

**Imagining the Future III:
Theatrescience India in London
July 2008**

External Evaluation

Dr. Jessica Mordsley

Executive Summary

In July 2008, *Imagining the Future III: Theatrescience India in London* took place. This five-day event consisted of a number of workshops, performances, playreadings, and discussions which explored the political, emotional and personal implications of current developments in biomedical science.

Participants included theatre practitioners and scientific experts from the UK and India, many of whom had previously collaborated on *Imagining the Future II* in Bangalore in 2007.

This was an innovative, exciting and unusual project which aimed to engage the public in biomedical science-based issues through the medium of theatre. The project succeeded in achieving this public engagement through a diverse programme of events which entertained, informed and inspired those who attended.

A particular strength of this project was that it demonstrated a number of different ways in which public engagement with science can be achieved: through different styles of drama, through post-show discussions which give audiences the chance to engage directly with experts, and through the bringing together of people who would otherwise not have had the chance to meet.

It was also successful in that all of the participants both enjoyed and learned from taking part in the project, that it increased intercultural and interdisciplinary dialogue between theatre and science professionals, and that it inspired many ideas for future work.

This report seeks to evaluate the success of *Imagining the Future III* with reference to the aims stated on the original project funding application.

It examines the effectiveness of the project in terms of audience and participant engagement through direct observation, contextual information, and analysis of quantitative and qualitative data.

1. History and Context of the Project

Theatrescience, run by Jeff Teare (director), Rebecca Gould (producer/director), Simon Turley (writer) and Professor Anthony Pinching (scientific adviser), is a 'rolling laboratory of new plays, workshops, performances, festivals, studies and exchanges' which brings together science and theatre in innovative ways. It uses theatre to engage audiences and participants in discussions of social, ethical, and political issues relating to biomedical science, and develops exciting new drama inspired by these issues. It has been supported by the Wellcome Trust since its inception.

Imagining the Future III, also known as *Theatrescience India in London*, is the most recent stage of a project that began in Plymouth, UK, in 2003. The first *Imagining the Future* brought together scientists, writers, actors and directors for a series of workshops and seminars at the Theatre Royal, Plymouth, which resulted in the writing and performance of four scripts based around biomedical science. This was followed by 'Theatre of Science', an extensive programme of events bringing together theatre and science, held at the Theatre Royal in 2004/5.

The project was expanded by beginning an intercultural exchange with theatre practitioners and scientists in India. Developments in biomedical science, such as genetic modification, HIV research, and pesticide pollution, and the ethical, political and economic debates surrounding them, are hugely significant in India, and this in turn has repercussions for the rest of the world. It is therefore a place which has great potential for exploring these issues. Furthermore, India's distinctive styles of drama bring a new dimension to the theatrical work.

In 2006, Rebecca Gould, Jeff Teare and Simon Turley visited India to run a series of pilot workshops and to make initial contact with Indian organisations. They discovered that theatre practitioners and scientists in India were very enthusiastic about the possibilities of combining theatre and science. Following this visit, *Imagining the Future II* took place in Bangalore in 2007; this event included workshops and seminars which resulted in performances of four plays and readings of three scripts.

The next stage of the project was to bring some of this work to the UK. This would bring a new, non-Eurocentric perspective to public engagement with science in Britain, and bring out both the similarities and differences between the two cultures. The work to be performed included two of the plays created in Bangalore – *The Invisible River* by Artistes' Repertory Theatre and *Crab Soup* by The Creative Arts – plus two of the scripts that were read – *Idiot Wind* by Farhad Sorabjee and *Bad Blood Blues* by Paul Sirett.

The overall context of the project is therefore a continuation of the collaboration between Theatrescience and the Indian theatre practitioners and scientists who had previously worked together on *Imagining the Future II* in Bangalore.

2. *Intended Outcomes*

The intended outcomes of the project, as stated on the original funding application, were as follows:

1. Further involvement in, and discussion of, biomedical science-based social, political and ethical issues by people in the South-West (and, perhaps, London – the Soho Theatre has expressed interest in this project).
2. A direct interface between these people and concerned theatre practitioners from India.
3. Promulgation of published scripts and reportage video to interested bodies and the press.
4. A further development of the work both in India and the UK.

This evaluation will consider to what extent and in what ways each of these outcomes was achieved. The results are discussed in section 9 of this report.

3. *Methods of Evaluation*

3.1 Audience Questionnaires

Audience response questionnaires were distributed after each of the two plays performed at Sadlers Wells. The questionnaires were completed by audiences immediately after the performances and were collected on the same night to maximise the response rate. The questionnaires included both open and closed questions in order to collect qualitative and quantitative data. They also included 'DVAS' (discrete visual analogue scale) questions, for which respondents were asked to position themselves on a scale of agreement by choosing a number from 1 to 10.

3.2 Participant Questionnaires

There was also a questionnaire for participants which was distributed and collected via email in the weeks following the production. This similarly included a mixture of open and closed questions to obtain both qualitative and quantitative data.

Copies of each of the questionnaires are appended to this report.

3.3 Observation

This evaluation will also draw on direct observation of the various events that formed part of the project.

4. List of Participants

Theatrescience

Rebecca Gould

Jeff Teare

Simon Turley

Artistes' Repertory Theatre, Bangalore

Sukhita Aiyar (actor)

Veena Appiah (actor)

Pritham Kumar (actor)

Harish Seshadri (actor)

Joshua Saldanha (actor)

Arundhati Raja (producer)

Jagdish Raja (producer)

Ruchika Chanana (director)

Gautam Raja (writer)

Dipti Rao (administration)

The Creative Arts, Kolkata

Taranjit Kaur (actor)

Payel De (actor)

Vajinder 'Rocky' Bhardwaj (actor)

Souptik Chakraborty (actor)

Ramanjit Kaur (director)

Arthur Cardozo (writer)

Scientists

Hemalatha (Latha) Somsekhar, Indian Council of Medical Research, New Delhi

Mukund Thattai, National Centre for Biological Sciences, Bangalore

Professor Peter Godfrey-Faussett, Department of International Health, London School of Hygiene and Tropical Medicine

Writers

Farhad Sorabjee, Mumbai

Paul Sirett, UK

Chairs

Simon Parry, Wellcome Trust

Actors (UK)

Rachel Donovan
Shiv Grewal
Sudha Bhuchar
Trudie Goodwin
Abdul Salis

5. Structure of the Project

The programme consisted of a series of events taking place over five days, from 14th-18th July 2008. The schedule was as follows:

Monday 14th July

Workshop at Soho Theatre: *Evolution in India*

Playreading at Soho Theatre: *Idiot Wind* by Farhad Sorabjee

Tuesday 15th July

Workshop at Soho Theatre: *Verbatim Theatre - Women Living with HIV*

Playreading at Soho Theatre: *Bad Blood Blues* by Paul Sirett

Wednesday 16th July

Presentation at Nehru Centre (Indian High Commission)

Thursday 17th July

Performance at Lilian Baylis Studio, Sadlers Wells: *Crab Soup* by The Creative Arts

Friday 18th July

Performance at Lilian Baylis Studio, Sadlers Wells: *The Invisible River* by Artistes' Repertory Theatre

Each of the playreadings and performances was followed by a post-show discussion.

