

## Journal - Around the World in 79 days - Spring 2013

### Part 9: Delhi Ending 25 April - 10 May: hotter and hotter...

**Saturday-Sunday, 27-28 April:** Definitely hot here in Delhi, temperatures reaching around 106 F in the afternoons, but fortunately dry and low humidity, despite the sun only peaking through the constant haze. It is no wonder that the English families fled to the hills (eg Mussoorie) those many years ago. The natives laugh and say next month is hotter - 45 to 50 degrees C - that



*IUAC Director's house - many of these trees scattered around the lab*

translates to above 110 F, and the coming of the monsoon makes it humid too: TG for the AC (in the lab and lodging) as one of Mary's relatives used to say.

My weekly atomic physics class was shifted from Thursday to Saturday morning (10 to 12:30) so rather than take the usual trip downtown in the hot afternoon, I stayed home and worked. Sunday, however, my Darwinian philosophy called - the need to get away and be refreshed - there are two museums more or less downtown, quite close to each other, between India Gate and the Yamuna river: the Arts and Crafts and the Science Museum - no-one I talked to at the lab seemed to have visited either, and the guidebooks said almost nothing about them, so



*The museum guards*

who knows what an expedition might find!

It was a bit of a walk from the metro station to the Arts and Crafts museum - near the Gandhi memorial and the Supreme Court buildings; getting there about 11 am found almost nobody there, including no ticket collector at the entry booth: just a guard with a gun saying no photos. This turned out to be another of those empty Indian threats - once inside the museum itself, despite the signs, the guards did not seem to care about photograph taking (see the photos here...). It turned out to be an incredibly interesting museum, both inside, with lots of historical objects, and outside, where a whole village is set up with buildings and transport vehicles of all ages from all over India, plus a



*Cloth and wood chariot*

little street market where artists are sitting around selling their wares (much like a miniature version of the square at Santa Fe, but at Indian prices). As I wandered through the museum, gradually more tourists appeared, but never crowded; there



*GEB's new car*



*Car closeup*



*Village transport*



*Mobile home - locker in front part*



*Chicken house - 3 coops in one*

was a really nice display of masks, and another display of materials, showing India's

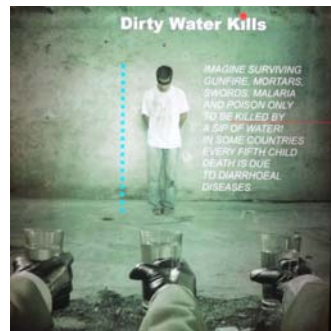
long history of patterns in cotton. The outside village was empty apart from a couple of artists making drawings, but some fascinating old carts - again, a miniature version of the UK west Sussex open air museum, made famous through its record of the shepherds' base-5 counting system that we have come to know and love so well...(*yan, tan, tethera, hethera, pimp...*The children's album "*Fiddle Up a Tune*" by Eric Nagler features a song "Yan Tan Tethera," whose eponymous phrase begins an incantation used to calm leprechauns: "Yan tan tethera, one two three: All you little ones, let us be. Hevapin sethera, four five six: Lay down your magic fiddlesticks." [note the missing word!])

Besides buying at the open market square, I also bought a few things in the museum shop - but the guy really wanted to sell me a large piece of Pashmina cloth - for just 80,000 rupees (\$1600) - no way, I would rather buy silk in China.

The cafeteria was closed for lunch, so i went 200 m down the road to the science museum - they had a pretty low-level (and in the basement) cafeteria, full of people - i went for the "north-India lunch" - at 60 rupees (\$1.20), the most expensive thing on



Science illusion



Dirty water **KILLS!**



Too many to count....

the menu. I feel lucky that my stomach seems to have survived the experience - perhaps the accompanying coke helped to kill off any germs. Then on to the museum itself - full of interesting hands-on science exhibits, and other things like the story of water in India, the history of measurement, etc. I particularly liked one early distance measurement used apparently for a few centuries: "the distance one can hear a cow mooing" - yes it is really true - see the pic!

One disappointment was no air conditioning in the whole museum, and quite crowded, in contrast to the Arts and Crafts Museum; so by 4 pm it was really time to go join the ice-cream vendors outside.

Across the street are remnants of an old city wall, and in the middle of it some sort of Hindu temple, with lots of people going in and out. However, the main

business seemed to be street sellers hawking hard liquor next to the temple gates - seeing lots of young and old men carrying away their bottles of whisky did not seem terribly religious - I decided it was probably not one of the safer parts of Delhi, and moved on quickly. I suppose Jesus would have done something about it, although perhaps this a modern version of turning water into wine.

