

Theatrescience

‘Not My Fault’:  
Genetic Variance, Risk,  
Responsibility and Health

Evaluation report

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## **1 Executive Summary**

This report evaluates the Theatrescience project 'Not My Fault', which commissioned six new site-specific plays on the theme of 'genetic difference and health', funded by the Wellcome Trust and Arts Council England.

Beginning in 2009, the project aimed to stimulate debate and awareness around issues of genetic predisposition by creating new theatre for a new and unexpected space. It also incorporated education projects with Ridgeway School in Plymouth and Peninsula College of Medicine and Dentistry (PCMD).

This report analyses the development process by which the plays were produced, describing and assessing the various stages of the project, including workshops, script development, rehearsals and performances. It considers feedback from participants, audiences and the company, as well as external documentation.

It also explores the relationship between arts and sciences, analysing preconceptions about theatre and science collaborations and suggesting how these can be challenged. It scrutinises the collaborations between scientists/clinicians and theatre makers which are at the heart of 'Not My Fault' and all of Theatrescience's work.

Finally, it makes recommendations for how the project can be built upon and developed further, based on the strengths, weaknesses, opportunities and threats identified in the report.

This report aims to be an important and useful resource for the Theatrescience team and for anyone interested in science and theatre, the interaction between scientists and arts practitioners, and the process of developing new plays. The team hope to disseminate the findings widely and to extend it with future research.

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## **2.Introduction**

### **2.1History and context of the project**

Theatrescience produces new drama which is inspired by and casts new light on biomedical science. Established by co-directors Jeff Teare and Rebecca Gould in 2002, it aims to break down the barriers between theatre and science, engage new audiences with scientific questions, and encourage scientists and arts practitioners to reach out beyond their own fields.

Over the past nine years, the company has evolved a unique development process, involving workshops, discussions, and feedback between scientists, clinicians, theatre practitioners, students and the public.

Subjects that have been covered include HIV, cystic fibrosis, cholera and pollution in the Ganges, autism, Indian forest ecology, drug trials in the developing world, and many more. The company has worked across the UK and in India and Uganda.

The core Theatrescience team also includes playwright Simon Turley and scientific advisor Professor Anthony Pinching. In 2008 Theatrescience were invited to perform extracts from Simon Turley's play, *Something Somatic*, to senior Wellcome Trust public engagement advisors and staff at the Eden Project in Cornwall.

At that time the Wellcome Trust was inviting Society Award applications on the subject of 'genetic difference and health'. Having done schools workshops and plays on this subject, the team wanted to explore it further, and so submitted an application for a programme of work called 'Not My Fault', on the theme of genetic variability and health, to be performed within the biomes of the Eden Project.

The project aimed to stimulate debate and awareness around issues of genetic predisposition by creating new theatre for a new and unexpected space. It also incorporated education projects with Ridgeway School in Plymouth and Peninsula College of Medicine and Dentistry (PCMD).

The application was successful, and with the funding from the Wellcome Trust, plus a Grants for the Arts award from the Arts Council England, the team began working on the project in early 2009.

## **2.2 Objectives**

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

- 1. bring together leading scientists and clinicians, playwrights, director and actors on an equal footing, inspiring and supporting them to co-imagine new plays with biomedical science at their core*
- 2. create exciting new pieces of theatre and present them in an unexpected space*
- 3. engage the public with the science of genetics and what it means for them personally*
- 4. offer audience members the opportunity to discuss the issues raised through post-performance discussions with theatre and science professionals involved in the project*
- 5. continue our work of using innovative forms of learning to engage with school pupils, particularly those at risk of exclusion*
- 6. reach out to new audiences, primarily through the Eden Project*

This evaluation will consider to what extent and in what ways each of these objectives was achieved. The results are discussed below.

## **2.3 Project structure**

### *Participants*

#### **Theatrescience team**

Jeff Teare	Director
Rebecca Gould	Producer
Mel Scaffold	Project manager

#### **Writers**

Selma Dimitrijevic	<i>Extremely Brief and Violent</i>
Alison Falconer	<i>50/50</i>
Sophie Macdonald	<i>Life in Ben's World</i>
Kitty O'Keeffe	<i>Perfect Match</i>
Jack Redmond	<i>Caroline</i>
Simon Turley	<i>State of Nature</i>

#### **Scientific advisors**

Prof. Anthony Pinching	Interim Vice Dean for Undergraduate Medical Education & Associate Dean for Cornwall, Peninsula College of Medicine & Dentistry
Dr Giles Richards	Consultant in Old Age Psychiatry, Cornwall Foundation Partnership Trust
Dr Peter Turnpenny	Clinical Genetics Department, Royal Devon & Exeter Hospital
Dr Steve Watkins	Community Sub-Dean for Cornwall, Peninsula Medical School
Dr Oonagh Corrigan	Senior Lecturer in Clinical Education Research, Institute of Clinical Education, Peninsula Medical School
Dr Dennis Francis	Lecturer in Molecular Biology, Cardiff University
Dr Atina Krajewska	Lecturer in Law, Exeter University

#### **Ridgeway School project**

Kevin Johnson	Education director
Tim Welch	Science teacher
Louise Frost	Science teacher
Ten students in years 7-9	

## **State of Nature production**

### *Cast*

Timothy Block	Patrick
Emma Bown	Louise
Jonathan Smith	Paddy
Sarah Kameela Impey	Kalpana

### *Crew*

Caroline Jones	Designer
Richard Price	Sound designer
John Whewell	Production manager
Daisy Gladstone	Company deputy stage manager
Rowan Rutter	Production assistant
Eluned Gramich	Press
Abi Curran	Director's assistant

### *Timeline*

May 2009	Wellcome Trust funding awarded
Sep 2009	Call for applications from writers
Nov 2009	Writers Weekend at Eden
Jan 2010	Pitches received
Feb 2010	Writers commissioned
Apr 2010	Arts Council England funding awarded
May 2010	First drafts due
Jun 2010	Ridgeway School workshops begin, Plymouth
Jun 2010	Script workshop of <i>Extremely Brief and Violent</i> , London
Jul 2010	Ridgeway School performance at Eden
Jul 2010	Script workshop of <i>State of Nature</i> and young writers' plays, Cardiff
Sep 2010	Casting for <i>State of Nature</i>
Oct 2010	<i>State of Nature</i> rehearsals, London
Nov 2010	<i>State of Nature</i> published by Parthian
Nov 2010	Performances/Book launch at Eden Project

## **2.4Floods**

On the day the plays were meant to open (17th November 2010), Cornwall was struck by severe flooding. For the first time in its ten-year history, the Eden Project had to close due to the extreme weather conditions.

This was obviously a huge setback after many months of intricate planning for staging the plays at Eden. However, the team worked extremely hard and managed to relocate the events for Saturday 20th November – the core 'showpiece' day featuring the book launch for *State of Nature* and a panel discussion in addition to the performances of *State of Nature* and the young writers' plays – to the Lost Gardens of Heligan.

Despite this disruption, the audience arrived in even greater numbers than originally expected at Eden. Almost every guest who had booked to attend at the Eden Project transferred their ticket to the new venue and, despite being 20 degrees colder than the intended venue in the Eden biome, the plays and talks went ahead with excellent feedback from the audience.

On the following day, Sunday 21st November, with the support of Professor Anthony Pinching, the production was moved to The Knowledge Spa at Royal Cornwall Hospital, Truro. The plays were finally performed at Eden for three days from the 23rd to 25th November.

Despite the huge efforts of all involved to minimise the effects of the flooding, the extreme disruption to the long-planned production should be kept in mind when assessing the project.

## **2.5 Introduction to project evaluation**

Evaluation has been an integral part of 'Not My Fault' throughout the project. Discussions and interviews with the evaluator enabled the Theatrescience team and other NMF participants to reflect on their own theory and practice as the project progressed.

This evaluation report considers the extent to which the project achieved its original objectives, as stated in the original funding application submitted to the Wellcome Trust.

It analyses the results of the project in terms of engaging and informing participants and audiences, numbers of those involved, documentation and dissemination of the project, and how it can be taken forward.



This evaluation also seeks to go beyond these measures of effectiveness by examining the development process of NMF and of Theatrescience more generally.

Evaluations of previous Theatrescience projects have established that the development process succeeds in engaging audiences and participants with scientific ideas, as well as engaging scientists with artistic processes and approaches.