In addition to this programme of events, there were a number of less formal opportunities for participants to network with UK professionals, visit sites of scientific and theatrical interest in London, and to get to know each other as a group.

6 Observation of Events

6.1 Workshops

Evolution in India

Led by: Jeff Teare and Rebecca Gould

Participants: Artistes' Repertory Theatre, The Creative Arts, Farhad Sorabjee, Latha Somsekhar, Mukund Thattai, Rachel Donovan, and Simon Turley.

Participants were given newspaper articles about Charles Darwin, Alfred Russell Wallace, and the history of the study of evolution to read before the workshop.

Rebecca Gould led warm-up exercises for the group.

Jeff Teare introduced the subject of evolution and read out a selection of propositions about evolution, such as 'A superior intelligence/deity is involved in the development of life as we know it' and 'Humankind is the result of a linear ascent'. Participants were asked to form a 'line of approval', positioning themselves along a scale from 'completely agree' to 'completely disagree' for each proposition. This gave a quick visual way to see what participants' opinions were.

The two scientists, Latha Somsekhar and Mukund Thattai, then gave an overview of Darwin's theories to the rest of the group, including concepts such as 'survival of the fittest' and 'ring speciation', and answered participants' questions.

Following this, the participants were divided into four groups. Each group was asked to choose a subject from a list of three possibilities (the human interest story – Darwin and Wallace, the ascent of man, the history of evolution) and a style of theatre (Bollywood, physical theatre, or soap opera) in order to produce a four-minute theatrical piece to be performed to the rest of the group at the end of the workshop.

The participants spent the rest of the morning in their groups, discussing the issues around human evolution, and writing and rehearsing their pieces.

At the end of the workshop the groups performed their pieces, as follows:

Group 1: Physical theatre without dialogue which showed how human activities can be traced back through time.

Group 2: A family meal at the Darwins', focusing on the relationship between Charles Darwin and his strongly religious wife.

Group 3: Physical theatre with dialogue, set on board a boat, also showing the relationship between Darwin and his wife.

Group 4: 'Adam's Rib' theatre company, *Wall-lose and Dar-wins*. A humorous piece with a traditional Indian auntie trying to get her niece to choose between Darwin and Wallace as potential husbands.

At the end of the workshop, the same propositions about human evolution were read aloud, and participants again formed lines of approval, to see if people's opinions had changed during the course of the workshop. There were no significant changes of opinion, although there was a slight shift away from belief in human uniqueness.

However, this exercise resulted in a number of questions being asked to clarify the propositions, which then led to a plenary discussion among the whole group about the various issues raised during the workshop, such as the differences between India and the UK in terms of the reception of the

theory of evolution, whether the idea is less inimical to Hinduism than to Christianity, how Hinduism views the relationship between humans and animals, the matter of consciousness, and so on.

This workshop was the source of interesting debate and created four new short pieces of theatre with potential for development. It was a valuable exploration of scientific ideas, theatrical practices, and cultural differences.

Verbatim Theatre - Women Living with HIV

Led by: Jeff Teare and Rebecca Gould

Participants: Artists' Repertory Theatre, The Creative Arts, Farhad Sorabjee, Latha Somsekhar, Mukund Thattai, and Simon Turley.

The second workshop at Soho was based around transcripts of interviews with HIV-positive women in Kolkata, conducted by The Creative Arts.

After warm-up exercises, Jeff Teare gave an overview of the practice of verbatim theatre, outlining its history, key productions such as Nick Kent's *The Colour of Justice* (based on the Stephen Lawrence inquiry), and his own past projects. He explained the process of successfully turning transcripts into a staged production: how for example you can play with the structure of the words, and can juxtapose different sections, but you can't change them.

The participants were then given sections of the interviews to read aloud to the whole group.

Arthur Cardozo from The Creative Arts then led an exercise using objects and spaces in the room to further express the issues and themes of the verbatim interview extracts.

Short readings/performances were then shared, and discussed by the group.

Conclusions on Workshops

Participants found the workshops to be one of the most enjoyable and useful parts of the whole project, as indicated by these comments:

- The workshops at Soho were great in that we were able to discuss [...] scientific theories that are historical and at the same time so intrinsic to our lives and the global knowledge we possess today as a species.
- [I] found out during the workshops that the scientists are more creative than they look.
- I enjoyed our workshops in the mornings – learnt things about evolution about which I had no clue – so that was a literal 'learning'.
- A lot of interaction took place between UK and India mostly during the workshops and seminars that raised questions regarding, social, ethical issues in India, which were hopefully answered to the point of satisfaction, by the Indians present there at that time.

6.2 Playreadings

Idiot Wind by Farhad Sorabjee

Cast: Shiv Grewal and Sudha Bhuchar

Post-show discussion: Farhad Sorabjee, Latha Somsekhar, Jeff Teare, Simon Turley (chair)

Synopsis: This play, which was originally developed during *Imagining the Future II* in Bangalore, deals with the matter of autism and explores the possible causes and consequences of having an autistic child.

Attendance: 41

There was excellent attendance for this reading. The audience included literary managers from major theatres, respected playwrights, members of the Equity Directors Committee, and a number of scientists and research students from institutions including the London School of Hygiene and Tropical Medicine.

Following the reading, the playwright, director, and scientist answered questions from the audience about the causes of autism, current research, the scientific validity of the story and the process of developing the play.

Bad Blood Blues by Paul Sirett

Cast: Trudie Goodwin and Abdul Salis

Post-show discussion: Professor Peter Godfrey-Faussett, Paul Sirett, Jeff Teare

Synopsis: A love story entangled with the ethical problems of double-blind HIV drug trials in West Africa.

Attendance: 29

There was again very good attendance for this reading, with audience members from Cambridge University (Partners Linked Across Collaborations in Ethics and the Biosciences – Orbital research group), the London School of Hygiene and Tropical Medicine, the Wellcome Trust, and several theatre companies.

There was a long and fascinating discussion after the reading, in which Peter Godfrey-Faussett, a Professor of International Health at LSHTM with extensive experience of leading HIV and TB research projects in Africa and globally, answered questions about the ethics, practices and challenges of conducting double-blind placebo-controlled drug trials. Paul Sirett and Jeff Teare also discussed the inspiration for the play and the process of developing the script.

