

ELECTRONIC MAIL & GUARDIAN

Johannesburg, South Africa. March 17, 1998

-
-
-
-

From a Karoo hill, we move closer to the mind of God



Mirror, mirror: Part of the telescope at Sutherland

TECHNOLOGY

A small 'sacred city' in the Karoo is South Africa's window on to the universe, writes

RUBEN MOWSKOWSKI

ONE gets to the South African Astronomical Observatory (SAAO) at Sutherland by driving up the N1 from Cape Town until the ground becomes dry and flinty and the bushes sparse and then, after about three hours, you turn west.

Driving inland I say to my friend John, who has accompanied me: "Just imagine, in the old days, some young woman, let's call her Olive Schreiner, living for years in this remote dry place staring day

after day into lonely emptiness with the only company being the sheep and the odd farmworker and a visit maybe on Sunday to the church in town. And then one day a guy like you turns up in the town and the two of you meet."

John, you see, is going to stay in Sutherland while I visit the observatory and I'm trying to encourage him.

From the distance, Sutherland, with its church spire pointing up at the heavens, corresponds to the archetype of the sacred city. The world is only several thousand years old in such a town and there is not a sinner that does not feel that he or she is being closely observed. The result is that very little happens. I've heard that the place is so quiet you can hear a clock on

someone's mantelpiece ticking as you walk down the main road. The welcome sign as you enter says: "Be prepared, be polite, be patient." Sounds like they're *gatvol* of visitors or maybe still smarting from the memory of their trekboer forerunners having been driven out by the local San in 1750.

We cruise up and down a few streets without seeing a car. John buys himself a litre of scotch and checks into the local hotel promising to give me the lowdown on the town the next morning. I take a left to the observatory where they say, apparently without causing any major conflict with the church, that the universe is 15-billion years old.

I have wanted go to Sutherland ever since I heard about the silence and saw photographs of the futuristic aluminium-slatted observatories on the hill. In a classic JG Ballard science fiction story, *The Voices of Time*, an astronomer suffering from chronic insomnia detects a numerical countdown coming off a distant pulsar. These days the talk is more about UFOs and alien abductions. UFOs, for some reason, are never sighted by astronomers: mostly it's people having coming home from a night braai on the edge of town in the back of a bakkie. Astronomers don't seem very abductable.

I had given John a spare set of car keys just in case.



Southern eyes: The observatory at Sutherland monitors the stars visible from our hemisphere

The complex looks like it comes straight out of the Ballard story: low-slung building, wide roads, no sign of people. Inside we are back in our past. On the wall, a plaque with the names of John B Vorster and Margaret Thatcher. This place is a museum of dour people and the forbidding patriarchal years - a mix of Calvinism and British Admiralty, now with its sting removed, strangely anachronistic.

Reams of books and academic journals line the walls. Astronomy turns out paper at an alarming rate. For a start, the numbers are huge. Some (for instance, the size of the universe) would take a million books to print if they were not presented in algorithms. Nevertheless, when you are counting photons and the telescope is dumping figures into a computer every 15 minutes, a lot of data is being accumulated.

Up on the hill is where science happens - where the stars sing. The only problem is there are clouds. The brochure says that it's clear or partly clear 75% of the year. I arrived during the 25% that it isn't. What do astronomers do when it's overcast? I spend the evening talking to Dr Robert Stobie, the director of the SAAO, about the new telescope.

It goes by the very earthbound acronym of Salt (Southern African Large Telescope). Why not a San name, I wonder? After all, the word Karoo is a San word meaning dry land. These people who occupied this land for hundreds of thousands of years had intimate knowledge of the stars, and the skyscape provided them with both calendar and direction. In those times every adult and child would have been familiar with the cosmic display, the positions of the sun, the phases of the moon. Today it is generally left to the astronomers - professional and amateur.

Stobie, himself a practising astronomer, points out that as a southern hemisphere country, we are able to make observations that are impossible from the northern hemisphere. Moreover, because there is much less landmass in the southern hemisphere, an observatory in South Africa is a vital link in any continuous tracking procedure involving observatories in, say, Chile and Australia.

For these reasons and, because we have excellent weather conditions and technical skills, the observatory has been for many years one of the most important in the southern hemisphere. South Africa is now faced with the necessity of either upgrading its 1,9m telescope or obsolescence. The proposed new optical and infrared telescope with its 10m mirror will be the biggest in the southern hemisphere and will secure South Africa's place in astronomy well into the 21st century.

