinematic Anatomy of a Merger***, The Astronomical Journal, 125: 1134-1149.

English J and Freeman K. (2003), ***Giant H II Regions in the Merging System NGC 3256: Are They the Birthplaces of Globular Clusters?***, The Astronomical Journal, 125: 1124-1133.

English J, Taylor A R, Mashchenko S Y, Irwin J A, Basu S, and Johnstone D. (2000), ***The Galactic Worm GW 123.4-1.5: A Mushroom-shaped H I Cloud***, The Astrophysical Journal, 533: L25-L28.

Conference Papers:

*Ferrand, G, English, J, Irani, P. (2016). ***3D visualization of astronomy data cubes using immersive displays***. arXiv:1607.08874. Canadian Astronomical Society (CASCAS 2016)

English J, Fiege J, *Wiegert T, Koribalski B, Kerzendorf W, Freeman K. (2010). ***The DiVA's Mask: Iconifying Galaxies and Revealing H I Anomalies***. Galaxies and their Masks. Galaxies and their Masks, Namibia (Springer). 105-111

Fluke C, English J, Barnes D. (2010). ***Visualization-Directed Interactive Model-Fitting to Spectral Data Cubes***. Astronomical Society of the Pacific Conference Series, Vol. 434. Astronomical Data Analysis Software and Systems XIX, Sapporo, Japan