As the end results of Theatrescience projects have already been evaluated, this evaluation therefore seeks to document and assess the *process* of developing new work more than the final *outcome*. For similar reasons, it concentrates on the interaction between theatre makers and scientists, rather than performers and audiences.

In discussion with the Theatrescience team, it was agreed that the evaluation would focus on answering the following questions:

- What is unique about the **Theatrescience development process**, and how does it succeed in producing engaging theatre?
- What is the relationship between theatre and science, in particular the precise nature of **collaboration and interaction between scientists and theatre practitioners** in producing new drama?

In order to analyse the development process, the evaluator, in consultation with the Theatrescience team, chose two plays as case studies to be examined in greater detail. The evaluation tracks the evolution of these two plays throughout the writing process, from the original pitch through to final performance/publication, in particular appraising the role played by each writer's interaction with their scientific advisor.

## **2.6 Methods of evaluation**

'Not My Fault' is a large-scale project which included a diverse range of events and participants. This evaluation considers all of the different parts individually and how these form an integrated whole. The following methods of gathering information have been used to evaluate the success of 'Not My Fault'.

### *Observation*

**Direct observation** of workshops, performances, et cetera including:

- Writers' Weekend, Eden, November 2009
- *Extremely Brief and Violent* workshop, London, June 2010

- *State of Nature* workshop, Cardiff, July 2010
- Young writers workshop, Cardiff, July 2010
- Ridgeway School workshop, Plymouth, June 2010
- Ridgeway School performance, Eden, July 2010
- Theatrescience team meetings: Bristol, Jan 2010; Cardiff, March 2010; London, June 2010
- Publishing meetings, Cardiff, March/July 2010
- *State of Nature* rehearsals, London, Oct 2010
- Public run-through, London, Nov 2010
- Launch Day: *State of Nature* book launch and first performance, young writers first performance, readings of *Extremely Brief and Violent* and *50/50*, Lost Gardens of Heligan, Cornwall, Nov 2010

### Questionnaires

- Questionnaire 1 to writers and scientists who took part in the 'Not My Fault' Writers Weekend at Eden in November 2009. Responses were collected from 3 established writers, 3 young writers, and 3 scientific experts. The questionnaire was distributed and responses collected by email.
- Questionnaire 2 to the six commissioned writers, their scientific advisors, and the creative team. This was distributed at the end of the project, following the performances in Cornwall.
- Questionnaire 3 to audiences watching *State of Nature* at Heligan, Truro, and Eden. The questions were distributed on cards and collected on the day. 65 responses were collected.

Copies of all of these questionnaires are appended to this report.

### Interviews

- In-depth telephone interviews were conducted with Alison Falconer and Sophie Macdonald, and with their scientific advisors, Dr Peter Turnpenny and Dr Steve Watkins, as part of the case studies outlined above.
- Interviews were conducted with Kevin Johnson, director of the Ridgeway School project, in person and by telephone, and with teachers at Ridgeway School.
- The project director, Jeff Teare, was interviewed at the conclusion.
- School students participating in the Ridgeway School project, following their performance at Eden, gave their feedback to the evaluator in small groups.

They were given a short questionnaire to stimulate and guide discussion: a copy of this is appended to this report.

### *Statistics*

Audience numbers, participant data and other quantitative data.

### *Documentation*

This evaluation also considers other documentation produced in the course of the project, including:

- Promotional material
- Press coverage
- Theatrescience Archive at Warwick University
- Online discussions
- Publication of the plays
- Video, photo and audio documentation

### **3. 'Not My Fault' development process**

#### **3.1 The Theatrescience development process**

The Theatrescience website lays out its distinctive development process as follows:

*Discussion and interaction between scientists, artists, and the public is fundamental to our artistic development process. Our projects involve workshops, debates, and mutual feedback between all involved. As well as providing initial stimulus and debate, scientists attend rehearsals and workshops and provide feedback on the work as it develops, to ensure that all the work we produce is scientifically accurate.*

*This innovative process results in high-quality new theatrical productions based around biomedical science.*

*Post-show discussions, which enable audiences to question both scientists and theatre practitioners directly, are also integral to the way we work. These inspire audiences to start exploring science for themselves, as well as encouraging participants and scientists to reflect upon their own work.*

The key features which constitute Theatrescience's development process are repeated and reciprocal feedback between scientists and theatre practitioners, discussion of scientific and artistic ideas, and post-show discussions with the public.

However, each project takes its own distinctive shape, depending on many factors such as the individual scientists and artists involved, the nature of the production, the location, subject matter, and other considerations.

The following section of this evaluation looks at how the Theatrescience development process unfolded for 'Not My Fault'. It describes and assesses each step of the process.

#### **3.2 Writers Weekend**

Having secured funding and held discussions with the various partner organisations, 'Not My Fault' had its creative beginning in November 2009. Theatrescience invited five established playwrights and five young emerging writers to spend a weekend at the Eden Project to learn about current issues in genetic science. The aim of this was to inspire and inform them to devise ideas for new theatrical pieces to be performed at Eden in 2010.

Writers were recruited through Soho Theatre and various arts organisations in the South West. An important aim of the project was to recruit not only established playwrights, but also young writers who were just starting out on their careers, in the hope that the project would play a formative role in engaging them with science in a lasting way. The success of this aim is discussed below.

The weekend programme consisted of five sessions in which experts in the scientific, social, legal, and clinical aspects of genetics gave an overview of current thinking in their field, followed by discussions with the writers.

The programme of speakers was as follows:

Session 1: Professor Anthony Pinching and Jeff Teare: **Introduction** (background to the project, introduction to genetics, current questions in genetics)

Session 2: Dr Atina Krajewska: **Genetics and the law**

Session 3: Dr Oonagh Corrigan: **Social and ethical aspects of the new genetics**

Session 4: Dr Dennis Francis: **Chromosomes, cells and genetic modification**

Session 5: Dr Steve Watkins: **Genetics in clinical practice**

Session 6: Jeff Teare, Simon Turley, Rebecca Gould, Anthony Pinching: **Plenum** (how to pitch and develop plays)

The weekend also included a tour of the Eden Project by Eden staff in order to view the potential theatrical spaces, and opportunities for informal discussions between the writers, scientists, and the Theatrescience team.

In addition, Jeff Teare and Simon Turley led a workshop for the five young writers. This included an 'automatic writing' exercise and another exploring reaction to location. The writers' initial response to some of the science input was also discussed as well as reactions to the Eden Project.

Participants were provided with a 'Writer's Pack' in advance of the weekend, intended to introduce them to the themes of the project and to spark off their initial thinking about genetic predisposition. This contained some basic information about genetics, plus copies of approximately 25 recent news articles about genetics (for example, articles on 'the fat gene', 'the infidelity gene', personalised genetic medicine, and DNA evidence).

Following the weekend, the Theatrescience team distributed notes to all who had attended, containing detailed write-ups of each session. This served as a useful

reference for the writers as the project continued. (The notes are appended to this report.)

The writers were invited to submit pitches by the end of the year; all of the professional playwrights and three of the young writers did so. Of these, two playwrights plus three young writers were commissioned. Another playwright submitted a pitch which was not considered suitable, but after discussion with the team she later submitted a revised pitch which was commissioned.

### **Feedback from participants**

After the writers had been commissioned, they (along with the scientists who had attended) were sent a questionnaire which asked about their experience of the weekend. (The questionnaire also gathered participants' thoughts on science and the arts, which are discussed in section 4.1 below.)

