

would be very useful. Although it may sound frivolous, I actually think that establishing a proper space for this kind of exchange to take place is vital. I appreciate that an English faculty cafe is an additional luxury that money is unlikely to permit at this point - but at some point in the future, I think it would be an incredibly valuable resource to aim towards.

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## A letter from India

Dhiraj Murthy

As part of my PhD work in Sociology, I have one academic year of language training and fieldwork in India. Last month, I traded my oh-so-comfy college room by Parker's Piece for a cheap hotel room in Mussoorie, a mountain town adjacent to the Himalayas. Out went boozy nights at the Emma bar and watching the ducks frolic; in came Hindi classes in an old church and hordes of monkeys.

In the North Indian state Uttarakhand, where I'm studying, there are two types of primates - the more common monkey in India, the rhesus macaque (*Macaca mulatta*), and its bigger relative, the langur (*semnopithecus entellus*). This latter primate is also referred to as the Hanuman langur as it is viewed by many Hindus to be a sacred creature related to the Hindu monkey god of the same name.

Depending on the strand of Hinduism, Hanuman was most probably born as the son of a monkey King and Queen; was an incarnation of Shiva; or was the progeny of Vayu, the wind God, and Punjikasthala, who was born part female and part monkey after being cursed in a previous life. (What a curse!). Regardless of his uncertain familial origins, Hanuman is considered by most camps to possess divine powers, including immortality. In his youth, he epitomised the cheeky monkey; to the chagrin of various saints living in a nearby forest, the young Hanuman

would pull their long beards and create whirlwinds with his breath. Hanuman, when he matured, decided to go from naughty to nice. His most memorable feats are considered his location of a kidnapped goddess of sorts, Sita, and the procuring of a rare medicinal herb deep in the Himalayas to heal a seriously wounded god, Lakshman. For Hindus, Hanuman symbolises courage, power, and faithfulness.

High in the pine forested mountains where I study Hindi, the rhesus macaques and langurs, descendants of Hanuman or otherwise, are many times viewed by the locals as pests. Imran, a local lad with a penchant for 50 Cent, sagely advised me: "Don't worry! The brown ones are afraid of men and the grey ones are easily scared off with a slingshot." So, I was saved from the macaques by my masculinity. And, thankfully, I never had to foray into the world of low-grade armaments to protect myself from aggressive langurs: I just had to stomp around in a rather humiliating fashion. But some of the women I spoke with said that the macaques were aggressive towards them and would grab their carrier bags and, if they resisted, would scratch them. Kids were especially vulnerable and were encouraged by their parents to have a slingshot close by.

Monkeys can also be oh-so mischievous, yet cute - like a young cheeky Hanuman. I found this story particularly amusing: a couple, in the town I was living in, had accidentally left a window open, whilst they were happily buying wares at the local market; a monkey decided to exploit this lapse in security and have a bit of fun; one would think the monkey would go straight for some tasty food; but, no bananas or even naans were absconded with; rather, the monkey proceeded to move saucepans from the cupboards



to the roof. Fancy a rooftop langur dinner party? 'Cos monkeys know how to par-tay! A troupe of macaques found these big puddles on the top of an unfinished temple and had their own Monkey Miami Beach, complete with separate party areas. As I approached, they labelled me an uncool gatecrasher and shot me menacing looks. They sensed my fear and nearly nonexistent masculinity and let me pass before getting back to temple volleyball and their Mai Tais. Monkeys also enjoy a spot of urban gymnastics. They climb through the town centre, perilously clutching live power lines. It's quite frightening seeing cute baby macaques risking electrocution just to cross from the barber shop to the wall across the road. Or, when pretty big monkeys are directly above me, I keep imagining my demise in India: Dhiraj was squashed by a monkey. Hmm....

Next time I will shower you with tales from my upcoming move to New Delhi.

