

Interview with a comet-hunter



Alan Hale, PhD, achieved worldwide recognition when Comet Hale-Bopp whooshed through the skies in the early months of 1997. But Hale's contributions are not limited to the co-discovery of the most widely-viewed comet in history. He has studied extensively the threat posed by near-Earth asteroids and the detecting

of planets around other stars. Hale is an outspoken advocate of improved science education and is pushing for an expanded human presence in space. Hale, who was born in Tachikawa, Japan in 1958, is the author of the acclaimed book *Everybody's Comet*. *Nepali Times* spoke with Hale about his wide-ranging career and how Nepal could develop astronomy education.

Nepali Times: How did you get into the field of astronomy? What inspired you to become an astronomer?

Alan Hale: I first became interested in astronomy when I was about six years old. My father checked out some books on astronomy from the library and handed them to me, to see if I might be interested. Turns out, I was. This was in the mid-1960s, during the Apollo 'rush to the moon', and I became inspired me to study astronomy and space. Later I



STAR GAZING
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had the opportunity to work at the Jet Propulsion Laboratory as a contractor for

the Deep Space Network [until 1986], and was involved in several space projects, most notably the Voyager 2 encounter with Uranus. This reawakened my long-time desire to pursue a career as a scientist.

What was your most exciting moment in stargazing?

This would have to be discovering Comet Hale-Bopp in 1995 and then seeing it. Some other spectacular, memorable sights I've seen include other Great Comets—Bennet, West, and Hyakutake—and seeing Comet McNaught last month in the daytime was quite a treat. The six total solar eclipses I've seen, and the January 1992 annular eclipse that happened at sunset, rank high on my list of favourite sights. I witnessed the great Leonid meteor storm of 1966, and the 1998 Leonid shower, with its many bright fireballs, was also quite impressive.

What key issues in astronomy are you now engaged in?

Some of the things I'm interested in include the hunt for objects that might threaten Earth (i.e., comets and asteroids), and also the role these objects may have played in the formation of the planets—and what resources they might contain for future human use. I'm also rather interested in the 'transition' between comets and asteroids, and the relationship between these two types of objects.

Highlights in April

Venus continues its brilliant show in the western sky after sunset and is near the famous Pleiades star cluster from 10-12 April. Saturn is prominent and at its highest point between 8-9PM all month. The predawn scene will start to get lively, with Jupiter at its highest point each night before daybreak. The Moon meets Mars during the early morning hours on the 14 April. Also enjoy watching—through binoculars is best—the reddish Mars and faintly green Uranus in close conjunction on 30 April an hour before dawn. The Lyrid meteor shower peaks on 22 April.

The search for planets around other stars is now a heavy observational field. I haven't done too much work in this field in recent years, but hope to get back to it soon. I'm especially interested in planetary systems that might have habitable planets like Earth, and the conditions that might be necessary for life to develop on these worlds. I'm also interested in spaceflight, particularly in advancing commercial human spaceflight and eventually creating a spacefaring future for humanity.

The hunt for Earth-threatening objects, and the search for planets around other stars, are 'hot' items right now in astronomy. Other areas include the age and evolution of the universe, the nature of 'dark matter' and 'dark energy,' and the nature of gamma-ray bursts. There is also a lot of interest in spacecraft missions to the planets and other bodies of the solar system.

How can countries like Nepal get ahead in astronomy?

One doesn't need much in the way of expensive equipment to study the night time sky. If schools could be provided with binoculars and/or small telescopes, that would greatly help science education, and create interest in science amongst some of the students.

Science education would be greatly facilitated by access to remote telescopes and government investment in computers and internet technology so this equipment is available to as many students as is practical. Locating one or more such telescopes in Nepal (for example, working with private groups that are building networks of them) would further help.



Can astronomy be used to promote peace?

We all see the same sky at night, regardless of where we are on Earth, and this connects us all. Realising this, together with other things astronomy teaches us (like how small Earth actually is compared to the universe as a whole, and images of Earth taken from space) is a large step towards understanding that we're all in this together.

International collaboration, such as via the telescope networks, can help enormously to create environments where students from various nations can work together. Participating in international conferences and travelling to watch events like solar eclipses allows students to interact with people from other countries, and creates a solid foundation for communication and understanding.

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MARK TURIN

A mother of mother tongue education

MARK TURIN

"I hope members of different language groups may attend such a workshop and produce a book in their mother tongue. That way they motivate others to learn to read and to keep reading", says Noriko Matsuura, in the gentle but animated manner that is her trademark.

Noriko, or Nori for short, first came to Nepal in May 1996 as a member of SIL International. She first worked with the Research Centre for Education Innovation and Development at Tribhuvan University (CERID) and the Department of Education, and presently runs Mother Tongue Pipal Pustak. Matsuura is also a visiting scholar from Sophia University in Tokyo, attached to the Linguistic Institute for International Communication.

In 1997, when Matsuura was working on one of the Rai languages spoken in eastern Nepal, members of the community became interested in having translations of the Nepali language Pipal Pustak books in their own language. Pipal Books was developed by the non-formal education support office of the United Mission to Nepal to support literacy by easing the transition from oral communication to the conventions of print. Starting with only four titles, by 2002 Matsuura had already organised for sixteen different story books to be translated into eight of Nepal's ethnic mother tongues.

The next step was to provide a structured framework for people to write narratives in their mother tongues rather than simply translating stories from Nepali. With this in mind, the first Mother Tongue Pipal Pustak workshop was held in 2005, at which members of four language communities were given two weeks in which to write a book in their mother tongue based on their own life experiences.

Some basic agreement about orthography must already exist for the production of a story book to be worthwhile, limiting participation to speakers of languages with a written form already under development. However, we should not forget that most written systems are standardised by and through use, and not by committee, so having a diverse set of printed materials in circulation is an important first step in the often long process of standardisation.

In the yearly January workshop (planned at a quiet time in the agricultural cycle), the fledgling authors formulate written texts from oral narratives drawn from their own lives under the supervision of trainers. With an artist, a graphic designer and computer staff on hand, each participant creates a dummy book for field-testing. After revisions and edits, 500 copies of each book are produced and sold to the author at a reduced rate, which they are then able to sell on for a few extra rupees.

Alongside the mother tongue story, each book also contains summaries in Nepali and English, and a short author's biography. To date, thirty Mother Tongue Pipal Pustak books have been produced in nine different languages. Deeply committed to mother tongue education and to the sustainability of Nepal's endangered speech forms, Matsuura would like to train more Nepali facilitators so that they can run workshops in villages, and not require participants to come all the way to Kathmandu. ●