### **The questionnaire asked: What were your expectations of the 'Not My Fault' Writers Weekend, and how did the reality compare with your expectations?**

#### **Most participants said that they learned more than they had expected to:**

*I found out so much more than I had anticipated. I thought the talks and speakers covered a wide range of material which both interested me and exhausted me. There was so much to take in that I found it difficult to process it at the time but from my own notes and the ones given after the event I was able to digest everything.*

*I think I had expected a couple of writing sessions in which we would discuss techniques and a visit to the Eden Project. The reality, of course, was far more pleasant. Meeting everyone was very fun and being treated like an adult was also appreciated. I certainly enjoyed the visit to the Eden Project and the amount of freedom we had around there. I hadn't expected all of the information about the genetics however that was brilliant and very interesting.*

*I expected it to be more straight science lessons. I was really impressed with the range of speakers (and sandwiches).*

*I guess having guest lecturers talking about subjects I am so interested in helped in concentration on the theme instead on the situation.*

**Those who had worked with the company before unsurprisingly had a more accurate idea of what to expect:**

*[I expected to] Offer contemporary perspectives on relevant science that could provide inspiration and ideas for writers. Felt good in content and as an interaction, but the proof of the pudding will be in the final performances!*

*I expected to get a sense of The Eden Project as a potential site-specific location; to meet some writers new to the company and its processes (and maybe to help clarify things for them if I could); to benefit from some illumination with regard to genetic variation and health. On the whole, I think this is what happened.*

**Participants were very positive about the atmosphere:**

*I suppose I didn't really know what I expected from meeting the Theatrescience team and the other writers but I found that there was an atmosphere of acceptance, encouragement and sharing.*

*To be honest, I didn't know what to expect especially since there was several writers and we all knew that only some of us will continue working with the company. I didn't feel any competition but there was a lot of talk about it.*

**Some participants would have liked to have spent more informal time chatting to the scientists:**

*The workshop itself was fantastic, and as I said before, I wanted to hear more from the scientist[s] and to have more time to talk to them – but I absolutely understand that it wasn't possible at the time and was grateful for the time we had.*

*It was a very interesting weekend but with the scientists not spending enough social time with us to get to know them, I didn't feel I got past the confidence gap of feeling able to ask stupid questions in a large group. Time was inevitably very limited and there was quite a large group of writers, compared to scientists who tended to be around a few at a time. [...] Maybe workshops in small groups with the scientists where we were forced to contribute might have got us sparking off each other more – but then again, we probably wouldn't have covered so much ground.*

This last comment above sums up the difficulty of balancing information with inspiration; in other words, dividing the time between formal teaching sessions and more informal, creative discussions.

Due to budgetary constraints, the event took place over a weekend rather than the originally planned week. This meant that there were many structured sessions, with the scientists taking turns to address the group, and relatively little unstructured time for more informal discussions or exploratory workshops.

This led to initially more of a one-way transmission of information than is usual with Theatrescience's projects. Had there been more time, it is likely that the programme would have included space for the writers and scientists to spend more time as co-creators, working and playing with ideas more loosely. Similar sessions have formed part of previous Theatrescience projects (for example Theatrescience India in London, 2008, and the Theatrescience Residency at National Centre for Biological Sciences, Bangalore 2009).

The informal discussions which did take place, for example over dinner, as well as the question and answer sessions at the end of each talk, afforded some opportunities for more interactive dialogue.

From the outset, each writer approached the project with different expectations of how a collaboration of this sort might work; for example, one participant had expected "*to make connections with a particular scientist who sparked new ideas in order to develop a pitch together*", i.e. seeing the scientists as potential co-creators, whereas another saw them as "*lecturers*" whose role was simply to impart information.

**The questionnaire also asked: Thinking about the talks at Eden, where scientific experts spoke to the group about genetics, what was your experience of these talks? Informative, inspiring, challenging?**

**Participants unanimously agreed that the talks were very informative:**

*For me these talks were informative, inspiring and challenging. Having not read into Biology much since lessons at school they really provided a booster and a quick way for me to refresh my memory and learn some new things.*

*Interesting and a bit daunting – I have never seen myself as a 'scientist' more a jobbing GP and medical educator.*



*Incredibly informative and, as I mentioned above, a lot of [sic] take in.*

*As a speaker, I may be biased about mine, but the other speakers took up the challenge in really interesting ways, and all of the above descriptors apply.*

One participant later added:

*The scientific, medical and emotional talks held over the course of the workshopping weekend at Eden last November, truly was inspiring, and pre-emptively helpful.*

**Both groups – the writers in particular – found themselves much more engaged with science and genetics as a result of attending. Several participants referred to following up research or being more interested in science after the weekend:**

*Some of the ethical debates I found very interesting and some ideas are still floating around in my head... the subject of those discussions and talks seem to be (re)appearing to me in the news and conversation..*

*Obviously there were things I didn't understand however they were either answered in questions that were asked or research I took up after the weekend.*

*It made me want to practice [sic] medicine.*

**One participant felt they had not been sufficiently prepared:**

*I wish I had more time to prepare, because I feel if I knew just a tiny bit more I would have got much more from the experts who were there and hopefully they would be able to have easier and more complex conversations with us.*

Possibly the Writer's Packs could have been distributed earlier. Otherwise it is difficult to think of ways in which participants could have been more prepared, as the weekend was intended to be an introduction to genetics.

### **3.3 Beginning to write**

Of the five scientists who addressed the group, two went on to act as scientific advisors for commissioned plays: Professor Anthony Pinching (*State of Nature*) and

Dr Steve Watkins (*Life in Ben's World*). For the other four plays, experts in the relevant scientific fields were approached by the company.

The development process from this point on separated into several strands as each writer worked on their pitch and then their first draft, with guidance from Jeff Teare as artistic director/dramaturg, and began communicating, and in some cases meeting, with their scientific advisors. (See section 4.3 'Case studies' below.)

In the end of project questionnaire, all of the writers commented very positively on their experiences of the writing process. One wrote:

*The process, even on a small scale, of having your script edited, challenged and read aloud was amazing. Learning how much of a collaborative process writing for theatre is.*

Asked how the process differed from previous projects she had worked on, one young writer, Sophie, said:

*Probably the amount of feedback which I got, from Jeff especially – at the beginning I was quite stuck, but I knew Jeff was there and willing to look at ideas and drafts. Also Simon [Turley], who gave me helpful advice. The whole process felt open – I wasn't intimidated about getting in touch with people. In previous projects I might have felt able to send one draft across to be looked at – but I knew I could send lots. Theatrescience as a company have been very open, friendly and helpful.*

She also commented on the communications and mutual guidance between the three young writers:

*Kate was really helpful in commenting on drafts. It was nice to see what they were up to as the project was progressing. You can feel very alone – it was nice to chat with Jack and Kate and I could help them too as well as vice versa. They're both lovely people so that helped!*

The other young writers also praised their experiences of the writing process and the support they had received throughout (see for example their interviews at the Theatrescience Archive).

Project Manager Mel Scaffold commented that the professional development of the young writers was one of the outstanding positive outcomes of the project:

*The development of the young writers – one in particular – was, I feel, a very successful part of the project, and an excellent opportunity for them to be*

*nurtured at a stage in their career when that level of support is not easily available.*

The established writers were also supported throughout the writing process with close communication with the Theatrescience team.

### **3.4 Workshops**

Script development workshops for all of the plays (with the exception of *50/50*, which was commissioned later than the others) took place in summer 2010.

*State of Nature* plus the three young writers' plays were workshopped at Chapter Arts Centre in Cardiff in July. The three young writers plus Simon Turley attended, along with three actors, Jeff Teare as director, Rebecca Gould as producer, and Mel Scaffold as project manager. All gave feedback to the writers. At the end of the workshop there was an opportunity for the young writers to discuss the progress of their pieces with the Theatrescience team, and each other. This was evidently an important experience for the young writers (hearing their work read for the first time) and also a crucial stage in the development of *State of Nature*.

*Extremely Brief and Violent* by Selma Dimitrijevic was workshopped at the Beyond Centre in London in June, with three actors, Chris White as director and Rebecca Gould as producer. This play is inspired by the idea of the so-called 'warrior gene', and the media's tendency to crudely characterise it as causing violent behaviour. It centres on a boy called JJ and the destructive effects of this genetic condition (or the expectations about it) on his family. Selma is a London-based writer and director, and the Co-Artistic Director of Greyscale together with Lorne Campbell. Her plays include *Gods Are Fallen And All Safety Gone* (Oran Mor), *Game Theory* (co-written with Pamela Carter, Traverse Theatre), *Night Time* (Traverse Theatre), *Broken* (Oran Mor), *Re:Union* (7:84 Theatre) and *A Prayer* (Greyscale). She has also directed a number of plays and translated many plays and novels by authors including Zadie Smith, Dave Eggers, and Salman Rushdie. In 2007, Selma was awarded the Scottish Arts Council New Writing Bursary and in 2008 and 2010 was awarded the Peggy Ramsay Bursary. She is currently working on a new play 'Life Without'.

The *Extremely Brief and Violent* workshop led to many discussions between the actors, director, producer and writer. At the end of the workshop Selma commented that it had been very useful in terms of seeing how audience might try to work out

how the various scenes fit together, and that it had clarified decisions that she needed to make as a writer.

