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Unmanned Aerial Vehicles

Policy may delay development

The technology of drones was developed for the surveillance of enemy territory and for dropping bombs without losing the manpower that controls the aerial vehicle. But the technology can be used for aerial shots in documentaries, which, in earlier days, would have cost hiring a helicopter. And, today, we often see lightweight drones used for entertainment in parks and public spaces.

This technology can help in giving us aerial images of centimetre-scale resolution. And, that too, in real time video. So monitoring floods and other disasters to manage mitigation is made easier. Application of pesticides and herbicides, monitoring of soil moisture and status of crops to manage agriculture, etc., will be major applications of the technology.

In spite of such advantages, some countries have banned the use of unmanned aerial vehicles. Most countries have, however, formulated policies and set up regulations so that the technology is not misused. India too, now has a policy in place. But to make full use of the technology and to lay the foundations for its further development, the policy may need small tweaks, say researchers. A General Article on **page 25** in this issue compares the policies in some of the developed countries to suggest some changes in the Indian policy on unmanned aerial vehicles.

Traffic Flow Parameters

At the merging section of roads

Merging sections on highways and urban roads create bottlenecks in traffic. Such road sections are prone to accidents. There are not enough studies to help us design better merging sections, particularly in Indian traffic situations. Two wheelers, three wheelers, four wheelers, buses, trucks – vehicles on the roads in Indian cities are more diverse than in most other countries. Moreover, the drivers have scant regard for lane markings on roads.

Researchers from the Muzaffarpur Institute of Technology, Muzaffarpur and the Sardar Vallabhbhai National Institute of Technology, Surat set up cameras in a 28 kilometre urban road in Delhi to monitor the movement of vehicles at, before and a kilometre after a merging section.

They compared the differences in the speed of vehicles at the merging section and at one kilometre away. They examined the impact of the merging section on the speed of vehicles in each of the four lanes, and analysed the effect of entry flow on the speed of vehicles in the main stream. The Research Article on **page 94** in this issue must be read not only by road and highway infrastructure designers but also by people who drive on urban roads.

Archaeology meets Anthropology

Unmasking the history of Maski

Maski, in the Raichur district, Karnataka is the place where a minor Buddhist edict discovered in 1915 confirmed that Devanampiye Piyadasi was indeed Emperor Ashoka. It is believed that the name is derived from Mahasangha which morphed into Masangi and then to Maski. The Maski Archaeological Research Project which started in 2010 is slowly unmasking the history of the area.

About sixty-four square kilometres of the area have been earmarked for the project. The researchers have surveyed more than half the project area by now, locating 271 locations of archaeological interest. Only a few of these sites were excavated. Yet the way people lived there for the last five thousand years is slowly being unearthed.

The multidisciplinary team led by the Karnatak Directorate of Archaeology, Museums and Heritage has two anthropologists from the US and Canada. They used the clues that emerged to understand land use patterns and socio-political relations from the Prehistoric to the Early Historic to Medieval times.

Less than 150 years ago, Europeans deciphered the ancient scripts of India because no Indian could read what was written on the ancient edicts. Today collaborations between Indian institutions and foreign anthropologists interpret Indian archaeological evidence to understand land use and social relations in historical and pre-historical times on the basis of archaeological findings. See the contrasts in the approaches. Read the Research Account on **page 46** in this issue.

Amarja Reservoir Catchment

Drinking water contamination

The Amarja reservoir's catchment area in Karnataka is spread over more than five hundred square kilometres. The landscape consists of black cotton soils derived from the Deccan traps and porous basaltic outgrowths of flat topped hills with terraces.

Researchers from the Karnataka Central University took samples of water from many wells in the area to conduct microbiological analyses. Besides common pathogens such as *E. coli*, the researchers found *Pseudomonas aeruginosa*, and sulphite-reducing anaerobic bacteria in the samples from most of the wells. This could be because of faecal contamination of the wells, say the researchers.

Groundwater in the lower part of the catchment especially needs appropriate treatments before use for domestic consumption. Public health authorities in the Anand Taluk, Kalburgi may take urgent note of the Research Communication on **page 114** in this issue.

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