6.3 Presentation at Nehru Centre

Participants: Artistes' Repertory Theatre, The Creative Arts, Rebecca Gould, Jeff Teare and Simon Turley.

Attendance: 30

This presentation offered participants a chance to showcase their work within a specifically Indian cultural context in the UK.

Rebecca Gould, Simon Turley, Arundhati Raja and Ramanjit Kaur gave an overview of the Theatrescience project, its history and its goals, and short extracts from the plays were performed.

While this event was a good opportunity for all of the participants to work together and provided a central focus for the week, it was felt generally that attendance could have been improved. In particular, participants and organisers felt that the Nehru Centre/Indian High Commission could have done more to support and promote the event.

6.4 Plays

Crab Soup

Writer: Arthur Cardozo

Director: Ramanjit Kaur

Cast: Taranjit Kaur, Rocky Bhardwaj, Souptik Chakraborty, Payel De

Post-show discussion: Ramanjit Kaur, Latha Somsekhar, Arthur Cardozo, Rebecca Gould (chair)

Synopsis: The effects of HIV infection on an Indian marriage, the relationship between the husband, the wife, and her maid, and the use of a vaginal gel which prevents the transmission of HIV.

Attendance: 123

Crab Soup, initially created during *Imagining the Future II* and then developed by TCA in the subsequent months, is a powerful theatrical piece with a strong focus on the physical, including dancing, singing, and extensive use of props, combined with intense images, sounds, and smells. This was the first performance of the play outside India.

The audience included many health/science professionals from organisations such as Guy's Hospital and Cambridge University, representatives of the world of theatre and media, and people from the Indian community. This diverse mix was reflected in the questions asked during the post-show discussion. The lively debate covered subjects including gender and class politics in India, research into microbicides and their possible use as contraceptives, religion, law, ethics, and the process of writing and staging the play. The discussion showed a real level of

interest and engagement with the play's subject matter. This is discussed further below in section 7.1 which analyses the audience questionnaires for *Crab Soup*.

The Invisible River

Writer: Gautam Raja

Director: Ruchika Chanana

Cast: Sukhita Aiyar, Veena Appiah, Pritham Kumar, Harish Seshadri, Joshua Saldanha

Post-show discussion: Ruchika Chanana, Mukund Thattai, Gautam Raja, Simon Parry (chair)

Synopsis: The possibility that the religious belief in the healing power of the Ganga might have a scientific basis in the discovery of bacteriophages in the polluted water.

Attendance: 180

The Invisible River explores the complex relationships between science, religion, politics, tradition, and family in contemporary India, centred around the discovery of bacteriophages in the waters of the River Ganges. It was developed during *Imagining the Future II* and this was its first international performance.

The play was full to capacity, with standing room only. As with *Crab Soup*, the diverse mix of people in the audience led to a fascinating and wide-ranging post-show discussion. Subjects covered included an extensive discussion of phage therapy, with contributions from audience members currently conducting clinical trials in this area, the political aspects of research, the balance between religion and science, the representation of science in the media, and the motivations behind writing the play.

7. Audience Responses

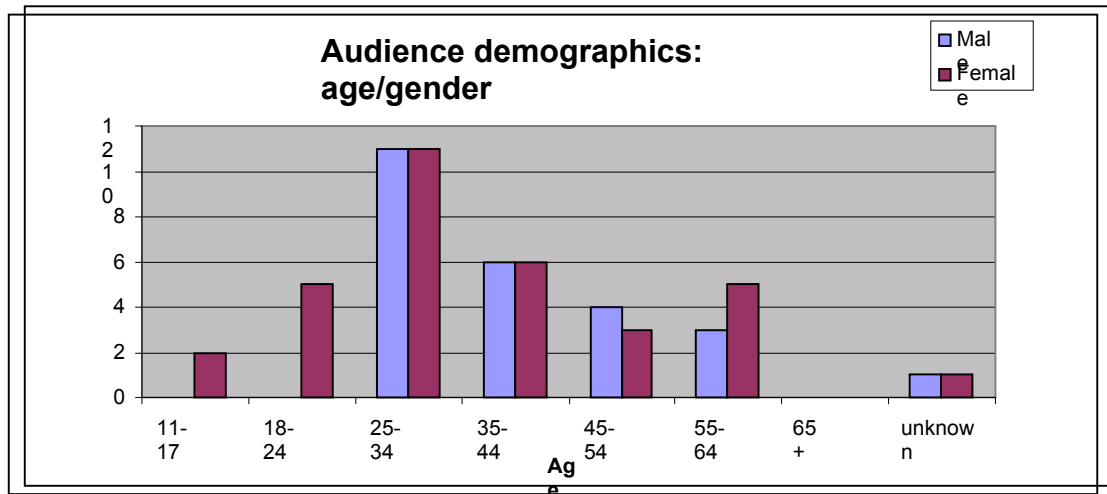
This report will now consider the audience responses to *Crab Soup* and *The Invisible River*, based on the questionnaires which were distributed, completed, and collected immediately after each performance.

7.1 Crab Soup

Total number in audience	123	
Total questionnaires completed	58	(47% of audience)

7.1.1 Demographics

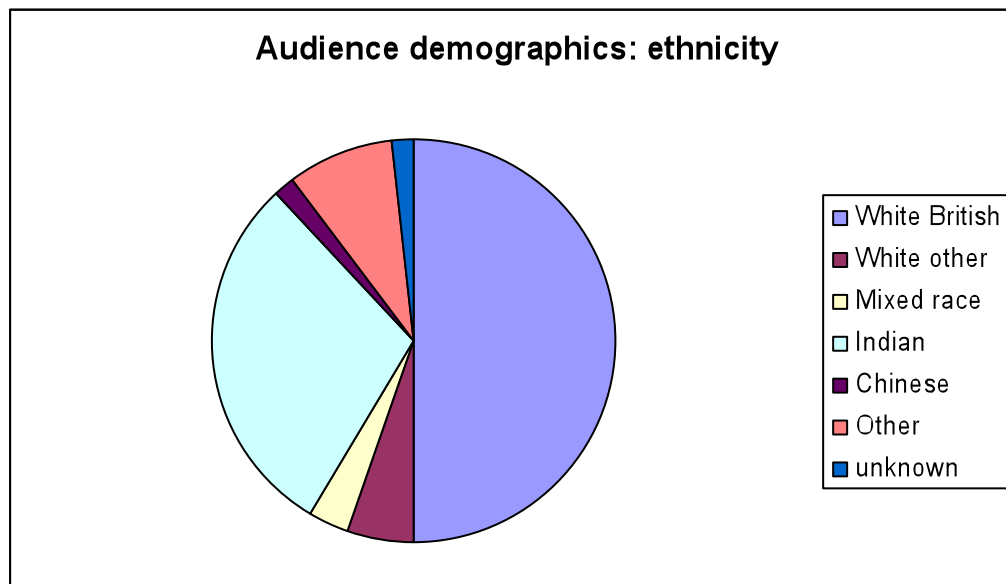
Questions 1-3 collected demographic information about the audience. This chart shows the respondents broken down by age and gender.