The workshop focused on dramaturgical questions rather than the science of the issues involved. At this stage it seemed that the play would benefit from more interaction with a scientific advisor.

Although *Extremely Brief and Violent* has naturalistic characters and dialogue, it has a non-traditional narrative structure, presenting a number of short scenes in a non-chronological order. There is a perception that plays 'about' science tend to be fairly literal and traditional in style; therefore the diversity of styles in the work created for 'Not My Fault' makes the project as a whole more interesting and nuanced.

### **3.5 Rehearsals**

The casting for *State of Nature* (and the three young writers' plays) took place in London in September 2010. Rehearsals began at the Islington Arts Factory in October 2010. As well as the director Jeff Teare and the cast, rehearsals were also attended by the Producer, Company Deputy Stage Manager, the Production Assistant, and the Project Manager.

Playwright Simon Turley and scientific advisor Professor Antony Pinching also attended on some days. Tony watched the cast perform and advised them on how to make the depiction of Lewy Body dementia more medically accurate: for example, that Timothy Block (playing Patrick) should speak more slowly and walk with a Parkinsonian 'shuffle'.

The actors' interviews at the Theatrescience Archive discuss the significant impact that this scientific guidance had on the play: Timothy's 'drastic changes in facial expression', 'stiffness of arms', and so on, which changed the pace and atmosphere of the play (For more on the scientific input into the rehearsal process, see section 4.4 below).

At the end of rehearsals, on 12 November, there was a 'try out' (preview for invited guests) at the Pleasance Studio, London. This was a final opportunity to get feedback before the company decamped to Cornwall.

### **3.6 Performances**

Performances were scheduled to take place at Eden from 17-25 November, excluding the 22nd. However, as noted above, severe flooding forced the closure of the Eden Project and the cancellation of the first three performances. Following relocation, *State of Nature* plus the three young writers' plays were performed as follows:

- 20 Nov            Lost Gardens of Heligan, Cornwall (plays plus *State of Nature* book launch, panel discussion and readings from *50/50* and *Extremely Brief and Violent*)
- 21 Nov            Knowledge Spa, Truro, Cornwall
- 23-25 Nov        Eden Project, Cornwall

On the launch day, the programme was introduced by Theatrescience directors Jeff Teare and Rebecca Gould, who explained the reason for the move to Heligan and the background to the project.

The day opened with performances of the three young writers' plays:

#### *Life in Ben's World* by Sophie Macdonald

A three-hander devised as a site-specific piece for the Mediterranean Biome at Eden: specifically the grape vines, as the three characters are grape pickers. 18-year-old Ben (Jonathan Smith) is the youngest of the three; the other two, Robin (Emma Bown) and Joe (Timothy Block), are in their late thirties and sixties respectively. The piece revolves around Ben's fantasy of a world where genetic engineering is used to ensure that no one gets old. This piece was well-received by the audience with lots of big laughs.

#### *Caroline* by Jack Redmond

A monologue by a woman who has repeatedly attempted to kill herself, this is a dark piece exploring bipolar disorder, suicide, and the possible genetic link (as her father also committed suicide). It was compellingly performed by Sarah Kameela Impey. At Eden, this play was performed as 'guerrilla theatre' with Sarah beginning to speak as she sat on a wall in the Mediterranean Biome.

#### *Perfect Match* by Kitty O'Keeffe

The final piece was a comic play starring 'PM', a machine which assesses people's romantic compatibility by analysing their genes, plus Emma Bown as mad scientist

Dr Liebe, Jonathan Smith as lovelorn Welshman Harry, and Sarah Kameela Impey as mad Barry Manilow fan Mary. Colourful and high-energy, with plenty of audience participation, this left everyone in good spirits before lunch.

After lunch, *State of Nature* was performed. The only full-length play produced for 'Not My Fault', it is an insight into the life and mind of Patrick, who is suffering from an aggressive form of dementia called Lewy Body. The play opens with his niece, Louise, arriving to take on the role of carer at Patrick's rambling house in the Cornish countryside. Throughout the play, Patrick's memories of his youth in 1960s India, where he took part in the Naxalbari Uprising and met the love of his life, physically invade the stage, so that for the audience as well as for Patrick, the events in the Indian forest become more vivid and real than the world he now inhabits. We also learn during the play that Patrick's father and brother (Louise's father) may both also have died from the same illness, raising the possibility that Louise herself may face a similar future. The tension between Louise's Christian faith and nonbeliever Patrick, in the face of the realities of dementia, also runs through the play. The boundaries between past and present visibly break down. Despite the change of venue from a tropical biome to a freezing and wet Cornish garden, responses to the play were extremely positive (see below).

The audience then saw extracts from the two plays in development, Selma Dimitrijevic's *Extremely Brief and Violent* and Alison Falconer's *50/50*, followed by Q&A sessions with the playwrights, chaired by Dr Richard Davies, director of Parthian Books.<sup>1</sup>

The day culminated in a panel discussion, also chaired by Dr Davies, with the panellists Simon Turley (writer of *State of Nature*), Professor Anthony Pinching (*State of Nature* scientific advisor) and Shelagh Otway (Locality Manager for Devon, Cornwall and the Isles of Scilly, Alzheimer's Society). The panellists discussed the inspiration behind the play, the visual presentation of dementia, Professor Pinching's experience of working with Theatrescience, the work of the Alzheimer's Society, the outlook for dementia care, music therapy for dementia, Theatrescience's history, ethos and process, stigma around dementia, the emotional impact of *State of Nature*, et cetera. A full transcript of the discussion is appended to this report. A video of it can also be viewed at the Theatrescience Archive.

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<sup>1</sup> Video footage of the play excerpts and discussions is available online at the *State of Nature* Theatrescience archive. For more information, see section 2.6 'Documentation', below.

Attendance figures were as follows:

Eden Ridgeway Performance	120
Pleasance preview	60
Heligan	50
PCMD	40
Eden Med Biome (inc. open dress)	80+
Eden Trop Biome	100+

+ indicates that passers-by (without tickets) also watched these performances.

Audience feedback was taken at all of the Cornwall performances. 65 feedback cards were collected in total.

**Q1 asked 'What did you most enjoy about the play today?'**

**Subject matter:**

*Serious subject matter presented in a thought-provoking and accessible way.*

*Raised an unsavoury topic.*

*A different perspective on a difficult subject.*

**Writing/acting:**

*That it was sensitive but not bleak. Still funny.*

*Excellent acting and science-based themes – and variety of writing.*

*Beautiful pathos, insight into the 'dementia' mind.*

*It was so touching, understanding dementia is so important to us all as we grow older. An excellent performance – sensitive and emotionally acted. I felt I was 'in' the play. Thank you all so much for a wonderful experience.*

*Enlightening/great script.*

*Brilliant writing, brilliant acting.*

*It was very informative about Lewy-body Dementia and an awesome performance.*

*The quality of the acting by the character with dementia was realistic and sympathetically portrayed.*

*The reality of the performance.*

*The realism in the character displaying dementia.*

*The way you could see into the dude's head while keeping it all pretty realistic.*

*The reality of the portrayal, excellent writing and convincing portrayal of the characters.*

**Setting/location:**

*Incredible setting and touching story.*

*The location.*

*The set was very interesting.*

*The setting.*

*I liked that it was set in the rainforest biome. It made it different.*

*Acting and venue.*

*The staging and clear presentation of the story.*

*The exquisite interpretation of character and theme – of course, the thought provoking content.*

**All of the above:**

*The acting was tremendous and the script was thought-provoking, The proximity to the action really helped to draw you into the story. The setting of course was wonderful.*

*Its message (powerful). A stunning and thought-provoking performance from the entire cast. Congratulations to all. This was brilliant! Theatre as it should be. Every best wish for the future.*

*An engaging serious play in an unusual setting.*

*The acting, the fact it could only be done as a play, would be very difficult as TV.*

**Q2 asked 'What, if anything, did you not enjoy about the play?'**

18 of 65 respondents answered this question (not including those who answered 'Nothing, I enjoyed it all'). Apart from one who commented 'No conclusion', the other 17 responses all mentioned the location or setting. In the case of the non-Eden performances, one commented '*The venue was distracting due to people coming in and out – particularly during powerful emotional scenes*' and another wrote '*Venue – but understandable due to recent weather*'.

