Annual Report WGSN 2022

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WG Associates: Danielle Adams (USA), Doris Vickers (Austria), Yunli Shi (China)

WGSN Chair: Susanne M Hoffmann (Germany)
WGSN Secretary: Eric Mamajek (USA)
WGSN Etymology Task Group Lead: Doris Vickers (Austria)
WGSN IAU Websites:

- https://www.iau.org/science/scientific_bodies/working_groups/280/
- http://exopla.net/approved-star-names/

WGSN Email:

- starnames@exopla.net is forwarded to Eric and Susanne
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1. Summary of Terms of Reference

The IAU Division C Working Group on Star Names (WGSN) consists of an international group of astronomers with expertise in various fields of astronomy who research and catalog proper names for stars for the use by the international astronomical community and also to aid the recognition and preservation of intangible astronomical heritage.[2] WGSN maintains the IAU Catalog of Star Names.

The focus during the 2021-2024 triennium will be: (1) to continue an exhaustive search of star names from the cultural astronomy literature, (2) to adopt new IAU proper names for stars of scientific and historical value for community use following WGSN guidelines, (3) to provide relevant expertise to support other IAU efforts related to celestial nomenclature, including public naming campaigns (e.g. NameExoWorlds). Anticipated Outputs of the WGSN are (1) to maintain the IAU Catalog of Star Names (https://www.iau.org/public/themes/naming_stars/) and assist the IAU with maintaining its web content on celestial nomenclature, (2) to add etymological and ethnological information to the IAU Catalog of Star Names in the interests of further preserving astronomical heritage, (3) to construct a new supporting list or name bank of names for stars and associated asterisms which is culturally and geographically diverse, (4) to

[1] deceased.
[2] https://www.iau.org/science/scientific_bodies/working_groups/280/.

refine WGSN guidelines for the proposal and adoption of names for stars. This annual report covers activities during 2022 and early 2023.

2. Business Matters

WGSN members were deeply afflicted due to the loss of our dear member Jay Pasachoff in 2022. Jay was a strong supporter of getting the WGSN chartered in the wake of the first NameExoWorlds campaign in order to clarify IAU policy on star names, and was one of the WGSN's founding members in 2016. The New York Times printed[3] an obituary on Jay's remarkable life and career. He shall be sorely missed.

After discussing various options, the WG agreed to migrate internet content for WGSN to a new site https://exopla.net/star-names/ maintained by WG chair Susanne Hoffmann. The products for several of the WG's activities were posted there (described below).

The only new star names added to the IAU list of star names[4] in 2022 were previously reported in the 2021 annual report (Geminga and Rana). Additional names which raised questions about standards for WG adoption of new IAU star names resulted in further discussion, but shelving votes on any further proposals during the year. Rather than focus on adopting additional IAU star names in 2022, WG members continue the ongoing activity of researching names of star names and asterisms from around the world.

3. Update on WGSN Activities

3.1 Etymologies: Star Names

Doris Vickers (chairing the Etymology Task Group) led the creation of a table compiling etymologies for star names that had been previously adopted by WGSN. For each star name, info on the etymological roots, ethnic/cultural group, country or language (e.g. Latin, Arabic, fictional, etc.), references (where more information about a particular star name can be found or where this star name has been mentioned first), approval status and approval date is given. This table is now available on our website and information is continuously being added and updated: http://exopla.net/star-names/modern-iau-star-names/

3.2 Etymologies: Constellations

Susanne M Hoffmann surveyed the history of constellations and collected the meanings of constellations as of interest to answer public requests (e.g. for naming stars after beloved people: the IAU can't do this for each individual but we can tell people that there are constellations dedicated to love and admiration as general concepts since millennia). This content was posted to https://exopla.net/.

[3] https://www.nytimes.com/2022/11/20/obituaries/jay-pasachoff-dead.html.
[4] https://www.iau.org/public/themes/naming_stars/#n4.

3.3 IAU Website Content on Star Names and Constellations

- *Updates to IAU Star Names Website*: The OAO requested that WGSN update the IAU website "star names" which we did as a group activity in April/ March 2022 (all group members involved). Ian Ridpath, Javier Mejuto and Susanne Hoffmann also contributed to the new version of the page for "constellations."