As this chart shows, 38% of respondents were in the 25-34 age bracket. 21% were aged 35-44, 14% were aged 55-64, 12% were aged 45-54, 9% were aged 18-24, and the remaining 7% were either aged under 18, or did not give their age.

Of those who responded, somewhat more than half (57%) were female.

This chart shows the respondents categorised by ethnic group:



50% of respondents (29) identified themselves as White British. The other ethnic group making up a significant proportion of the audience was Indian: 29% of respondents placed themselves in this category. 9% identified themselves as Other, 5% as White Other, 3% as Mixed Race, and 2% as Chinese. 2% of respondents did not answer this question.

7.1.2 Employment and Experience

Questions 4-6 asked for information about respondents' employment and experience of the issues covered in the play. This was partly to collect demographic information and also to establish whether the audience had previous knowledge about the subject matter.

Respondents' employment status was as follows:

Employed full time	29
Self employed	10
Employed part time	8
Student	4
Retired	3
Unemployed	2
At home	1
Other	1
<i>Total</i>	<i>58</i>

As this table shows, 81% of respondents were in employment. Respondents were also asked to state their profession. 39 of 58 respondents did so, and their areas of work can be categorised as follows:

Science/Medicine/Research	12
Arts/Media	8
Other	7
IT	5
Education	4
Law	3
<i>Total</i>	<i>39</i>

A fairly high proportion (over 30%) of the audience were employed in medical or scientific fields, meaning that many of them were likely to have some knowledge of the issues covered in the play. Specific occupations listed which had relevance to the subject matter of *Crab Soup* included 'Doctor' (4 of 39 respondents), 'Scientist' or 'Research Scientist' (4 of 39), 'Health visitor', and 'Dentist'. As discussed above, the professional expertise of many of the audience also emerged during the post-show discussion.

This was reflected in the answers to question 6, which asked whether the respondents had any previous experience of the subjects discussed in the play. 16 of 58 respondents (28%) had professional experience of the subjects discussed, while 10% had personal experience. 34 respondents (59%) did not have any experience of the subjects, while 2 were unsure or preferred not to say.

The number of people employed in relevant fields was also reflected in the answers to question 16, which asked respondents why they had chosen to attend the performance. Several people mentioned the relevance of the play to their work or research, with 7 respondents referring to their

interest in the scientific and medical issues covered in the play; specific issues mentioned included 'sexual health', 'women's issues', and 'medicine in India'.

7.1.3 Knowledge and Beliefs

Questions 7-10 aimed to evaluate respondents' attitudes towards the issues covered in the play, and to what extent these were affected by the performance.

Question 7 asked the respondents whether they thought there was a lack of understanding among the general public in the UK about the issues surrounding HIV/AIDS in India. Answers were given using the DVAS scale.

The overall result of this question was a strong agreement that there is a lack of understanding. The mean response for this question was **7.9 out of 10**, with 45 of 54 respondents rating 7/10 or higher.

The following question asked to what extent respondents felt that *Crab Soup* had contributed to their understanding of the personal and social impact of HIV/AIDS in an Indian context.

Of 57 answers, the mean response was **6.5 out of 10**, with a median of 7, suggesting that respondents felt that *Crab Soup* had definitely increased their understanding.

There was a wider range of responses for question 9, which asked respondents whether *Crab Soup* had changed their attitude towards HIV/AIDS in India. The mean response to this question was **5 out of 10**, with a spread of answers covering the full range from 1 (no change in attitude) to 10 (total change in attitude).

Question 10 asked respondents to comment, if appropriate, on *how* their attitude had been changed. 19 responses were received. The key ways in which people felt their attitude had changed were:

- **increased knowledge** of the subject matter. The majority of respondents referred to this, using terms such as 'awareness' and 'realisation' to describe how CS changed their attitude: for example, 'Gained awareness of the issues' and 'More knowledge'.
- **gender**, with several respondents referring to 'Women's role in the struggle', 'Attitudes of sexism', and 'Male/female relationships', and
- **the Indian context specifically**, as indicated in responses such as 'power structure of marriage in India', 'I didn't realise it was a major issue in India until tonight', and 'HIV/AIDS is always highlighted in reference to Africa, this opened my eyes to its prevalence elsewhere'.

7.1.4 Engagement and Enjoyment

Questions 11-14 were intended to assess the extent to which *Crab Soup* engaged the audience in the scientific issues covered in the play, how much people enjoyed the play, which aspects they particularly enjoyed or disliked, and how these two aspects – engagement and enjoyment – were linked.

In response to question 11, 'To what extent did 'Crab Soup' engage you in this issue?', 47 of 56 people rated 5/10 or higher. The mean response was **6.8 out of 10**; the majority of respondents found that the play did engage them with the scientific issues.

Question 12 simply asked 'Did you enjoy 'Crab Soup'?'. Responses to this question were very positive, with 49 of 57 people rating 5/10 or higher. The mean response was **7.4 out of 10**, which indicates that on the whole the audience found the play to be very enjoyable.

Questions 13 and 14 were open questions, which asked respondents to comment on what they found most and least enjoyable about the play.

For question 13, 45 comments were received. Several comments complimented the play as a whole, for example: 'All aspects - how the issues were handled, sensitive acting, relationships, lighting, etc.' and 'A highly engaging piece of theatre - organic from the writing to the lights and all points in between. Excellence in motion'.

Specific aspects which people particularly enjoyed included:

- **imagery.** This was the most enjoyable aspect of the play, with 13 of 45 comments specifically drawing attention to its visual impact. Comments included: 'the images were very striking', 'I loved the visual effects and the images created. They were extremely powerful', and 'how simple yet effective the lighting was'.
- **acting.** 12 of 45 respondents referred to the actors, with comments describing the acting as 'powerful' and 'sensitive' and the performances as 'seamless'.
- **the message.** 8 comments referred to the presentation of the issues, for example 'a clear message presented in an engaging way' and 'knowledge on what steps are being taken to improve the present condition in India'.
- **physical movement.** 6 comments listed 'movement', 'dance', 'physicality', etc. as being particularly enjoyable.
- **post-show discussion.** 4 comments listed the post-show Q&A session as the most enjoyable aspect.
- **sound.** 4 people commented positively on the use of various sounds and the music in the play.
- **symbolism.** 3 comments referred to the symbolism of the play, for example 'symbolic props (newspapers/mud)' and 'nice symbolism'.
- **the maid.** 3 people found the character of the maid particularly significant.