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## Climate Complications

Mario Bitter

Balloon-born measurements are one of the many methods used by atmospheric scientists to measure climate parameters and properties. (Picture: Graeme Hansford)

Climate change is a real phenomenon and whoever is still in doubt should glance out of their window or watch the evening news. The 3rd assessment report of the Intergovernmental Panel



on Climate Change (IPCC), the world authority on climate change, comprised of virtually all the expert names in the field, stated unambiguously in 2001: “...most of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations”. No need to say who was responsible for the increase in emissions over this period. The Kyoto Protocol (see boxed text) tries to curb these anthropogenic greenhouse gas emissions and it intends to regulate the emission of five greenhouse gas species (methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs)) together with CO<sub>2</sub>. All have the ability to absorb infrared radiation emitted by Earth, which consequentially cannot leave the atmosphere and therefore heats it up.

But why is there such a controversy about climate change? Next to economic implications, which all governments naturally shy away from, it is the inherent complexity of the Earth system itself. Earth can be considered as a highly complex ‘organism’ consisting of numerous ‘organs’ like the atmosphere (air), the lithosphere (ground), the hydrosphere (water), the biosphere (life), the cryosphere (ice) and other ‘vital body parts’. All interact with each other, either directly or indirectly, and create a system whose complexity even surpasses that of higher evolved biological organisms, like us humans, who are also part of the Earth system.

Non-linear interactions are characteristic for such a system, which means that the intuitive relationship of “little has little effects and more has a larger effects” breaks down and chaotic interrelations can come into play. The standard textbook example, for such non-linear behaviour, is the relationship between temperature and water vapour: another very effective, but naturally occurring greenhouse gas. If the temperature increases, more liquid water evaporates and the water vapour amount in the air is increased. The increased water vapour then traps more infrared radiation coming from the Earth, which increases the temperature further and causing more evaporation. The cycle carries on with no obvious end in sight, and, if it was not for rain to form and reduce the humidity in the air, we could all look like roast chickens.

However, in this water-temperature balance, rain activity is only one part of the story and many other factors, of which we do not even know all yet, play a significant role.

In order to understand such delicate relationships we need very precise experimental observations, since even slight uncertainties could have a significant effect on our understanding of the whole climate system. The results of these observations then find their way into computer models and allow us to forecast the future, which ideally would be used to inform the human race and come to sound policy decisions. At the Centre for Atmospheric Science, I work on a very tiny bit of this whole Earth machine. We have developed a highly sensitive laser technique, which, among other things, can be used to test the ability of water vapour to attenuate sun light. The findings are then compared to our current understanding of the light-absorption properties and the significance of water vapour in the atmosphere. As our experiments have shown, the theoretical description of this interaction between light and water vapour is not fully understood, causing questions to arise as to whether scientists are using appropriate data in their forecasts models. Although, we would not expect the effects to be dramatic, we might still see a very small nudge on how people will calculate our climatic prospects and how we derive more accurate answers to the most pressing question of this century: Where is Climate Change heading?

## The Kyoto Treaty – Talking Climate

The Treaty’s goal is for a legally-binding minimum 5 % cut in greenhouse gas emissions, compared to the 1990 or 1995 level. The agreed targets have to be reached by 2008 - 2012. The lion’s share of the reductions are expected to be achieved by the industrialised countries, many of which consequentially have to achieve reductions of 6 - 8 % in their national greenhouse gas emission budget.

The Treaty needs to be ratified by at least 55 nations, whose 1990 CO<sub>2</sub> emissions accounted for at least 55% of the total amount of all the 126 signatories. Russia’s recent commitment puts the current percentage at 61.6%, thus coming above the critical threshold. This “will allow the climate train to leave the station”, as Klaus Toepfer, head of the UN Environment Programme, put it.

The Kyoto Protocol is not designed to be a static ‘one-size-fits-all’ agreement; it can adapt itself to changing circumstances. Kyoto has been and will be periodically reviewed, and all parties are expected to take “appropriate actions” based on the best available scientific knowledge. Talks on commitments reaching beyond the 2012 timeline have to start 2005, where it is very likely that countries such as India and China will have to bear more responsibility.