The museums are not far from the India Gate (Arc de Triomphe), so i walked there along a pleasant tree-shaded road (lots of monkeys), past the Delhi stadium. Unfortunately, the fields between the road and the arch were closed off by groups of soldiers - I still have no idea why everything was closed off (it was also the following weekend), so after 4-5 auto-rickshaws had stopped to check, I took one to the other side of the arch and then walked up the grand avenue towards the metro station, and then on home - plenty of entertainment on the way provided by the many informal cricket matches taking place: I never saw any female players the whole time in India.

A tiring, hot day, but very rewarding: I think it is interesting that the science museum



Human doorway

**As long as the cow is heard!**  
Relation between length units varied over the period from Kautilya (~300 BC) to Akbar (~1600 BC). One yojana was 4 goruta (distance to which the sound of cow is heard). One goruta was 1000 dandas (the length of a man). One danda was 4 hasta. One hasta was 24/ 28/42/54 angula.

How far can a cow sound sound?

**Measuring earth in Angula**  
Aryabhata (499 AD) and Bhaskara II (1150 AD) measured the circumference of the earth as 3300 yojana and 5000 yojana. One took Hasta as 24 Angula while the other took it as 42 Angula; so their measures varied. But in Angula unit both were correct within 2.5% error.

How big is the earth?



was so full and the arts and crafts museum so empty - the two museums are next to each other, both with very low entrance fees.

**Week of 29 April - 5 May:** Lots of physics progress this week with a couple of good students preparing apparatus for an eventual experiment - but most of you would not really be interested - (perhaps I can show you a picture of the “Notre Dame” spectrometer, which actually came via me from the University of Chicago). Thursday I gave the final talk of my series - we were joined by two professors and a student from the University of Delhi - all theorists who are eager to help interpret our experimental results - if we ever get any - at least 6 months away. Then on Friday morning the graduate student from Aligarh, Haris Kunari, whom i had worked with last year, finally arrived. We had originally planned to fly for a few days to Kerala in South India where Haris is from; but we jointly decided that would be too much - Kerala is both hotter and a lot more humid than Delhi at this time of year - the monsoon is almost ready to begin there. Instead, we planned a trip back to Aligarh, home of AMU - Aligarh Muslem University.



*India Gate - from the Secretariat*



*The President's Palace - (by Edward Lutyens)*

Given the heat, I decided just one short day touring downtown would be enough for the weekend: I had not yet seen the center of Indian Government, now called “The Central Secretariat”, at the end of the grand boulevard coming from India Gate. Just a short walk uphill



*The Secretariat (one side)*

from the metro station, one finds a very symmetric set of government buildings: first, well set back from the road are two identical



*Cupola of Secretariat*

buildings, one on each side - one might think that one must be the “House of lords” or Senate”, the other the “House of Commons” or “House of Representatives”. In fact, not at all true - each building appears to house a number of different ministries - housing, defence, finance, etc. At the end of the road is the home of the President of India, and that is as far as one can go - one has to turn around and go back down again. Almost everywhere, little encampments of soldiers, keeping guard, playing cards, etc.

I did have a little interaction with a couple of groups of soldiers....on first getting there, i walked up one of flowing staircases to where workers were repairing some of the flagstones, went past them, and took some pictures from the cupola overlooking the roadway and walked on. As most of you know, my hearing is not the best, but apparently some guard way behind was shouting at me. Once I got to the next group, now next to the main road, the guy, clearly in charge, showed me the first guy waving, and insisted i walk all the way back (with him), then back down the steps and onto the road again - the guards are a little sensitive, but as you all

know, being a mild-mannered, non-questioning person myself, I was certainly going to follow the instructions given with a little twiddle of the guard's musket. I am not sure he understood my English anyway.



*An interesting cow*

After lunch and a brief look around the National museum (I was there last year) at the end of the next block, I returned to the cool of my room and the lab. Of keen interest that day was that it happened to be the last day of the English soccer season for Huddersfield's Division. The



*Qutub Minar - from the metro station at Chhattarpur (highest minaret in Delhi)*

afternoon games in England occur in the evening in Delhi. It was very rewarding to see Huddersfield and their Yorkshire neighbors, Barnsley play to a 2-2 draw, enabling them to avoid relegation, and the hated Peterborough team (not really hated, but Sebastien and I did watch in a Louisville bar as they thrashed Huddersfield 4-0 in playoffs 2 years ago) lose and be relegated - bye-bye Peterborough!



*Hawk flying near the lab*

Sunday much too hot (108F) to repeat a trip downtown, so stayed home and prepared a talk for Aligarh.