- *Updates to IAU Website Description of Constellations*: While the IAU has official constellation *names*[5] (nominative and genitive forms, and three-letter abbreviations), the *descriptions* of those constellations are unofficial. The IAU has posted descriptions of the constellations on their website for many years, however some have noted that some of the descriptions were dubious or could be improved. Rob van Gent made two suggestions to change official English translations of the Latin names. Pyxis and Circinus, both had been translated as compass and he suggested translating them as "mariner's compass" and "drawing compass", which was accepted. The announcement of this change caused some more group members to join the discussion on proper translations to English. In a virtual group meeting it was decided that Ian Ridpath, Rob van Gent and Susanne M Hoffmann form a task group to review the historical descriptions and propose short descriptions to be posted on the IAU website (through the OAO). WGSN agreed upon the following changes:

Updated	**Previous**	**Notes**
Andromeda, the Princess	The Chained Maiden	The "chained maiden" causes more questions than it helps, it refers to a specific variant of mythology that is unknown in most parts of the world, while "the princess" is a general concept connected to the "heavenly family" of queen (Cassiopeia), king (Cepheus) and daughter (Andromeda).
Cassiopeia, the Queen	The Seated Queen	The specifier is redundant.
Berenice's Hair	The Bernice's Hair	Typo
Hercules	The Hercules	Article dropped as it is a proper name for a mythological hero.
Dorado, The Dolphinfish	Swordfish	Swordfish is definitely wrong: it

[5] The original IAU texts on constellation names from the 1920s (Transactions of the IAU, Vol. 1, p. 158, as adopted by 1922 IAU resolution) are hard to find, but are summarized in a website maintained by Ian Ridpath (http://ianridpath.com/iaulist1.html). A modern version of the table of names and abbreviations appears in Table 11 of The IAU Style Manual (1989) https://www.iau.org/static/publications/stylemanual1989.pdf.

		is neither a translation of the Latin word nor biologically correct. The original term from de Houtman 1603 is Dorado which refers to the same being as “dolphinfish” (*Coryphaena hippurus*) versus swordfish (*Xiphias gladius*): dorado has fishbones, swordfish has bones.
Horologium, The Pendulum Clock	The Clock	Original description from Lacaille was for a specific type of clock, an invention of the Early Modern Age[6]
Hydra, The Water Snake	Female Water Snake	The attribution of sexes was made 1.5 centuries after the invention of Hyi and was not common in literature in recent centuries.
Hydrus, The Lesser Water Snake	Male Water Snake	
Norma, the Set Square	Carpenter’s Square	The literal translation would be “the measure” and Lacaille dedicated it to the art of technical drawings; the original depiction shows a set square.
Reticulum, the Net (an instrument)	The Reticle	The literal translation of the Latin term is "Net" (see OLD) but without explanation, this could be misleading: Lacaille did not mean a fish net. His term and description in French is: “Le Réticule rhomboïde, petit instrument astronomique qui a servi à dresser ce catalogue: on le construit par l'intersection de quatre droites tirées de chaque angle d'un carré au milieu de deux côtés opposés.” Mémoires 1752, four years before the star chart was published. He describes how to construct a rhomb or diamond on paper and he does not explicitly state how

[6] http://www.ianridpath.com/startales/horologiumlacaille.html.

		and for what purpose he uses it. In Susanne's view, his original depiction does not look like a modern eyepiece reticle while Ian and Rob claim the opposite. As there is no consensus, we stick to the literal translation of the Latin term but consider it polite to give an explanation in parenthesis that he did not mean a fish net.
Argo ● Carina, the Ship's Keel ● Puppis, the Ship's Stern ● Vela, the Ship's Sails	The Keel The Stern The Sails	Argo (Arg) is one of the official abbreviations ratified in 1922 and still occasionally used by historians of astronomy. For the three constellations that form parts of Argo, we recommend showing their connection in the translation.

4. Further Problems / Tasks

4.1 Method and Content

We identified some critical questions on how to continue our naming suggestions.

- There is space in the etymology table[7] (called "additional info") to provide broader context about specific star names (e.g. if a star name officially is spelled in Latin, but is just a translation or loanword from Ancient Greek or if a star name is not grammatically correct Latin - as in the case of Parumleo).
- There were some cases of star names identified as "problematic" in this list (due to their various etymologies, e.g. for political reasons). This is recognized as possible earlier mistakes but not changed. It will be kept in mind as "lessons learned" for future namings.
- Eric Mamajek drafted a scoring system with multiple axes for comparing the relative merit of names proposed for adoption by the WGSN. However, further deliberation on the proposal was shelved until 2023.