- **different style of theatre.** 3 respondents said that they particularly enjoyed seeing a style of theatre that differed from more traditional 'English' drama, and one person commented on 'the organic seamless mix of styles which worked well in this hugely personal and intimate relationship between two people'.

For question 14, which asked respondents what they found least enjoyable about the play, 11 comments were received. Of these, 5 people found the script/dramaturgy to be the least enjoyable aspect of the play, while 1 person commented 'I found the symbolism very effective, but then was left quite confused as to what exactly everything symbolised (e.g. white paint)'. 1 person also commented that 'the heightened emotion at times made it more difficult for me to empathise with the characters' situations'.

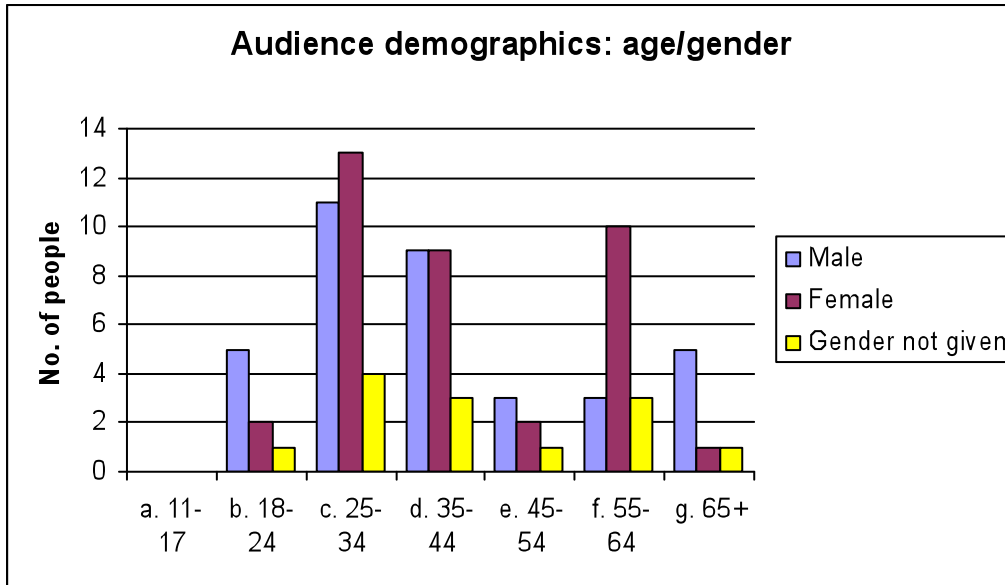
It is clear from reading these comments that people found *Crab Soup* to be a powerful sensory experience in terms of the images, sounds, and smells used in the play. The general impression from these responses is that *Crab Soup* is very effective at engaging audiences with the scientific and ethical issues around HIV in India. By presenting it as part of a heightened emotional performance, audiences are affected on a visceral level and thus engage with the scientific aspects in a way they might not if the same information was presented in a more straightforwardly factual form.

7.2 The Invisible River

Total number in audience	180	
Total questionnaires completed	86	(48% of audience)

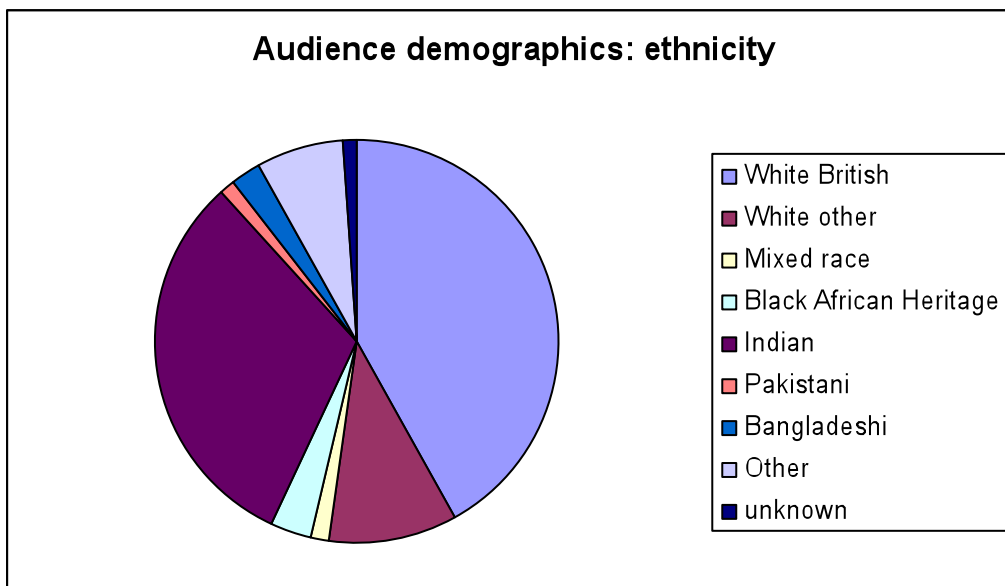
7.2.1 Demographics

As with *Crab Soup*, the first 3 questions aimed to collect basic demographic information about respondents.



The majority of respondents (33%) were in the 25-34 age category, with 24% aged 35-44, 19% aged 55-64, 9% aged 18-24, 8% aged over 65, and 7% aged 45-64.

36 of the 86 respondents were male, 37 were female, and 13 did not give their gender.



There was a diverse mix of ethnicities among the respondents, with under half (42%) identifying themselves as White British. A further 31% identified themselves as Indian, 10% as White Other, 7% as Other (those who specified wrote 'British Asian' and 'East African British Muslim'), 3% as Black African Heritage, 2% as Bangladeshi, and 1% as Mixed race, and Pakistani.

7.2.2 Employment and Experience

Questions 4-6 asked about respondents' employment status and experience of relevant issues in order to establish whether the audience had previous knowledge of the subjects covered in the play.

Employed full time	42
Self employed	19
Retired	9
Other	8
Employed part time	4
Unemployed	3
At home	1
<i>Total</i>	<i>86</i>

66 out of 86 (77%) of respondents were employed. Of those who specified their profession, 28% (17 of 61 respondents) worked within Arts/Media; other significant fields of work were Science/Medicine/Research (18%), Business/Finance (18%), Education (7%), and IT (7%).