The telescope will be horizontally but not vertically manoeuvrable. Since the stars rotate in an arc over the sky it will be possible to see 70% of them at some time of the year. This means that observations will be cued to coincide with the appearance of a particular star. Technicians will run the facility, and e-mail data to astronomers all over the world who will view the star on their computer screens in their own time.

If, like me, you harboured a romantic notion of the astronomer peering through his eyepiece at the stars, I'm going to have to disappoint you. At the end of any reasonable size telescope is a detector that captures data. For example, it counts photons or uses a CCD camera to record images. One reason one would use a CCD camera rather than the naked eye is that a camera can place a 10-minute exposure on tape. The astronomer (or technician) spends the night in front of a computer monitor in a small room adjacent to the telescope which he or she checks and - in the case of the smaller ones - manually adjusts.

This is no cushy job. We are talking about an 11-hour stint at -15oC in winter with snow sometimes covering the ground and no heating allowed as that would cause a distortion in measurement. Add to that the fact that the dome is in darkness, and the need to make sure that the mechanism does not go too far and bump into something, and you have a pretty demanding job. One important piece of equipment among all the computers: a stereo system. Apparently the domes have excellent acoustics and music does not disturb the stars.

Thebe Medupe is a 24-year-old doctoral student in astrophysics who likes to play jazz saxophone in the observatory dome at night. I spoke to him on the roof of the astronomy faculty at the University of Cape Town. He believes the new telescope will encourage young people to study science and foster communication among scientists in Africa, but he complains that in schools a European perspective of the history of astronomy implies that black people were unaware of the stars.

This is not the case. Africans had a lunar calendar and used the stars as a calendar and for navigational purposes. Medupe favours the idea of students researching oral history in the villages to establish the astronomical

RELATED ARTICLES

- [The stars are younger than the universe](#) April 1997
- [SA astronomer proves universe is even bigger](#) February 1997

CYBERSPACE

- [South African Astronomical Observatory](#)
- [Astroweb](#)

knowledge of elders who can still remember. If you reduce the inclusion of astronomy to a folklore by describing mythology and ignoring practical uses, you are demeaning the people, he says.

He proposes that a lunar calendar be presented in schools alongside a modern calendar and that the practical uses of astronomy, both historical and current, be taught as well as the abstract concepts. Our ancestors, he says, used to observe the stars and practise astronomy in the same way as the Greeks.

It was time to take a look at Timothy Ferris's book, *The Whole Shebang: A State-of-the-Universe(s) Report*, which I bought to educate myself on astronomy. Once started I could not put it down. It has the stamp of great writing - the ability to convey complex ideas in simple language. It explains all the current theories of the nature of the universe. Even string theory, the idea that the physical world is nothing other than six collapsed higher dimensions, becomes clear.

Read this book and I am sure you will agree that it is worth us spending that R50-million (our share of the telescope's cost - the rest will come from overseas). It is after all an enterprise that is taking us closer towards what Stephen Hawking described as "the very mind of God". I can't help feeling that even the predikant down the road from the observatory in Sutherland would support the endeavour. It is a search in which mysticism and science join, which is impartial to culture, religion or ideology because it seeks only truth. Whatever comes out of it goes not just to one person, or one country, but to all the world.

Finally, I assume you will want to know what happened to friend John. Well, he didn't meet Olive Schreiner, in fact, he was the only guest in the hotel. He drank a lot of whisky and as there was not much I could tell him about the stars (I didn't see any) I couldn't very well complain about him having nothing to report about Sutherland.

Next time I will go there with Medupe. I want to hear *Stella by Starlight* played on a saxophone on a hill under a Karoo sky. Seems like, what with black holes and dark matter appearing all over the place, there's a bit more to cosmic structure than meets the eye. As Ferris says, "It may well turn out that over there - or more properly, inside out and underfoot, marbled through the very fabric of the space that is in turn marbled through every material object - the universe remains as it was in the beginning when all places were one place, all times one time, and all things the same thing."

Reflecting on this helps one not to take oneself too seriously. -- *Mail&Guardian, March 17, 1998.*

[HOME](#) [CONTENTS](#) [ENTERTAINMENT](#) [ZA*NOW](#) [JUMP*START](#) [MADAM&EVE](#)
[TRAVEL](#) [PCREVIEW](#) [CYBERGUIDE](#) [WEBFEET](#) [LETTERS](#) [BOOKS](#)
[DEAR WALTER](#) [FIND A JOB](#) [ARCHIVE](#) [WHO WE ARE](#) [HELP!](#) [EMAIL US](#)