The performances at Eden also attracted a few negative comments about the location, specifically 'the ants', 'the Eden tannoy announcement', and the difficulty of the venue for hay fever sufferers. The tannoy was switched off after the first performance, at Theatrescience's request. This is one example of how the shorter run caused by the flooding meant that the production did not get a full opportunity to reach its peak: the longer run, as initially planned, would have enabled problems such as this to be tackled. As Jeff Teare commented: '*Because of the floods, there*



*wasn't enough of a run-in at Eden. With eight performances, you'd work out ways to tweak things, developmentally you'd get to advance. But with three, it's not possible.'*

**Q3 asked 'Do you feel that "State of Nature" has contributed to your understanding of genetically inherited dementia?'**

The responses were as follows

<i>Yes – a lot</i>	29
<i>Yes – somewhat</i>	31
<i>Not very much</i>	3
<i>Not at all</i>	2*

\*one respondent wrote "because I work with patients who suffer from dementia" and the other wrote "No but only because have experience delivering social care services"

**Q4 asked 'Why did you choose to attend today's performance?'**

Other than those with a personal connection to the plays, the main reasons for attending included:

Professional interest:

*In health care – interest in 'the other side'.  
I'm a doctor (GP) so see this every day. Great insight.*

Personal interest:

*Because my husband has Lewy Body  
Help me in my work and personal life.*

General interest:

*Interest.  
Accessible venue, interesting subject and just theatre.  
Picked up a leaflet at Truro library and came to Eden specially for this.*

Recommendation:

*My wife and son saw it yesterday and persuaded me to come.  
My son, an environmentalist, told me about it, and as we live locally and love Eden and drama – a natural pull!*

'Just passing':

*Because I was at Eden.*

*Impulse.*

*Stumbled across it.*

*Going past.*

There was a good mixture of those who made the trip to Eden to see the play, those who happened to be passing, those with a specialist interest (personal or professional) in the subject matter, and those who were drawn to the idea of theatre at Eden.

It is worth noting that many of those who were 'just passing' left extremely positive feedback: for example, one wrote '*it was amazing, very well acted, thought provoking*'. This is important because a major objective of this project (as with all Theatrescience work) is to reach new audiences who might not have chosen to attend theatre or an event 'about science'.

It is also worth noting that those with an existing knowledge of the subject matter found the play truthful and informative:

- The respondent who attended because her husband has Lewy Body wrote that the play 'was so true' and that the play had contributed 'a lot' to her understanding of dementia.
- Similarly, the GP who 'see[s] this every day' also indicated that he learned 'a lot' from the play.
- One of the respondents with experience of delivering social care services to people with dementia commented positively on the '*Portrayal of dementia – accuracy of it– impact on sufferer and family*'.

These responses indicate that the play has real value and contributes to the understanding even of those with an intimate knowledge of the condition.

These findings are echoed in the comments from director Jeff Teare, who said, when asked why he had found the Eden performances particularly enjoyable:

*1. People who had knowledge of dementia thought we'd nailed it. I was concerned that the portrayal might be OTT but I was approached afterwards by the wife of a sufferer who said it was spot on.*

*2. Having set the project up initially with the idea of a mixed audience – those who were just passing and those who'd bought tickets – later on I thought this might be unrealistic, that the play might not catch the attention of passers-by. However, when we did the three performances in the biome we did get those*

*who passed by stopping and becoming engrossed. So I thought we must be doing something right.*

It was also borne out in the panel discussion, when Shelagh Otway, who works for the Alzheimer's Society, spoke about how *State of Nature* reflected and cast new light on her own experiences:

*It brought out the texture of the life of the person living with dementia, and also the carer – often represented as one-dimensional, 'the person who opens the door', but State of Nature showed the carer as a full person with their own fears, own thoughts, own tragedies in their own life. [...] There were moments there I recognised from my own experiences: the parts where the carer corrected him wrongly – the conversation about the pyjamas being from India not Egypt – she was right but it wasn't what he was talking about. [...] That character was allowed to illustrate that becoming a carer is not a sanctification.*

One respondent commented: *Normally, would there be info boards on disease in the foyer?* Theatrescience does not usually provide further factual information on the subjects covered in the plays, presumably because this would make them seem overly 'educational', rather than productions with the (generally successful) aim of inspiring curiosity and encouraging audiences to seek out further knowledge themselves.

The very positive audience reaction was also noted by Project Manager Mel Scaffold:

*The enthusiastic response of the audience was a great reminder as to why we'd started the project. After the challenges of the production week, seeing the audience appreciate the performances and engage with the issues was a massively important element of the project's resolution.*

In conclusion, *State of Nature* was extremely well-received by its audiences, who found it on the whole to be both informative and emotionally powerful. There were a few complaints about the venue/location: inevitable for the relocated performances, perhaps more problematic for the Eden performances, although understandable in such an unusual venue with almost no history of theatrical productions. Those with a personal or professional connection to the subject matter found it just as informative as the general public.

### **3.7 Education project**

#### *Peninsula College SSU*

One component of the Education Project was delivered by Jeff Teare to medical students at Peninsula College of Medicine and Dentistry (PCMD), as part of the fourth-year Special Study Unit 'Talking About Being Ill'.

The partnership between PCMD and Theatrescience dates back to the first 'Imagining the Future' project in 2002, which was based in Plymouth. A series of scientific advisors from PCMD worked with Theatrescience before Professor Anthony Pinching was recruited as an expert on HIV to advise on Simon Turley's play *Seeing without Light*. While all the scientific advisors were helpful and enthusiastic, Professor Pinching brought to the project, according to producer Rebecca Gould, 'a whole new level of enthusiasm', and has been a key part of the Theatrescience story ever since.

Reciprocally, since 2005 Jeff Teare has led a Special Study Unit (SSU) at PCMD. The college has a strong tradition of Medical Humanities education and offers its students a number of SSUs which allow them to explore certain subjects in more depth. Many of these are taught by external experts from a wide variety of backgrounds.

The idea of this SSU is to use drama and the writing and performing of monologues and short scenes to get the students to explore their own attitudes to illness. Originally it was specific to CFS (Chronic Fatigue Syndrome), but now the students pick their own illnesses/conditions to consider. This year, the chosen subjects were Unwanted pregnancy, IBS, Huntington's and Dementia.

Jeff gave this cohort of students copies of *State of Nature*, asked them to read it and then used it as the basis for a discussion of 'how to write drama about illness'. The play got extremely positive responses from the students.

One student, Sasha, commented on Theatrescience's Youtube page:

*Jeff, this is very good. Congratulations to you all.*

*Best wishes,*

*Sasha (Peninsula medstudent)*

These positive responses suggest the play has useful potential as a tool for training medical professionals to deal with dementia.

### *Ridgeway School*

The other Education component involved ten students in Years 7-9 at Ridgeway Specialist Science School, Plymouth. The students were selected by the school as being 'reluctant learners of science'. Under the direction of Kevin Johnson, a freelance theatre director, the students devised a play around the themes of 'Not My Fault' and performed it at the Eden Project in July 2010.

The Education Director was briefed by the Theatrescience team about the themes of 'Not My Fault'. I first interviewed Kevin prior to his first session at the school; he was planning to try to devise a piece around the idea of food intake and its effects on behaviour, but was open to being 'led by the kids', depending on their willingness to take the initiative. His plan was to draw up a 'contract of behaviour' for the sessions, and to begin with theatrical exercises 'with a science tilt'. Louise Frost and Tim Welch, science teachers at Ridgeway, provided information about the school's science curriculum to help Kevin to plan the workshops, and were to assist with the sessions.

### **Observation of workshop**

As evaluator I attended the 5th session on 25th June 2010. After a warm-up exercise, there was a discussion about genes. Kevin explained to the students that you get one gene from your mother and one from your father. He then explained the principle of dominant and recessive genes, using the example of brown and blue eyes.

The students were then divided into 5 pairs and taught the basics of stage fighting. With guidance, they invented some basic routines (sequences of moves), then showed the rest of the group who gave their feedback.

Finally Kevin introduced the beginning of the story, about a man called Frank and his parents, and demonstrated how the fighting sequences would fit into the story: representing the genes from Frank's mother and father fighting for dominance in Frank's genome.

At the group's request, they repeated an exercise from an earlier session where they formed a beating heart.