Arts/Media	17
Science/Medicine/Research	11
Business/Finance	11
Other	11
IT	4
Education	4
Law	3
<i>Total</i>	<i>61</i>

Those employed in occupations relating to biomedical sciences included 'Biologist', 'Medical Communications', 'Doctor', 'NHS' (role not specified), 'PhD Student in Biological Sciences', and '(Ex-biochemist Imperial College)'.

Asked in question 6 whether they had any experience of the issues covered in *The Invisible River*, 29 out of 86 people (34%) had personal experience, 11 (13%) had professional experience, and 44 out of 86 (51%) had no experience. It should be noted that unlike *Crab Soup*, which deals with a very specific issue, *The Invisible River* touches on many different topics (with the issues of bacteriophages and pollution of the Ganges as the central linking thread), and it is therefore possible that people interpreted this question of experience in different ways.

7.2.3 Knowledge and Beliefs

Questions 7-10 aimed to find out to what extent respondents' attitudes towards the relevant scientific issues were changed by watching the play.

Question 7 asked the respondents whether they thought there was a lack of understanding among the general public in the UK about the issues

covered in *The Invisible River*, specifically biomedical advances in India. Answers were given using the DVAS scale.

The mean response for this question was **8.2 out of 10**, indicating very strong agreement that there is a lack of understanding. In fact, 26 of 82 respondents rated 10/10 for this question, meaning they believe the general public in the UK has no understanding at all of these developments.

The following question asked to what extent respondents felt that *The Invisible River* had contributed to their understanding of recent biomedical developments in an Indian context. Respondents felt strongly that *The Invisible River* had increased their understanding, giving a mean response of **7.4 out of 10**.

For question 9, which asked respondents whether the play had changed their attitude towards these developments, the mean result was **6.7 out of 10**.

Question 10 asked respondents to comment, if appropriate, on *how* their attitude had been changed. 28 comments were received, all of them very positive.

Almost all respondents (24 out of 28) commented on their **increased understanding and awareness**, for example 'Understanding makes one appreciate what is really going on. This play has contributed greatly towards this understanding' and 'Better understanding of the complexity of the issues at stake'. Several of these respondents emphasised their complete lack of knowledge prior to attending the play, for example:

- Didn't previously know about this area of science.
- Had no idea about the phage theory before today.
- It was an education - I knew very little about it.
- Didn't know anything about this.
- Favourably - a concept I had never previously considered.
- I was completely oblivious to this and thus found it extremely educational.

6 of the 28 comments also emphasised that *The Invisible River* made them want to go and learn more about the subjects discussed in the play, for example:

- It would be interesting to learn more about phagetherapy.
- I'll probably go away and read more about it.
- Wanting to engage more.
- Would like to find out more about current research.

Other respondents commented that the play made them feel **more optimistic** about biomedical developments, for example describing the change in their attitude as 'increased optimism'.

7.2.4 Engagement and Enjoyment

Questions 11-14 were intended to assess the extent to which *The Invisible River* engaged the audience in the scientific issues covered in the play, how much people enjoyed the play, which aspects they particularly enjoyed or disliked, and how these two aspects – engagement and enjoyment – were linked.

Question 11 asked 'To what extent did *The Invisible River* engage you in this issue?'. Responses to this question were very high, with a mean of **8.1 out of 10**, and 26 of 77 respondents (34%) rating 10/10.

Asked in question 12 whether they had enjoyed the play, respondents were overwhelmingly positive. The mean response was **9.0 out of 10**, with the majority of respondents (54 of 77) giving full marks : 10/10 for enjoyment.

Questions 13 and 14 were open questions, which asked respondents to comment on what they found most and least enjoyable about the play.

For question 13, 67 comments were received. Many people listed multiple aspects of the play which they had enjoyed, with several responses such as 'All of it!' and 'I enjoyed everything'.

Specific aspects which respondents particularly enjoyed were:

- **subject matter / science vs. religion.** 38 of the 67 comments praised the themes, subject matter, or topic of the play. While some simply commented 'engaging subject matter', many comments were more detailed, for example:
 - Bringing science and 'religion' (Hindu Dharma) together, both in their most difficult forms, in a way that it is simple to capture the essence of them
 - The insight into the confluence of science and spirituality.
 - The interplay and interdependence of religion and science, esp. Hinduism - and politics of course.Most of these comments focused specifically on the combination of faith/religion with science. Respondents felt strongly that the play very successfully addressed both of these areas without collapsing the differences between them, or being unduly weighted towards either. One respondent commented 'I would never have imagined the faith and science topic could be addressed on stage', while another wrote 'The conflict between faith and science, while not a new idea, was very vividly portrayed and was given a broader dimension'.
- **acting.** Many respondents (25 of 67) praised the 'excellent actors' and 'very powerful performances', with one typical comment being 'the actors were ALL absolutely fantastic - the MOST enjoyable!'
- **script/dialogue.** Approximately 10 respondents mentioned the script and dialogue specifically as the most enjoyable aspect.

- **humour.** There was a strong positive response to the humour of the play, with 12 of 67 comments mentioning it. Many of these comments emphasised the combination of humorous and serious aspects of the play, for example, 'the story was funny and filled with pathos', and 'the mix of humour with a serious subject'. One respondent explained how the humour increased their understanding of the subject matter: 'The use of comedy and the lightness of approach in certain parts of the play allowed me to access the "science" aspects.'
- Other aspects which were mentioned included the professional **presentation**, the **direction**, and the **atmosphere**, and several people described the play as 'thought-provoking' and 'engaging'.

Of the 15 responses to question 14, which asked respondents what they found least enjoyable about the play, 7 were complaints about the theatrical venue itself, with 6 complaining that it was too cold and 1 that the seats were too hard! Of the remaining 8 comments which related to the play itself, 1 respondent felt that there was too-much 'Hindu-bashing', saying 'I would have liked to see less negative aspects of Hinduism talked about'. While this is a concern, this comment is heavily outweighed by the many comments which praised the representation of religion in general and Hinduism in particular. Other comments felt that the play was too short, or that there should have been an interval, while 1 respondent complained about the technical quality of the sound.

What is clear from the responses to this questionnaire is that the audience found *The Invisible River* to be interesting, well-written, and very entertaining. Respondents were really engaged by the scientific, political and ethical questions tackled in the play, and many of them were inspired to actively seek to learn more.

7.3 Conclusion

Both *Crab Soup* and *The Invisible River* were very effective at engaging the audience in the issues they presented, but the two plays achieved this engagement in contrasting ways: *Crab Soup* primarily through emotional and sensory impact, and *The Invisible River* through its humour and tight scripting. The post-show discussions were also very successful in engaging audiences, whether they were professional experts or had no prior knowledge of the subject.

