

Understanding behaviour: from crickets to elephants*

‘Scientists have reported that elephants grieve their dead, monkeys perceive injustice and cockatoos like to dance to the music of the Backstreet Boys’ writes Hal Herzog in his 2010 book *Some We Love, Some We Hate, Some We Eat: Why It’s So Hard to Think Straight About Animals*. Behaviour is ubiquitous across the animal kingdom and has been a source of endless fascination for thinkers. Philosophers and ethologists have studied behaviour in a variety of living organisms, from microscopic cells to complex mammals, for almost half a decade now. Veteran ethologists Karl von Frisch, Konrad Lorenz, and Nikolaas Tinbergen received the 1973 Nobel Prize in Physiology or Medicine for their studies on animal behaviour. Since then, the field has grown manifolds with researchers all over the world studying different aspects of behaviour, using tools as diverse as microscopy, field observations and computational analysis.

Recently, a conference titled ‘Understanding Behaviour 2019’ brought together researchers, students and enthusiasts interested in understanding behavioural research across scales from all over India. The attendees included eminent researchers in the field along with college students – from undergraduates to postdocs, science writers and journalists, and some school students as well.

The conference began with a keynote address by Raghavendra Gadagkar (Centre for Ecological Sciences, Bengaluru), one of the giants in the field of behavioural studies in India. He is also a prolific writer and communicator, and has published a popular science book titled *Survival Strategies*. He delivered a captivating talk about his 25+ years in behavioural research on his organism of choice, paper wasp (*Ropalidia marginata*). Apart from his inspiring academic talk, Gadagkar also emphasized on doing behavioural research in India. ‘I don’t know of any other place that is well

suited than India to study behaviour’, he stated, pointing to the abundance of biodiversity across the country and a booming population of researchers. Gadagkar also touched on the point that behavioural experiments do not usually require huge resources or sophisticated equipment but rather a humble and rigorous experimental design, while sharing his experiences from his research days. He concluded his talk on a hopeful note, ‘Nothing is better than your experiments failing, it is when you explore and answer new questions’.

The keynote address was followed by a host of talks under different sessions by guest speakers – some invited and some contributing. The session on the first day included eight speakers from across the country talking about their research with a diverse bunch of organisms from insects (crickets, ants, paper wasps, fruit flies) to fishes (zebrafish) to mammals (elephants, bonnet macaques). They also spoke candidly about problems associated with behavioural research, be it studying paper wasp nest-building behaviour in a laboratory setting, or dealing with authorities for field permits and also how to circumvent such obstacles.

In general, behavioural studies are often accused of anthropomorphizing. However, all the talks in this conference reflected that behavioural studies just like any other science, look at a particular paradigm, a well-defined scientific question selected with high rigour and follow that question with a robust experimental design. For example, Anindya Sinha (NIAS, Bengaluru) spoke about his research on a specific dimension of communication: intentionality in bonnet macaques. Sumana Annagiri (Indian Institute of Science Education and Research (IISER), Kolkata) spoke about a specific behaviour in ants called tandem running, a social learning phenomenon observed during events like relocation.

A horizontal transfer of ideas/questions was seen during lunch/tea breaks, where the attendees and speakers interacted. The sessions gave way to a panel discussion on the topic of ‘Should behavioural research be funded?’ The panelists included four behavioural re-

searchers and to maintain a fair balance, a physicist and a chemist from IISER. Among other arguments, the chemist, in particular, raised some critical comments – behavioural research is essentially an oversimplification of a complex, multifaceted animal response and observing and scientifically studying that ‘behaviour’ without a subjective human lens is a misleading notion. Instead, he suggested viewing behavioural research as an extension of anthropology or other social sciences. He spoke about the reproducibility crisis and low sample size, absence of control groups in some studies, etc. doubting their reliability.

The other panelists shared a different view. Behavioural research – often viewed as blue-sky research – has important implications; understanding behavioural patterns in other organisms could help us glean insights into our own human behaviour. The bottom-up approach of understanding the workings of the mind is ongoing and the mind remains a black box. Thus, behavioural and cognitive research could work as a top-down strategy for understanding the workings of this cognitive black box.

Several panelists agreed that few studies do fall prey to anthropomorphizing but like any other science, the results and more so their interpretation require rigorous scrutiny. Bittu Kaveri Rajaraman (Ashoka University), while answering questions from the chemist, mentioned examples where simple behavioural experiments have led to profound insights in our understanding.

Sinha, who chaired the discussion made an interesting point about funding. He stated that the behavioural research community ought to do a better job at communicating their research and its importance in a more compelling and effective way to the funders and the general public at large. Rajaraman also touched upon the same point, and that a part of the funding should be allocated to communication/outreach of the science that is being produced. The panelists unanimously agreed that behavioural research should be treated and funded like any other branch of science. The panel discussion touched upon some important

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questions in the discipline and made for a good change against the backdrop of academic talks.

Talks on the second day encompassed several different aspects of studying behaviour. The first half of the day comprised of talks about field-based behaviour, which was followed by a session on 'Networks in behaviour'. It included talks by researchers who use a combination of behavioural observations/experiments and computational tools in their research.

The conference also hosted a bunch of workshops for the attendees. Each workshop being 2 h long covered topics like science communication, asking relevant questions in behaviour and basics of working with R, a statistical computing software, etc. All the workshops provided a good primer on the respective topics. This was followed by a poster

presentation session, where a total of 53 posters were presented by Master's students, Ph D's and postdocs. The posters were judged by a panel of experts and prizes were awarded to the best candidates at the end of the conference.

Day-three also included a couple of talks, which were split into two sessions. The first one was about behavioural ecology and the other on behavioural modelling. An interesting talk titled 'Cooperation and conflict: from microbial to human societies' was delivered by Supratim Sengupta (IISER Kolkata) in the second session. His research uses a mathematical model to predict behavioural patterns.

The conference also hosted a public talk titled 'Portraying behaviour through photography' by veteran wildlife photographer, Dhritiman Mukherjee. He narrated several of his adventures, showing

the attendees some stunning photographs that he has clicked over two decades of work across the globe, and gave insights and behind-the-scenes stories regarding each photograph.

The three-day conference provided a good understanding of behavioural research that is being carried out in the country. It was a focal point for experts and students alike to exchange ideas and consider further collaborative efforts. The gathering of over 250 participants reflects the growing interest in the field and this was also echoed by Anindita Bhadra (IISER, Kolkata) in her closing remarks. Conferences like these foster a sense of community and help us collectively make further strides in science, she concluded.

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