Although the group was quite difficult to control and their attention was easily distracted, especially during the science discussion, they were much more focused and enthusiastic once they were in pairs and working to music.

The feedback session worked well, with the pupils complimenting each other, which seemed to increase their confidence.

The science teacher's input was vital, for example suggesting other genes (in addition to eye colour) which could be part of the fight, explaining the basics of the genetic science, and contributing some words to the script (such as ways of describing genes).

After the session, Tim Welch (science teacher) commented:

*They will get a kinaesthetic understanding of genetics before they come to the subject next year. They are definitely picking up science without realising it, and enjoying themselves [...] I'm impressed with what you have managed to get out of these kids.*

I interviewed Education Director Kevin Johnson after this session. He was concerned that the students should be able to create a performance they could be proud of, and spoke about the difficulty of balancing the students' own creativity and the inherent value of taking part in the project, with the need for structure caused by the need to produce a finished performance in time. He was uncertain as to how much he should 'dictate' the play's shape. Hence his idea of introducing the general outline of the story, but encouraging the students to devise their own interpretations and set pieces around it.

He also spoke about the difficulties of disciplining a group made up solely of students classed as 'reluctant learners' who had not volunteered to participate, who needed a lot of individual attention. He felt that more contact with the teachers and greater continuity of teachers between sessions would have helped.

He felt that there were many criteria to be met – from the school, each teacher, the Theatrescience team, the Eden Project, and the students – and that these were not necessarily always "pulling in the same direction".

Project manager Mel Scaffold assisted Kevin in some of the workshops to provide extra support.

## **Eden performance**

On 7th July 2010 the group came to Eden to perform their piece. The students were visibly more engaged and interacting with the director more than at the school session. For example, a stage had unexpectedly been erected in the performance area; this could have caused problems, especially with a performance based around such tight physical routines, but the group actively and collectively suggested solutions, and within a short time had adapted the piece to work with the stage. All of the students in the group attended, participated fully and performed well.

The director had taken the decision to use a recorded narration telling the story, which was played through loudspeakers. This was an excellent idea as it controlled the timing and ensured that the students stayed focused, with no opportunity to wander off track or lose their place.

The students wore simple black costumes which was an effective and inexpensive way to make them look professional.

The story was 'about a man called Frank' who refused to take responsibility for his drinking, smoking, and eating of junk food, instead blaming it on his genes with a refrain of "It's not my fault". The students performed a number of physical routines representing Frank's genome and various parts of his body as it was affected by his unhealthy lifestyle.

They performed in the Mediterranean Biome in the late morning. The performance was advertised by chalk boards around the venue, and attracted a large audience which increased throughout the performance as passers-by stopped to watch. The audience included many children of primary school age who seemed to really enjoy the show's acrobatic and visual style and young performers.

## **Comments and feedback**

After the performance, the two accompanying science teachers commented

*The kids have definitely picked up a lot of science – for example I heard them joking about dominant and recessive alleles. This will give them a head start when they come to it in science lessons.*

*I was blown away by the performance today - the kids were fantastic and I loved the idea. You should be really proud of what you have achieved with them.*

Education Director Kevin Johnson was extremely pleased and surprised with the success of the performance, and the energy and enthusiasm of the students.

Director Jeff Teare commented '*Getting the Ridgeway kids to do that was a triumph*'.

Mel Scaffold, who had assisted at several of the school workshops:

*The journey the young people who participated in the Ridgeway project took, from their initial disengagement and scepticism to the performance of their piece at Eden, was gratifying and moving. Although also one of the most challenging aspects of the project to manage, I personally learnt a huge amount from it, and saw first-hand how the methodologies developed by Theatrescience could be modified and applied in different scenarios. Their increased confidence was evident, and they genuinely engaged in some of the issues dealt with in their performance. I was much more directly involved in this process than was originally intended, as the education director required additional support. Although this was a strain on my time, I found it hugely rewarding to work directly with the young people and the school.*

### **Feedback from the young people.**

After the performance, the students were put into small groups, with a short questionnaire as a prompt for their discussions. Their answers are given in full below:

How would you describe the experience of performing at Eden today?

*"I was really nervous. I didn't want people to be disappointed."*

*"I wasn't nervous at all, it was exciting."*

*"Fun"*

*"Didn't look at audience cause it made me nervous"*

*"Little kids make you less nervous than adults sitting in a row"*

*"More exciting than I'd expected"*

How would you describe the workshops over the last few weeks?

*"I thought it would be rubbish, with scripts and everything, but it wasn't."*

*"It was good to have lots of things to try out, like the stage fighting."*

*"We didn't think X and Y [two students] would do any work – they still messed about but did it properly in the end"*

*"Good fun"*

*"I think we went a really long way in a short time"*



*"Rubbish until it got going"*

*"Social"*

*"Better than lessons"*

What was your favourite part of the whole project?

*"Bamboo canes"*

*"The performance"*

*"Having time off school"*

*"Making new friends and working with people I wouldn't normally work with"*

*"I don't like reading from scripts, I enjoyed doing physical performance"*

*"Coming to Eden"*

What was your least favourite part?

*"The sessions were too short"*

*"I would have liked to have a bigger performance, with costumes and props"*

*"We want to be more professional"*

*"Pizzas"*

*"Food at Eden"*

If you were offered the chance to take part in another project about drama and science, would you say yes?

*Yes (unanimously)*

Why?

*"It was a good experience"*

*"It changed my idea of acting"*

*"Time off school and fun"*

*"Yes, can we work with you again?"*

*"Definitely! We really want to do it again. Can you go back to where you work and tell them you like us and you want to work with us again?"*

*"Yes, we've got an idea for a story about DNA where it's like a crime scene, and you have to fingerprint members of the audience"*

*"We want to perform to more audiences, maybe in assemblies"*

## **Conclusions**

As can be seen from the comments above, both the teachers and the students were overwhelmingly positive about the experience of taking part in 'Not My Fault'.

As an observer it was striking to see the difference in the young people between the workshop session and final performance; they visibly gained confidence and enthusiasm for both drama and science, and rose to the challenge of performing to a large public audience. Even the most undisciplined students '*did it properly in the end*'.

For students chosen as 'reluctant learners of science' to begin spontaneously devising ideas for science-based plays ('*we've got an idea for a story about DNA where it's like a crime scene, and you have to fingerprint members of the audience*') is a great testament to the success of this project, as well as to the students' own creativity.

The science teacher's observation that the students were joking among themselves about genetics confirms that they have changed from being at risk of falling seriously behind with science to having 'a head start' over their peers. Presumably, as well as the specific knowledge they have absorbed about genetics, they will also be less hostile to learning about science generally.

It is evident that taking part in this project was very beneficial to these students, and also to their science teachers, who were 'blown away' by the potential of drama and 'kinaesthetic understanding' to reach students who 'don't like reading from scripts'. It would be ideal to capitalise on and develop these students' new-found enthusiasm for performance and science as well as extending the model to other students.

### **3.8 Documentation**

#### *Promotional material*

Flyers were used to promote the play. 5000 were printed in total, of which:

- 2000 were passed to the Eden Project, who placed 1000 on general display at Eden, and 1000 to a targeted mailing list who have previously attended cultural events;
- 1000 to local groups in Cornwall such as NHS support groups for Alzheimer's, the Alzheimer's Society, Memory Cafés, Old people's care homes, libraries, et cetera;
- 1000 to Cornwall Arts Marketing, who distributed to arts and cultural venues in Cornwall and the South West; and
- 1000 to Theatrescience's mailing list.

An e-flyer was also produced. This was sent out by Theatrescience to their email distribution list, and also by Eden to their mailing list of approximately 6000.

The flyer gave the background to the project and to Theatrescience, some information about the play, and details of performances at Eden. A5 size, it folds out to an A3 poster with the play's image (also used as the book front cover): a pair of bare feet walking away through a lush tropical rainforest. A copy of the flyer is appended to this report.