8. Participant Responses

In the weeks following the project, participant questionnaires were distributed and collected via email. The aim of this questionnaire was to assess to what extent those who had participated in the project felt that it had been successful, which aspects they had found particularly enjoyable

or challenging, and their thoughts on potential future developments of the work.

8.1 Participant Demographics

12 completed questionnaires were received.

The breakdown of respondents in terms of organisations was as follows:

Artistes' Repertory Theatre	6
The Creative Arts	2
Theatrescience	2
Writers	1
Scientists	1

Respondents' roles within the project were:

Performer	3
Backstage	1
Writer	3
Administrative	1
Director	2
Scientist	1
Producer	1

Participants who responded ranged in age from 22 to 68, with an average age of 44. 7 were male and 5 were female.

8.2 Reasons for Participating

Questions 4-6 aimed to find out what participants' original reasons were for taking part in the *Imagining the Future III* project.

11 of the 12 respondents had previously worked with Theatrescience on *Imagining the Future II* in Bangalore, and therefore wanted to take part as a way of **continuing the collaboration**. Example comments included:

- Because we were a part of the pilot project and wished to continue the association.
- To see through something exciting of which I had been an integral part.
- As the logical next step from *Imagining the Future II*.

Several participants were keen to see how differently the work would be received in the UK, and to **disseminate knowledge about India** to an international audience:

- Wanted to be a part of the same project in a totally different environment.
- To see the reaction of the UK audience to the Indian plays.
- Wanted to hear the issues/questions that would be raised by the audience in UK.

- It was a challenge to be writing about science and blending it with emotions and packaging all that together into an Indian perspective for a British audience!

Above all, participants were inspired by the **bringing together of theatre and science**:

- Theatrescience is a unique project – very different from any others that I encountered – bringing science (something I've wanted to pursue but never have) and theatre (the field I currently work in) into contact with each other.
- It promised to be a solid platform for the exchange of ideas and a forum for the synthesis of new ideas in science and culture.
- To see how theatre can promote the exploration of critical developments in biomedical science ...

Asked in question 6 what specifically they had hoped to gain by working on the project. In addition to hoping to further **develop their professional skills** and networks, many participants commented that they wanted to learn more about how to successfully **engage the public with scientific ideas**:

- Wanted to be more involved in public engagement with science.
- Wanted more experience in using the creative fields for bioethics education.
- Was hoping to gain more ideas for public engagement with science/bioethics.
- Knowledge of the usage of one of the oldest mediums of communication this far not tested to communicate scientific breakthroughs. Also to be more informed on how we could use the medium of theatre to bring about huge ramifications in cultural mindset as also to use it as a strong arm of journalism for purposes of communication and information which otherwise may never see the light of the day..

Participants also hoped to **learn more about science** themselves, commenting for example: '[I hoped to] expand not only my experience of theatre but also gain a more in-depth understanding and association with science'.

Some participants also specifically commented on a desire to **represent Indian issues and culture** to a wider audience:

- Allowing wider audiences to get a glimpse of India and its political, religious and social contexts.
- To see further development of the work which we have been involved in for several years – and in particular the Indian prism at work on these issues.

Overall, it seems that the primary motivations were the desire to create wider public engagement with science and to develop further interdisciplinary work.

8.3 Outcomes

Having established why participants wanted to take part in *Imagining the Future III*, the subsequent questions aimed to find out to what extent the project had fulfilled their expectations.

Question 7 asked participants what they found to be the most useful outcomes of the project.

Many participants valued the **interactions** between the various people involved in the project, in particular the interdisciplinary aspects:

- The interaction with fellow theatre persons and discussions with experts from the world of science.
- It was an interesting project because I never thought theatre and science could gel together so well, therefore it was a different experience from the other projects I had done, and also found out during the workshops that the scientists are more creative than they look.

Participants also found the interactions with **audiences** to be very useful:

- Was good to see the success of the plays/readings including the post show discussions which were quite informative and varied (with discussions related to art and science).
- Feedback about the play from different kinds of audiences. Exposure for my cast and me to international venues and audiences. Presenting a very crucial Indian issue to an international gaze of scientists and social observers and artists.
- It was good to see substantial and varied audiences at the shows. It was great to see the patterns which we had experienced in our earlier projects taken on in new directions – the post show discussion on “The Invisible River” got right to the heart of what this whole thing is about ... completely integral contributions of writer, director and scientific advisor; an audience which is fully engaged in the piece-as-theatre and the piece-as-science.

Participants had also found the whole process of working on the project, bringing people together from different disciplines, professional backgrounds and geographical locations, to be a valuable learning experience.

Asked what they had found most enjoyable, as opposed to most useful, about taking part in the project, 5 of 12 respondents specified the **workshops**. 3 participants mentioned the **post-show discussions** as being especially enjoyable, for example ‘Taking part in the post show discussions was very stimulating’, and 3 mentioned the **performances**. Respondents also commented on the stimulating **exchange of ideas**, for example: ‘What I especially like about Theatrescience is the way ideas are explored, and then actually brought to life’ and ‘the obvious and keen

interest that people from the world of science and the arts have in the other was a revelation!'.

But in general, what was most enjoyable for participants was the **relationships and collaboration** between all involved, with many respondents saying they enjoyed the 'interacting', 'camaraderie', 'cultural synthesis', 'hanging out together', and 'the collaborative nature of the project'. As one participant commented:

We had people from different fields and different land coming in together and working as one, to come up with the best ideas in order to make the festival a success. This also created very close bond between each other.

It was generally felt that everyone involved in the project was interested, enthusiastic, and committed. For example, one respondent wrote: 'The people involved being, without exception, generous and fully engaged with the project'. Another commented: 'I believe there is enormous interest in this project in India, much of this being due to the transparent commitment, belief and enthusiasm of Rebecca and Jeff'.

Question 9 asked participants what they had found most challenging or difficult about working on the project. 4 of 12 respondents mentioned **financial or logistical difficulties**, such as the problems that some Indian participants had with obtaining visas, raising funds, and pressure of time. However, as one participant commented, 'Everything went off smoothly in the running of it'. 4 of 12 respondents also discussed **integrating theatre and science**:

- SCIENCE and blending it with emotions in a play!
- The science part of the project was pretty difficult for me to grab at the beginning but as the whole thing took shape gradually I got the hold of it.
- Writing a play with a definite scientific angle! Most interesting, and I never thought I would (or could) do something like this!
- Combining and intertwining art and science is a challenge especially when it comes to making sure that the scientific explanations are at a level which can be understood by the lay public.

As these comments indicate, while the practical side of things presented some difficulties, the challenges of bringing theatre and science together were stimulating and interesting rather than problematic.