4.2 Technology

Last year, it was decided by the WG to collect star names in a database. Therefore, several attempts have been made to host this database professionally.

[7] https://exopla.net/star-names/modern-iau-star-names/.

- Ancient Skies (ancient-skies.org) has been hosted privately by an Austrian amateur astronomer but the business he ran has been closed. Therefore, we are looking for alternative hostings as the current one is only temporary.
- As such questions also concern other groups in C.C4, a request was made to the IAU headquarters in Paris. After some months, it was found out that Paris does not have the capacity to host anything. The IAU data is hosted at ESO headquarter in Garching but this is only administrative data and no scientific data.
- Another request to the OAE that is based at the House of Astronomy in Heidelberg is currently under discussion. As this year's IAU astrophotography contest had the topic "historical and indigenous constellations" this is somehow suggestive to collect their and our material together. Nevertheless, a day before the submission of this report they replied that they won't have the capacity for this.
- We now consider setting up a draft locally on a university webspace and then make it permanent in a webarchive like Internet Archive or/ and Zenodo.

4.3 Discussion on naming stars after people:

The topic of whether to include star names based on the names of people has come up for debate multiple times in the WGSN. While several instances of historical star names based on the names of people (typically discoverers) which are in common use were proposed for the IAU Catalog of Star Names, opinions have varied widely about the standards for including such names or whether to include them at all.

- **Triggered our thoughts anew:**
  After reviewing some controversial cases from the last IAU NameExoWorlds public naming campaign, the 2022 NameExoWorlds campaign committee (which included members of IAU EC, WG Exoplanetary System Nomenclature, OAO, and was co-chaired by WGSN member Eric Mamajek) decided on the following exclusion for *new* proposals for names of exoplanets and their host stars: "*Names of real people, living or dead, or things or places named wholly or partly for people, should be excluded*." The exclusion was specifically written for the 2022 NameExoWorlds campaign and should not be interpreted as expressing disapproval for the proposal and adoption of eponymous names indefinitely, or representing IAU policy, or even WGSN policy.
- Due to external requests from the public, there was also an exchange on this topic between the IAU Gen Sec, OAO and WGSN chair. The crucial question: Should it be possible to name stars after humans *at all*.
  - i) PRO we have names like "Barnard's Star" in our list. These names were not invented by us but developed in the community and are common for many decades. So it should be possible to name stars after astronomers who made an important discovery about or with this star.
  - ii) CONTRA we don't want to express any political statement but leave the sky as neutral ground where astronomers can collaborate (independent of their political orientation and even when their states make war or cold war). Therefore, we don't want to name stars after political figures.
  - **iii) BUT**
    What if an astronomer is a political figure? (e.g. Ulugh Beg was a political leader)

If we allow it in principle, the IAU should check all biographies of astronomers suggested: who should do this and who is neutral enough to judge unemotionally and rationally?
What criteria should we apply (is it possible to identify common ones for all the world)?
Isn't it selfish when astronomers accept only the names of astronomers in the sky?
And who is an astronomer (observational/ computational/ historical astronomy - science vs. humanities-debate)?

State of Discussion:
Consensus:

1. Trying to define who is worthy, a-political, non-controversial, and gathers support and consensus across time (especially in future-time) is impossible.
2. We want to increase the diversity of names.
   Goal: giving people around the world the feeling of being welcomed and that they and their (cultural) context matter.

Handling

1. Up to now, the WGSN chair - when getting requests from the public to name stars after admired people - typically a) refers to the according constellation (e.g. of brotherly love or love in a marriage…) for the very personal requests, and b) refers to the option of naming asteroids and craters on the Moon after personalities.
   For the time being, we will continue this way.

After having the list of etymologies almost completed in February 2023, WGSN again discussed the naming of stars after people - now with the question if we should rename the stars that are already named in the “official IAU list”. We identified six eponymous or otherwise controversial names in the current list (like the astronomer’s name “Copernicus” or the author’s name “Cervantes” from naming campaigns). In most cases, there would have been alternatives to support the national interests of using a piece of the culture into the sky and still not using the name of a person, e.g. by using the title of the book or the main character as it was done in the Dutch proposal (“Sterrennacht”, the name of the painting, instead of “van Gogh”, the name of the painter). The consensus in the oral discussion in the WGSN meeting was that renaming would look like “white-washing” history and would cause unnecessary confusion. The names given by the IAU during the past few years should also now be considered “historical” and they witness the process of defining criteria.