### *Press coverage*

Alzheimer's Society, 'Dementia with Lewy Bodies featured in Eden Project Play', [http://www.alzheimers.org.uk/site/scripts/news\\_article.php?newsID=828](http://www.alzheimers.org.uk/site/scripts/news_article.php?newsID=828), 2 November 2010

'Eden's rainforest biome is venue for play about loss', and 'Explore State of Nature at Eden', both *Cornish Guardian*, 10 November 2010

Drum Beat online journal, 'Theatrescience at The Eden Project', *Communication Initiative Network* <http://www.comminit.com/en/node/325746>, 8 November 2010

South West News, 'Theatrescience to perform State of Nature in Eden's Rainforest Biome' <http://southwestshows.co.uk/2010/11/theatrescience-to-perform-state-of-nature-in-edens-rainforest-biome-news/>, 8 November 2010

'Rainforest setting for Eden *State of Nature* performance', *St Austell Voice*, 10 November 2010

'Nature intervenes', *St Austell Voice*, 21 November 2010

Taylor, Anne, 'The illness is the side story', *British Medical Journal* (342: 7787), 1 January 2011, p. 54.

Radio Interview, 17 November 2010, BBC Radio Cornwall

There was also scheduled television coverage (local news, ITV) which did not take place due to the closure of the venue on the planned filming day.

### *Theatrescience Archive at Warwick University*

The CAPITAL Centre at Warwick University (now part of IATL, the Institute for Advanced Teaching and Learning) has for several years been creating archives of contemporary performance, with an emphasis on interactive teaching and learning. These archives are an important research tool for students, practitioners, and academics studying performance, and particularly the transition from 'page to stage'.

Following discussion with academic staff at Warwick, Theatrescience engaged a postgraduate Theatre Studies student, Will Thomas, who is researching the internet as a site of performance and interaction, to create an online archive of 'Not My Fault'. The aim is for the archive to contribute towards Theatrescience's building of a larger, interactive network of those interested in theatre and science.

Will was supported by the Mill's Fund, a bursary scheme set up by the brother of a former Warwick student, which is aimed at supporting work focused on art and science. The bursary allowed Will to travel to London and attend three days of rehearsal, where he took video, audio, and visual archive material, including interviews and design material. He also spent a week in Cornwall recording the rehearsals, performances, book launch and other events.

All of the material is now available on an interactive and fully searchable web archive, hosted on Warwick's IATL site. Divided into four sections:

- Conception and Prehistory
- Writing and Design
- Rehearsal and Performance
- Evaluation

It features descriptions and photographs of the development process, video interviews with the company, and a virtual version of 'The Book' containing production schedules, staging notes, et cetera. The archive is reciprocally linked to Theatrescience's website and Facebook page.

The company hope that it will be a valuable tool for those thinking about art and science, planning, collaboration, design, writing, stage management, and theatre making in general.

This will also raise the company's profile and strengthen its links with academic Theatre Studies.

The archive can be accessed at this web address:

<http://go.warwick.ac.uk/theatrescience>

### *Online discussions*

Discussions took place on Theatrescience's Twitter account and dedicated Eden Facebook page throughout the final stages of the project. This had practical value in

communicating about the impact of the floods but more importantly was used to gauge people's thoughts about genetics and dementia by asking questions and stimulating discussion.

#### *Publication of the plays*

*State of Nature* (plus the young writers plays) was published in paperback by Parthian, an independent publisher, to coincide with the performances in Cornwall. The book also includes introductions by Simon Turley, Jeff Teare and Anthony Pinching and an introduction to Theatrescience's work. Parthian previously published *Seeing Without Light*, also by Simon Turley.

The team believe that it is important to publish the plays in order to give them a life beyond the project, so that other companies can produce them in the future.

#### *Video, photo and audio documentation*

In addition to the documenting of performances, rehearsals, and other parts of the development process by Will Thomas (see information above on the Archive), the Theatrescience team also filmed, photographed and recorded various parts of the process. A video was posted on Theatrescience's Youtube page shortly after the final performances. A podcast featuring a complete recording of *State of Nature* is available on the Theatrescience website.

### **3.9 Key points from this section**

- The Theatrescience development process has core features but each project has its own shape, depending on many specific factors
- The Writers Weekend was extremely informative and helpful for the writers, but more informal opportunities for talking to scientists would have been welcomed
- The young writers were given a great deal of support throughout the writing process
- Scientific input was vital to rehearsals
- Audiences very much enjoyed *State of Nature*, with particular praise given to the writing and acting
- Both the general public and those with a specialist interest in dementia found it increased their understanding of genetically inherited dementia

- Medical students found *State of Nature* very useful
- The schools project was a great success in which reluctant learners of science came to a good understanding of genetics through kinaesthetic learning
- The project was documented in a number of ways and has been archived on the Warwick University website

## **4. Theatre/science collaborations**

### **4.1 Theatre and science**

At the heart of the Theatrescience project is the bringing together of two disciplines which are traditionally viewed as separate. One of the aims of this evaluation is to establish how collaborative working relationships develop across disciplinary boundaries, and what impact they have on the individuals involved and the work that is produced.

Plays 'about science', broadly defined, can be dated back to the Ancient Greeks, through classics such as Ben Jonson's *The Alchemist* and Marlowe's *Doctor Faustus*. More recent examples include Bertholt Brecht's *Life of Galileo* (1937/1945), often cited as the first portrait of a scientist in drama, and Friedrich Dürrenmatt's *The Physicists*, a 1962 play warning of the possible consequences of atomic power.

In recent years the major reference point for theatre makers in this area has been Michael Frayn's *Copenhagen* (1998), which showed what theatre and science could offer each other. However, despite its success, and the gradually increasing number of scientists and theatre makers who recognise the potential in coming together, the divide between 'the two cultures' identified by C. P. Snow in the 1950s still seems to be very much in effect.

A recent article in the *Guardian* posed the question 'Why does theatre plus science equal poor plays?', with writer Alexis Soloski citing two examples of poor plays she had seen recently.<sup>2</sup> However, as many people pointed out in their comments on the article online, she in fact listed far more examples of successful science-based plays than those she perceived to be 'poor'. One commenter wrote:

*Alexis, you set out to "determine why so few good plays about maths and science are written".*

*The first and only piece of evidence you produce in support your hypothesis is: "The week before last I saw two pretty dreadful plays about science"*

*You then note: "Complicite's A Disappearing Number... which I unfortunately missed, appears to have done a much better job at marrying geometry with dramaturgy."*

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<sup>2</sup> Alexis Soloski, 'Why does theatre plus science equal poor plays?', *Guardian.co.uk Theatre Blog*, 26 July 2010, last accessed 20 February 2011 <<http://www.guardian.co.uk/stage/theatreblog/2010/jul/26/science-plays-stoppard>>

*You go on to note: "Great plays about science do exist" and you then list four, followed by "several (three) that are certainly very good"*

*So far, the ratio of good plays about science/math's to bad ones can be expressed 4:1 in favour of the good.*

*No further evidence is produced in support of your hypothesis - that science/math's as a subject produces poor plays.*

*The conclusion you should have drawn from the evidence you have gathered is that science or math's as a subject for plays produces more hits than misses.*

Many other commenters made similar points, listing many successful science-based plays. This poses an interesting question: why does the perception that 'theatre plus science equals poor plays' persist, even in the face of mounting evidence to the contrary? Is there perhaps a resistance to the idea that the two cultures can be successfully combined?

#### *Perceptions of theatre and science*

As part of Questionnaire 1 (distributed after the Writers Weekend and at the start of writing the plays), participants were asked for their thoughts on the bringing together of theatre and science, in order to build a picture of their views at this early stage in the project.

Of the six writers and three scientific experts who responded to the questionnaire, only four had any previous experience of projects bringing together scientists and arts practitioners (including two who had worked previously with Theatrescience).