**Monday-Tuesday, 6-7 May:** After lunch, Haris and myself took a rickshaw to the metro - metro to downtown and the 4:20 pm evening train to Aligarh: short story of the train: 1 hour going slowly, one hour stationary while several trains went by, then one hour going "fast", at possibly 80-100 km/hr, and arrival at Aligarh on time at 7:30 pm! We were entertained in our compartment by a 3-year old little boy who never stopped running around, up and down the corridor, etc - his parents were Iranians - the mother a professor of philosophy at a university near Tehran - she was visiting AMU, possibly to teach (it is one of the best known muslim universities in India), we never discovered his line of work, although we had an interesting discussion about Ahmaddinajad and US-Iranian relations. She was interested in one of my few philosophy connections - great uncle GG Berry, who interacted with Bertrand Russell around 100 years ago - she knew vaguely about Kurt Godel's developments in mathematical logic.



*Temples to the monkey god - also from Chhattarpur metro station*



*Aligarh Muslim University guesthouse*

Professor Tauheed Ahmed picked us up at the station - I stayed the one night at the guest house, where Haris and I had a nice supper, and he went on to his regular lodging. The guest house has probably 200 rooms, but perhaps only 3 or 4 of us staying - a nice front, but inside completely run down - the noisy airconditioner barely worked (not a noise problem for me, since i could remove my hearing aids - "the uncle Rex" solution); the bathroom mirror as missing, and replaced by a piece of cardboard, and only one of about 8 electrical outlets worked - enough for me since i had my US power strip with adaptor - to charge my hearing aid and computer batteries - no internet of course.

However, i did get a welcome pot of tea in my room in the morning before having breakfast - at a circular table for 2 of us - though it could have seated at least 20 of King Arthur's



knights. At the physics department I gave a talk at 9:30 am - lots of faculty and students attended even though it was exam break. It was good to meet many of them again who were there last year, especially a well known, but retired long ago, spectroscopist Dr. Chagtai - he had not been to the department since my talk in February 2012. This time, no press meeting on the lawn outside (that was election time) - instead, retiring to the faculty room for mid-morning tea and cake. Then, a tour of the labs to see their latest gadgets, and then back to Tauheed's office, where Haris and I and two other graduate students (Hala and Swapnil), plus some interactions with Tauheed, spent most of the rest of the day discussing progress on some data analysis (from an old Argonne experiment - since it was on the gas argon, I call it the argon-squared experiment) that they had been doing since my last visit. I then discovered that Hala and Swapnil were returning with us to Delhi and the lab that evening on the train where they will continue the analysis.

One interesting comparison with a US university: Tauheed has quite a large office, but half is used by the graduate students; the same happens in Tapan's office at IUAC - this openness is refreshing compared with the closed nature of most US professor's offices; but this can work both ways: for example, Tauheed rarely interrupts the students' work, and they report back when they are ready or need help; whereas Tapan is always asking about the minutiae. It reminds me of the differences between "guided inquiry" advisors and "guided inquiry" teachers, and their "direct instruction" counterparts: the actual direction of hands-on problem-solving requires giving the students the latitude to use peer-learning and learning through mistakes.

At morning tea, I commented how the "chai" is always sweet (basically hot sweet milk plus a tea bag), and one might as well drink Mountain Dew; I had noticed that the cold water that they kept in the office fridge was in a Mountain Dew bottle.



*Power walkers at the lab - I saw the 3 ladies most mornings around 7 am*

So at 4 pm, it was time for "afternoon tea" -

Hala and Jabeen left for a little while and came back with icecream for everyone, and a big bottle of Mountain Dew! So that was a special tea time.

At 7:30 Tauheed drove the 4 of us to the train station through the dusty busy streets and crazy traffic of Aligarh. The 8 pm train was on time - full of course - with reserved seats in most coaches, and airconditioned - dinner, included in the ticket price, was served immediately, and the train reached Delhi in about half the time of the outgoing train - important for us, since we needed to catch the metro before it

closed for the night - the metro was packed, as it always is from 8 pm onwards, but the ladies could sit in the "ladies' coach" which had lots of room; the population on the metro seems to be about 90% male. We had agreed that at the exit station (Chhattarpur), we would take two autorickshaws, and Haris and I would each go with one of the ladies - they were clearly relieved that they would not be traveling alone.

The last two days here are busy



*Rock splitters - not jailbirds - preparing the road - at 106F - all day long...*



*The last supper - Gaurav, Tappan, Haris, Gordon, Gajendez, Hala and Swapnil (photo by Prashant, Basu missing)*

clearing up the next steps in the various experimental projects. The likelihood is that I will return for the accelerator-based experiments - the one downside of this visit has been the lack of experimental time, which was originally planned. We had a last supper together on this last day, and I handed out a few small things to the students. Basu gets the big suitcase that he has had to carry around several times, both visits - since he was not here for supper, the students plan to fill it with bricks from the construction site and then give it to him.

**Friday, 10<sup>th</sup> May**, London! - Mary and to meet other sundry relatives - such as Philip, JC, John, Paul and Carmela and their doggie (the last not actually related).