2. Consequences: even if we shall not name stars after people in the future (to honor people, there are craters of the Moon and asteroids), we will not change the namings of the past. They are considered historical even if only four years old.

5. Other Activities

WGSN chair was invited to join the jury of the IAU photography contest because they aimed at "*heritage in the sky*", namely indigenous constellations. We hope that the results of this contest, i.e. several photographs of constellations from all over the world, will later be useful for the WGSN as a group or for its individual members (listed under publications).

6. Publications

Group contributions to IAU content

- New WGSN website on star name etymologies: https://exopla.net/star-names/modern-iau-star-names/
- IAU website on Star Names: https://www.iau.org/public/themes/naming_stars/ (we as a group wrote a new introduction)
- IAU website on Constellations: https://www.iau.org/public/themes/constellations/ (several group members helped writing and editing the text)
- IAU Astrophotography Contest 2022 (topic: cultural heritage): https://www.iau.org/news/announcements/detail/ann22042/ (SMH edited all and wrote many of the image captions)

Books by WGSN Members

- Hamacher, D.W. with Elders and Knowledge Holders (2022) The First Astronomers: How Indigenous Elders read the stars. Allen & Unwin

Hoffmann and Wolfschmidt, eds. (2022): Astronomy in Culture – Cultures of Astronomy. Proceedings of the Splinter Meeting in the Annual Meeting of the German Astronomical Society, Sept. 14-16, 2021., series: Nuncius Hamburgensis 57, tredition, Hamburg & OpenScienceTechnology Berlin (cBook) … with contributions by

- Jessica Gullberg and Steven R. Gullberg on painting Babylonian constellations: the development of artwork for Babylonian constellations in Stellarium.
- Steven Gullberg on Inca astronomy
- Susanne M Hoffmann on "multiple Greek sky cultures", historical development of the so-called "Greek" constellations, intercultural misunderstandings as trigger of transformation of constellations and star names, the identification of the circular zodiac of Dendera with Babylonian uranology and as an attempt in Roman-reigned Egypt to combine multiple cultural influences, new interpretations of the Nebra Sky Disc, …
- B.S. Shylaja and Venketeswara R Pai, 2022, *Star names in Indian Culture – a search leading to their evolution,* in Astronomy in Culture – Cultures of Astronomy, Eds Susanne M Hoffmann and Gudrun Wolfschmidt, tredition, Hamburg, pp 349-358
    - Study of star names from catalogues of medieval period (with Dr Venketeswara R Pai and Dr B S Shubha). Many Sanskrit catalogues had to be rediscovered in the context using the astrolabe. We found one with a long list of not only names, but

the coordinates and magnitudes too. These were written down in Sanskrit as coded words and we decoded them to extract the details. In all 106 stars were found. We also noticed that some of these names were eventually forgotten; they earned new names as literal translations of the European names – a clear case of colonial influence.
    - We came across an unusual application of the 28 stars of the zodiac. By observing the star which is one the meridian one could find the ascendant. This is the longitude of the point on the ecliptic which is just rising in the east. We decoded the verses to extract the numbers and found that they have incorporated the correction for latitude and the obliquity.
- Doris Vickers (with others) on the attempts to collect historical star names, constellations and other cultural information in a knowledge base
- …and including a paper edition of the currently ~40 Stellarium sky cultures (to provide a printed reference) by global contributors as of March 2022: there are further ones added in the meantime.

Talks (Public / Conference) on star names by WGSN members:

Adams

- Apr 13, 2022. Flagstaff Astronomy Symposium. "As the World Turns: Arabian Skies in Motion." (Talk)
- June 13–16, 2022. American Astronomical Society. “From Diving Eagle to Alighting Vulture: The Origin of Vega in Arabian Astronomy.” (iPoster)
- Sep 15, 2022. Communicating Astronomy with the Public. Indigenous Astronomy panel (virtual).
- Sep 20–23, 2022. Inspiration of Astronomical Phenomena. “Rising Star Paradigms: Encoding Seasonal Times in Arabic Saj’a Rhymes.” (Poster)
- Oct 26, 2022. Flagstaff Astronomy Symposium. "Rising Star Paradigms: Encoding Seasonal Times in Arabic Saj’a Rhymes." (Talk)
- Oct 31, 2022. Oxford XII Conference on Archaeoastronomy and Astronomy in Culture. “When the Scorpion Rises: Evolutions of Arabic Rhymed Prose for Seasonal Forecasting.” (Talk)