Finally, asked what they had learned from taking part in *Imagining the Future III*, responses were diverse, ranging from personal thoughts about future career plans, to changes in attitudes to working styles and methods, for example: 'The amount of professionalism involved was incredible and of course the management and the organisation of executing the whole festival was something that I could really take back with me'.

What was widely shared was a sense of **increased understanding between science and theatre**, and how the two could be combined, with comments such as:

- My exposure to science and scientific thought has certainly increased since the entire project began and I now find myself seeking more knowledge about certain topics in the scientific arena.
- That here is a whole new area where drama can play a creative and elucidating part.
- Science can be taught effectively using theatre.
- Learnt that art and science could be combined very successfully.
- A certain respect for the enormous work that goes into the world of science.

On the whole, then, respondents felt that they had learned a lot from taking part in *Imagining the Future III*, and also that they had enjoyed it very much.

8.4 Future Development

These positive experiences are reflected in the fact that all of the participants who responded were very keen to take part in future work. Asked how they would like to see the project developing in future, several participants mentioned working with **young people** and in schools and colleges, for example:

- It's a great concept and I would like to see if it can be done with younger people, schools and colleges that teach science. It would be interesting to see future scientists and politicians views as well.
- In India: I would like to extend the work with schools further, developing new works of performance through a collaborative programme and cultural exchange between young people in the UK and in India.

There was widespread enthusiasm for continued **intercultural and interdisciplinary collaboration and exchanges**. For example:

- I hope in both the workshops and the material that comes out of future sessions, there is more in-depth discussion and involvement in science and greater collaboration between theatre practitioners and scientific thinkers.
- Would like to see more collaborative activities where theatre could be used for public engagement with science. Since this is a relatively new idea in India, it should be propagated and used effectively.
- Would like to work on current and relevant ethical issues in biomedical science/research with the theatre groups and see how they could be brought to more audiences in India.
- There are strong links between the UK and the Indian companies. I could see further collaborations being of value to all involved. The companies involved may well continue to develop new projects

which are driven by biomedical questions independently of one another.

There was also enthusiasm for expanding the project on a **larger scale**, with increasing numbers of publications, performances, new plays, and workshops, and collaborating with people from other parts of the world, such as Asia, Australia, and the USA. Several participants also expressed the hope that there would be **more funding** available in future to enable this expansion to take place.

Finally, participants expressed hopes that **actual social and political change** would arise from the continuation of the *Imagining the Future* project, with one writing: 'ultimately though, for this to gather enough momentum to see change'.

These responses indicate that the project has increased enthusiasm for the Theatrescience collaboration among all participants, and that it project has inspired many new ideas and directions for future work.

9. Evaluation of Intended Outcomes

This evaluation will now consider how and to what extent the original intended outcomes of the project were achieved.

As outlined in part 1 of this report, the intended outcomes were:

1. further involvement in, and discussion of, biomedical science-based social, political and ethical issues by people in the South-West (and, perhaps, London - the Soho Theatre has expressed interest in this project).

As the project developed, rather than the South-West, the productions took place in London. However, while the regional emphasis shifted, the involvement of more people in debate around these issues did take place.

The biomedical science-based issues were raised for discussion in workshops and in post-show talks, all of which were very well-attended.

Asked whether they felt that this project had made people in the UK more aware of social and ethical issues relating to biomedical science in India, 10 of the 12 participants who responded said yes. Comments included:

- The plays/readings have definitely made an impact on the UK audience. The post show discussions clearly showed that they were very interested in the various social and ethical issues relating to biomedical science in India.
- Judging from the variety of questions and responses both plays received, the audience seemed to have understood that the social and ethical issues relating to biomedical science in India is rather unique in some ways – more overtly defined and controlled by class and caste and politics.
- The stories in all of the plays (both the productions and the readings) either directly or obliquely dealt with important, current biomedical issues ... The UK audiences had both the plays and the post-shows as an opportunity to advance their knowledge and understanding.

The only reservation expressed by participants was that not enough people from the UK were able to attend the shows, due to the limited number of performances. Comments included: 'For awareness to reach a larger number of people, the project needs further exploration.'

The general consensus among participants was that for those who attended performances and workshops, there was definitely productive and informative discussion of biomedical science-based social, political and ethical issues, but that it would be even better to reach larger audiences in future.

2. *A direct interface between these people and concerned theatre practitioners from India.*

This outcome was achieved through the performances, the post-show discussions, and the workshops.

When asked whether they felt the event had increased engagement and dialogue between people in the UK and Indian theatre and science practitioners, all 12 participants who responded said yes.

In their comments, many participants referred to the increased awareness and engagement that came of bringing together people from different countries and from different disciplines. One commented that this engagement was achieved 'through pertinent questions that were raised which was the objective in the first place'.

As outlined above, the various events gave members of the public a valuable opportunity to engage directly with theatre practitioners and scientists.

3. *Promulgation of published scripts and reportage video to interested bodies and the press.*

This outcome was achieved in a number of ways:

- *The Invisible River* script has been published by Samuel French Ltd.
- The festival was featured on BBC radio (an interview with Ramanjit Kaur and Arundhati Raja on the Nikki Bedi show on BBC Asian Network) and in the Indian press.
- Contact was made with several broadcast and print journalists with a view to future coverage of Theatrescience projects.
- Videos of the events are available on Youtube.com and on the Theatrescience website.

4. *A further development of the work both in India and the UK.*

As discussed in section 7.4 above, all of the participants are enthusiastic to continue this collaboration, and there are many new ideas about how the project could be taken forward. Discussions are continuing between various participants as to the specific direction the work will take.

An International Development grant has been secured from Wellcome to continue this work with *Imagining the Future IV*, and a return visit to India is planned, with further performances, workshops, and publications to result.

10. Conclusion

Imagining the Future III was an innovative, exciting and unusual project. There were many challenges involved in bringing together people from so many different disciplines and areas, especially on a tight budget. But these challenges were met by a highly committed, passionate and enthusiastic group of participants.

Their commitment and hard work was rewarded by an impressive and diverse programme of events which left both audiences and participants intellectually stimulated, better informed, more open-minded, and inspired to learn and produce more.

A particular strength of this project that it demonstrated a number of different ways in which public engagement with science can be achieved: through different styles of drama, through post-show discussions which give audiences the chance to engage directly with experts, and through the bringing together of people who would otherwise not have had the chance to meet.

In conclusion, *Imagining the Future III* succeeded in achieving increased public engagement with biomedical scientific issues, and made many new connections between cultures, continents, disciplines, individuals, and organisations.

Further information about the project is available on the Theatrescience website:

<http://www.theatrescience.org.uk>

A video with excerpts from the week's events can be viewed online at:

<http://www.youtube.com/watch?v=IGm6bq3TnYs>