



“Despite increasing scientific literature on antibacterial resistance the problem has still not left the conference rooms. We need to change the current paradigm that sees bacteria as our enemies. ReAct works towards this as one of its specific objectives.”

Otto Cars, Director of ReAct – Action on Antibiotic Resistance, Uppsala University, Sweden.

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“Any craft practice springs from an understanding of process and material as an extension of body. In the same way, it might be helpful to view disease and microbes as an integrated part of human life, rather than ‘the other.’ Skill is important in craft practice, and with long practice skill moves from ‘outside’ one’s body where it is a conscious act to an internalised position which allows the maker to ‘become’ the work. To draw an analogy here with disease requires an act of imagination that allows us to ‘get inside’ the way disease and microbes work. This takes time.”

Janet DeBoos, potter, Head of the Ceramics Workshop, School of Art, Australian National University, Canberra, Australia.

Microbes and Metaphors

Re-imaging bacteria, infection and the body

A dialogue between scientists and artists, 5-9 December 2008 at Wee Jasper, Australia

Mary Murray, Olle Nordberg and Satya Sivaraman

From 5 to 9 December 2008 a group of artists, scientists, social activists and journalists gathered at Cooradigbee Homestead, Wee Jasper in New South Wales, Australia, to begin a special mission. Set amidst open green pastures over spectacular undulating terrain and home to some of the globe’s oldest fossil finds, their task was to pull together ideas from a wide range of human endeavours with the common purpose of re-defining the perception of microbes in the present world to evolve new images and metaphors of the dynamic relationship between microbes, human beings and other species.

The thinking behind the dialogue was inspired by the report *‘Ending the War Metaphor: The Changing Agenda for Unravelling the Host–Microbe Relationship’*, organised by the Institute of Medicine of the US National Academy of Science; and by emerging scientific and artistic experimentation with bacterial art and ideas for learning from bacterial organisation.

The need for a new paradigm has become more urgent as the predominant metaphor of war, which conceives bacteria only as the enemy and antibiotics as the main weapons against them, is inaccurate and inadequate as a response to the serious threat of antibiotic resistance. The Wee Jasper dialogue was intended to give fresh attention to the creation of new concepts and methods and allow them space and time to grow naturally.

The number of participants present at Cooradigbee was ten, while seven contributed through presentations on Skype or by documents or e-mail. In the group five were scientists, six were artists and three both scientists and artists. Three participants were in the category of opinion-builders/ journalists. In addition, a number of leading and prestigious scientists had expressed a strong support for the dialogue and also contributed rich background material.

Participants found that many shared a similar sense of limitation about the current paradigm. It takes time for images to develop and come to a mature expression and avoid cliches. Participants agreed that the interaction should continue. An important tool for such interaction would be a well developed interactive website that would reflect both new scientific findings and the artistic and aesthetic dimensions of the topic. A strong effort to use a language accessible to all involved is highly desirable.

The presentations and discussions at the dialogue meeting should also be made available in a report or booklet, with a balance between text and pictures. A video entitled ‘Who Killed Antibiotics’ is being conceptualised and material from the dialogue will be used.

In a longer perspective a travelling art exhibition inspired by the world of microbes would be a strong tool to introduce new paradigms to challenge people’s perceptions about bacteria, the body and infection.

A follow up dialogue event should take place within a year, with a long lead time. The networking links of many kinds begun here including to other artists and scientists should be facilitated.

“I work from sensations and felt perceptions in the immediate environment and try to value them all equally, so even the un-noticed (unconscious) because small have their pervasive atmospheres just like the wind. Perhaps even as building blocks of existence they have more fluid consciousness than we agglomerates can imagine! I am also attracted to the seeming sense of community without heirarchy (portrayed without subject). Here is the parallel to microbes and metaphors. One specific conscious being is not more important than another.”

Peter Cameron, landscape artist, Sydney, Australia

Because we can't see microorganisms we don't think about them. They impact the ENTIRE biosphere. They are tremendously important THEY EXIST WHERE LIFE EXISTS. Bacteria talk to each other, both to the same species and to other species. They also talk across 'kingdoms' – to other forms of life altogether. It has been possible to find molecules that confuse the communication between bacteria so that they are unable to build biofilms – one problem in human infection. The key point here is that there is no killing attempted – only confusion. Therefore there is little mutation by the bacteria to avoid this strategy. If one does not attempt to kill them, they do not feel the need to resist”.

Linda Blackall, Professor of Microbiology and Research Team Leader of the team:- Understanding Marine Microbes and Symbioses at the Australian Institute of Marine Science, Townsville, Queensland, and Chairman of 12th International Meeting of the Society for Microbial Ecology

“I am astonished at the popularity of antibacterial hand gels and peoples attitude to bacteria and I have worked with this as a theme in my artwork and set out to change people's perceptions of normal flora. I have cultured beds and chairs and engaged people in discussion of these ubiquitous bacteria in hospital waiting rooms, schools, art galleries and museums while crocheting and needlepointing the patterns formed by these bacterial cultures. I am experimenting with bacterial communication to show how complex their microscopic communication is compared to human internet communication. I have developed performance art projects that draw the audience into a discussion about bacteria and how they communicate.”

Anna Dumitriu, artist, University of Brighton, University of Sussex, The Institute of Unnecessary Research, UK.



“We will never win a war against microbes. An escalating arms race between humans and microorganisms only disadvantages humans. There are more bacterial cells in us and on us than there are human cells. They are a normal part of our bodies, and keep us healthy. Microorganisms provide free ecosystem services that run the planet's atmospheric and biogeochemical cycles. We need bacteria more than they need us. We need a kind of trade agreement instead of war.”

Michael Gillings, Professor of Microbiology, School of Biological Science, Macquarie University, Sydney, Australia

“From organising a sustained medical service to treat the victims of the Bhopal gas disaster over the past 21 years, we have seen much abuse of antibiotics and ongoing damage to people's lungs and bodies that makes them susceptible to infection. The clinic has tried to treat people and help them build stronger physical, mental and immune strength by using the best of both modern medicine and alternatives such as yoga and ayurvedic medicines grown by the clinic itself. The organisation has campaigned to get Union Carbide to accept responsibility for the disaster and clean up areas of ongoing contamination. The campaigns have been effective, but often difficult and dangerous to carry out and met with opposition at many levels of the health and political systems. Understanding how microbes work gives much-needed inspiration for democratic leadership in social-political activist organisations and ways of organising ongoing action for medical, social and environmental justice for victims.”

Satinath Sarangi, Managing Trustee, Sambhavna Trust Clinic, Bhopal, India



“There is a place for the war metaphor. But only for those few situations when virulent pathogens invade and the human immune defence does not react. We need antibiotics for this. A high priority is to understand how to protect the human host (us) in bacterial infection rather than studying the antibiotic. The normal situation is a kind of democracy where beneficial bacteria, potentially harmful bacteria and humans are all talking to each other and negotiating a shared existence together. When this balance is disturbed you get inappropriate host response and bacteria colonise mucosal surfaces - so called civil disobedience. Most infections fall into the latter class.”

Robert Clancy, Clinical Immunologist, Emeritus Professor, Discipline of Immunology and Microbiology, University of Newcastle; Chief Medical Advisor, Hunter Immunology Pty Ltd. Australia.

I am not a clergyman, but an environmentalist. I am really attracted to the enigma of microbes. If we could track down the strategies of bacterial ecology and behavior these might be a paradigm for therapy to live a complementary life with all species.

Panya Chaityakum, wildlife artist, Rachaburi, Thailand



Some of the participants at the Wee Jasper Microbes and Metaphors meeting