# Engaging the Disengaged

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Recent years have seen a shift in science engagement activities from rigid 'top down' approaches to methods that consciously allow participants to share power in decision-making. However, the community x-change, an innovative project run by the BA (British Association for the Advancement of Science), shows there is still a long way to go.

## Power to the people

Since the House of Lords Science in Society report of 2000[1] there has been a steady stream of developments in the science communication field. Everyone is 'doing dialogue' and the processes and approaches of participation are gradually becoming embedded within institutions. The formation of Sciencewise[2], the proposed Expert Resource Centre for Public Dialogue on Science and Innovation[3] and the Beacons for Public Engagement[4] all demonstrate awareness, at a high level in public institutions, of the need for a social licence for the advance of science.

However, whilst these developments have been welcomed in many quarters, there still exists a suspicion regarding the quality and utility of these sorts of processes. Whilst new 'hardware' exists to probe public views some doubt whether culture change, the 'software' required for a meaningful response, has occurred.[5]

## Over-representing the under-represented

In this context, the community x-change was designed to explore a new methodology for dialogue. This 'two-way' approach takes elements from a

number of different initiatives, including citizens' juries and common language projects, to provide time and space for citizens to discuss issues of local concern as well as those with national implications – year one of this project addressing climate change. A series of structured deliberative workshops were held where citizens, including scientists and policymakers, could share their opinions and discuss strategies for positive change.

A distinguishing element of this process is that it seeks the views of voices currently excluded from public debate. It is easy to tick the diversity box for such an engagement process whilst never getting beyond the gatekeepers within local communities. Two outreach workers were therefore employed to involve a wide range of participants in the workshops, especially targeting the marginalised in society. Over a number of months they met and worked with a wide range of local groups to encourage their involvement in the process.

Through this project we wanted to learn how to improve practices of dialogue, particularly those allowing currently excluded voices to influence policy. We wanted to learn how to improve involvement processes which address issues that communities, as well as policymakers, deem to be of concern. We also wanted to develop the capacity of our elected representatives to engage with participatory processes. With this in mind, close contact with policymakers and stakeholders was maintained throughout, in order to ensure appropriate outputs.

## A safe space

The community group of about thirty participants included representatives from a broad range of groups: black and minority ethnic communities, non-English speakers, ex-offenders and young people, to name a few. A small number of scientists were also involved who were not experts on climate change but deliberately recruited as citizens.

Providing a safe space for participants to discuss local issues of concern gave depth to the process. Many of the local issues, for example public transport, could be discussed within the broad framework of the environment, allowing climate change to be introduced more naturally to the discussions. However, deep-felt personal feelings were also uncovered which impinged on the global science issue, one participant commenting, "I can't even influence my local community so how can I influence climate change." We also observed that willingness to value, and promise to act on, the views of a community quickly removes perceived barriers. Many participants greatly appreciated the opportunity to meet with other local people outside of their normal acquaintance.

## The future

Participants presented their video report of the workshops at the BA

Festival of Science in September 2006 and the videos are now available to view online.[6] To extend the influence of the discussions, a series of events based on resources from the project are now running across the country throughout 2007.[6]

The project has now entered a period of reflection and evaluation. Further workshops are planned in Liverpool, European Capital of Culture 2008, to coincide with the BA Festival of Science. There has been a great deal of learning within the project team about the benefits of collaborating with local communities and we will endeavour to embed future processes more deeply in local community structures. For example, we will provide greater levels of support to the group after the workshops to enable them to engage over a longer period of time with issues discussed. The danger with all engagement being that aspirations and expectations are raised, only for the individuals to be left high and dry once the project team move on. Without doubt, a comparable challenge is presenting the views expressed in a manner that influences decision-makers both locally and nationally.

The community x-change is funded by Sciencewise, Defra and the Wellcome Trust.

REFERENCES

1 House of Lords Science and Technology Committee, Third Report, 23 February 2000 http://www.publications.parliament.uk/pa/ld199900/ldselect/ldsctech/38/3801.htm
2 Sciencewise http://www.sciencewise.org.uk/
3 Pre-budget report, 6 December 2006 http://www.hm-treasury.gov.uk/pre_budget_report/prebud_pbr06/prebud_pbr06_index.cfm
4 See http://www.hefce.ac.uk/pubs/hefce/2006/06_49/
5 The Public Value of Science, Demos, 5 September 2005 http://www.demos.co.uk/publications/publicvalueofscience, p.19
6 See http://www.the-ba.net/communityxchange

# It's not just cricket – actually it's physics

Ever wanted to face a Shane Warne spin delivery or smash a Glen McGrath speed bowl? A new bowling simulator may enable you to do just that. The machine is the first of its kind to use physics, real cricket balls and novel speed and spin generating mechanisms to imitate realistic deliveries (eg spin, swing and pace) as generated by professional cricket players. Dr Andy West, the machine's inventor at Loughborough University described it at an Institute of Physics conference, *Physics and Engineering – Synergy for Success*, in October last year.

Dr West said: "By considering the physics of air flow around a ball and launch conditions we have made a robotic bowler that we can programme to mimic Warne, McGrath or the style of any other bowler. When we were designing the machine, we considered all the things that real players use, such as the orientation of the seam and the speed at which the ball is released to vary how a ball travels when it is bowled."

"Real life bowlers can get tired or injured during extensive training periods so the machine is ideal for batsmen to practise with. The team coach can programme it to bowl whatever sequences of deliveries he wants. Alternatively, exactly the same ball can be bowled again and again (referred to as shot grooving) until cricketers become expert at hitting them."

The trajectory of the ball from the bowling machine to the batsman is dependent on how the boundary air, the air next to the ball, moves around it and how it separates or moves away from the ball. There are two different types of air flow – laminar, which is smooth – and turbulent, which is rough. In laminar flow the boundary layer separates approximately halfway around the ball whereas in turbulent flow the separation is later.

The seam on a cricket ball "trips" the air flow into turbulence so there is rough air flow on one side of the ball and smooth air flow on the other. This creates an uneven air flow around the whole ball which causes a sideways drift. The size of the drift depends on the angle of the seam, the speed of the ball and the condition of the original air flow around the ball. It is essential therefore that the seam is aligned accurately to enable any machine to be able to generate this type of "swing" delivery.

Dr West continued: "Consideration of the physics of flight and the requirements of players and coaches has enabled us to make a very realistic bowling machine that will be great for professional cricketers to practise with. However our vision is that the machine is not just for the professional. The cricket emulator is part of a co-ordinated suite of sports simulation machines that have been or are currently under development at Loughborough covering sports such as golf, football, cycling, rowing and weight training."

The presentation, *The Development of a Novel Cricket Bowling System*, was made by Dr Andrew West and Laura Justham from Loughborough University at the Institute of Physics conference, Physics and Engineering – *Synergy for Success*, on 5th October 2006.