Hamacher

- 11 book presentations: “The First astronomers”:
  Talks: 24 Feb 2022: National Radio Astronomy Observatory (USA), 18 Jun 2022: Townsville Writers Festival (Australia), 03 Nov 2022: University of La Plata (Argentina),
  Seminars: 21 Sep 2022: University of Edinburgh (Scotland), 17 Jan 2023: University of Cologne (Germany), 10 Feb 2023: Max Planck Institute for Astronomy (Germany), 28 March 2023: University of Iceland (Iceland)
  Public Talks: 13 Apr 2022: Astronomical Society of Victoria (Australia), 28 Aug 2022: North West University (South Africa), 23 Nov 2022: recorded Arthur and Hilda Winch Annual Lecture, University of Sydney (Australia)
  Public Keynotes: 22 May 2022: Queenscliff Literary Festival (Australia), 12 Aug 2022: Canberra Writers Festival (Australia)

- 15 Nov 2022: Heidelberg University (Germany), "Meteorite Impacts and the End of the World" (Public Lecture)

Hoffmann

- July 2022, commentaries on astronomy at conference "Meteorology beyond borders", Utrecht, July 06-08 2022, among them: "Change in the cult of Demeter - Change of constellation Virgo".
- Sept. 19, 2022, Planetarium Jena, Intercultural Transformation of Ancient Constellations. MUL.APIN and the Nebra Disc - A Comparison of astronomical frames of reference.
- Sept. 21 ,2022, Planetarium Berlin, An Introduction to Ancient Skies: fulldome presentation of some phenomena of ancient astronomy,
- Sept. 22, 2022, Visualizing Ancient Skies: Transfer and Transformation of Astronomical Knowledge. IMAGINING THE SKY: Zodiac and related astral imagery in the ancient world. Free University Berlin
- Sept. 25-26, 2022, Nile University, 6th October City, Cases from Astronomy: Research Data Management Workshop
- Oct. 28, 2022, Planetarium Jena, *'l volger del ciel* - Dantes Sterne, Annual Meeting of the German Dante Society.

Shylaja B S

- RV Pai, BS Shylaja, 2021. From Nadyantaka to Paus n a: compilation of stars catalogued in Sarvasiddhantaraja - JOURNAL OF ASTROPHYSICS AND ASTRONOMY, vol 42, issue 2
- RV Pai, BS Shylaja, 2021. Investigating the astronomical histories of India and Southeast Asia: the role of stone inscriptions. In Orchiston, W., and Vahia, M. (eds.), *Exploring the History of Southeast Asian Astronomy: A Review of Current Projects and Future Prospects and Possibilities*. Cham (Switzerland), Springer. Pp. 653-672.

Public Talks (examples):

- Adams, Feb 11, 2022. International Day of Women in Science (virtual). https://www.youtube.com/watch?v=O_mkozSrzvs
- Adams, Sep 17, 2022. Meet a Cultural Astronomer (in-person sky tours at Lowell Observatory).
- Adams, Oct 25, 2022. "Stars on the Astrolabe." Astronomy on Tap, Flagstaff (in-person talk).
- Shylaja B S, Inscriptions and Evolution of calendars in South Asia, Symposium on Calendars in Asia and Oceania, Proceedings in Publications of the Anthropolgical Institute, Nanzen University, 2021
- Shylaja B S , Scanning the sky with ‚scanner', Golden Jubilee Celebrations of the 40" telescope, December 15, 2022
- Shylaja B S, Jan 12, 2023, Development of Astronomy in India in post medieval period, Indo-French CEFIPRA Astronomy Meeting (IFCAM)-III January 12, 2023 https://www.youtube.com/watch?v=4Z8bvq3qeac

Some short videos and podcasts to cover historical aspects

- Star Stuff: A Space Poddity (podcast). https://lowell.edu/2022/12/20/learning-science-through-historic-literature/
- Indigenous astronomy in Mer (Torres Strait, Australia). https://www.youtube.com/watch?v=7kpr3mwf8AI
- The First Astronomers: https://www.youtube.com/watch?v=fVjG2f2-SRY