**The questionnaire asked: How would you describe the way that science (scientists, scientific practices, institutions, and ideas) is represented in arts and culture?**

There was general consensus that there is a lack of representation of science overall:

*Not a lot, but where it is – (in plays at least) e.g. On Emotion, Blue Orange, even Hysteria, I think there are rounded characters dealing with human dilemmas.*

*Before I had any contact with Theatrescience I hadn't really thought about any sort of middle-ground between science and art and how one is represented through the other. I think it's extremely under represented and*



*that it would be a good idea to try and introduce it more into the arts, if only to allow people to understand it a little more. I've always thought that the arts is a millions miles away from something like Science.*

*I can honestly say that as someone deeply involved in theatre for the last 10 years I didn't hear about almost any of them. Partly probably through my own fault but I think partly through those projects being advertised more as a TIE or science based projects that are using theatre instead of theatre shows that happen to be about science.*

Several people thought it was represented too simplistically:

*The views are often too simplistic, although there are some great exceptions. The everyday life and the every-day life decisions are much more subtle and full of imponderables, and thus, at least for me, more interesting.*

*Mostly they're represented pretty one dimensionally.*

Some respondents believed that there had been more interaction between science and theatre recently:

*I think there are increasing signs of a recognition of the creativity involved in certain scientific practices ... that, whilst the 'two cultures' model is still out there, it is now recognised as an unnecessarily limited/limiting mode. When the two cultures are wheeled out, there's now more of a sense of the self-conscious speech marks around the term. However, I do think there's often a tokenistic procedure often at work in the way in which science is referenced in the arts and in culture.*

*I'm no expert but it seems like they are/or have been in the past portrayed as things at opposite ends of a spectrum. Recently I have noticed more of an integration between the two – working together. I think the arts and theatre can really help science, and vice versa.*

The scientists who answered this question tended to give more nuanced answers reflecting the wide range of representations:

*V variable – good (but tortured): Silent Witness – bad (but tortured): Frankenstein – heroic (and v self assured) - Barnes Wallace in Dambusters (this shows my age!)*

*More generically – frightening in much of SciFi e.g. Ray Bradbury; or aloof and cold Mr Spock – out of control in much of the press reports on anything from GM crops to Swine Flu*

*From the facile and superficial, the polemic, the caricature and the selective at worst, to the inspirational, creative and fresh insight-producing at best. Current mix would be about 95:5!*

One of the scientific advisors commented:

*If there's something I know about, I'd rather do it to ensure that the information is accurate, rather than leaving it to somebody else who may not do a completely accurate job. [...] It's definitely important to me that my sphere of expertise is represented accurately in arts and culture. The subject of Huntington's comes up regularly for example in TV soaps – these representations tend to be somewhat accurate, but not really true to reality. It is important because it may be the only way that the public get that information.*

These scientists/clinicians are clearly highly aware of how science and scientists are portrayed within the arts. It seems that a major motive for wanting to take part is to remedy inaccuracies in these portrayals.

**The questionnaire also asked participants how they had heard about the project and why they wanted to take part.**

Most already had some interest (developed to various degrees) in the bringing together of arts and science/medicine:

*I had become very interested in scientific ideas about the 'self' and had been researching for a play based on developments in brain imaging.*

*The theme of the project is something I was researching already and the company sounded like a group of people I would probably enjoy working with. (Which I do.)*

*The idea of working with professional writers and directors on [a] piece was very appealing. Also the subject area of genetics and health was something that attracted me to the project.*

One respondent, a clinician, mentioned his family connections to theatre:

*Fascinated by the idea; interested in the arts/medicine interface; interested in arts – of x3 sons, one is a visual/web based artist and another is a theatre project manager.*

These family connections are one of the key indicators that a scientist will be open to these kind of interdisciplinary projects, namely an existing link with theatre. On this subject, Project Manager Mel Scaffold commented:

*Although we didn't know it at the time of their initial involvement, it transpired that most if not all of our scientific collaborators had some interest or background in drama or another art form, such as amateur dramatics. These are people who already acknowledge the usefulness of theatre in some way, and as I don't believe it's the job of a collaborative project to convince its participants of the value of the 'other' that is not their practice, working with people who have already made that first step makes the process much easier.*

This observation was confirmed in evaluation interviews with two of the scientific advisors, Dr Steve Watkins and Dr Peter Turnpenny. As discussed above, Dr Turnpenny's stated reason for wanting to take part was to ensure that Huntington's disease was portrayed correctly. However, upon further questioning, he was aware of the potential benefits that theatre could offer clinicians:

*JM: What are your hopes for the play?*

*PT: I hope it generates curiosity and reflection in those who see it. That they might have a greater appreciation for genetic disease.*

*JM: Could it feed back into your dealings with patients?*

*PT: It might, depending on content. The Clinical Genetics Society has experimented with theatre in the late 90s. A theatre group based in Birmingham came and did a complete play at one of our conferences. We didn't need to be taught the science but the play was about the impact of disease in an immigrant family – because different cultural groups differ in their views on illness. It was very interesting indeed, done very well. Helped us as professionals. If it's got a lot of insight it can help us to understand the dynamics of what we do beyond the clinical.*

*JM: Do you think seeing that play made you more keen to take part in this project?*

*PT: Yes I think so, seeing that play made me want to be more involved with theatre. I could see how it could work.*

This final answer confirms the observation above: that generally scientists need to have some sort of experience of theatre before they appreciate its potential value, but this can be something as simple as seeing a single good play.

What this suggests is not that there is something unusual about these individuals which makes them uniquely suited to taking part in science/theatre collaborations, but that scientists/doctors need to see theatre in action before they understand what it has to offer them. This may be partly because of the UK education system which encourages individuals to define themselves as either 'science-y' or 'arty' at an early age. As producer Rebecca Gould put it at the *State of Nature* post-show discussion:

*It's like all things – it's about relationships – and these people [i.e. scientists and playwrights] generally don't meet each other – very different to what we've found in India when we've done residencies at NCBS, the scientists there are playwrights, musicians, they do everything. I don't want to generalise too much but in Britain, these are divided communities.*

This suggests that it is vitally important to bring theatre to as wide an audience as possible, in particular aiming to reach scientists and clinicians, as even one good experience of seeing a play can change their views permanently.

**The questionnaire also asked:**

**What do you see as the potential benefits and dangers of using theatre to explore science?**

There was broad consensus among participants that theatre could make scientific ideas more accessible and comprehensible to a non-scientific audience:

*I think theatre and art in general is a great way of translating science into popular conscience, challenging people's views and educating society.*

*I think there are benefits to using theatre as a tool to explore science. The most obvious to me is that it provides a fresh approach to allowing people to learn about science in a way that doesn't result in them getting tied up around the terminology etc.*

*Benefits ... Theatre can engage audiences acutely and profoundly – it can model both the known and the unfamiliar, and, therefore, open up fields of scientific endeavour to the scrutiny of people who might not otherwise get a handle on them.*

*Potential Benefits – producing science in ways people/audiences can understand, demonstrating with the use of body/mind/spirit rather than numbers and figures/data.*

Some respondents picked out more specific ways in which this could work, for example:

*As theatre is a visual presentation I think it would allow people to perceive science as less of a textbook subject and more of a physical experience.*

*Good – to bring arts and science together; to demystify science to an artistically minded person; to make science more attractive to people (children) as career choice; to get messages about science across in an understandable and entertaining way*

**Asked about the dangers of science-based theatre, participants identified a variety of issues.**

That it could be inaccurate or misleading:

*The problems are that, if the science is not well researched and correct, the work could be sensationalist or hysterical. Got to find a balance that respects both the science and the art.*

*Dangers – demonise science – the 'bad guys'; get the message wrong or so simplistic as to make it misinformation; to present science as mysterious and 'occult', not comprehensible by mere mortals.*

*Hazards are distortion, caricature and crude artifice.*

*Dangers – Getting the science totally wrong and leaving people with misleading ideas that they take for fact.*

That theatre would become merely a 'mouthpiece' for a scientific idea and would lack artistic merit:

*I think the biggest danger of using theatre to explore science is that we become mere 'explainers' to a wider audience of what scientists tell us and forget the value of our own centuries of tradition in understanding humanity.*

*Many people are used to going to see a piece of theatre to be entertained and to be presented with a story that has a plot and subplots and to be provided with a sense of catharsis at the end. If they're instead presented with a piece that has all of this but actually tries to bring the focus away from the story and more on the information side of it I feel people could either be confused by it or not pay any attention to it; or neither of those options and just perceive the performance as just a performance and come away from it none the wiser.*

*Dangers ... The dangers of all theatre ... You might just make a shit play that bores the bejaysus out of everyone ...*

That audiences would be put off by categorising a play as 'theatre science':

*And I don't see any dangers of using theatre to explore science. But I do see a bit of danger in labelling a show or a project a theatre science project. There is something about that label that makes people hear that it's not "normal" theatre project but probably something that has to do with education or schools. I am myself guilty of thinking that and have missed many shows when they were marketed to me in that way. Which doesn't mean that those shows were in any way less interesting than if they were marketed on the strength of the director, actors, writer or the theatre building.*

This and similar statements confirm that artists often have a negative view of science-inspired theatre, but this is usually a preconception or prejudice rather than based on any real experience. This suggests that there is still ongoing work to be done in challenging these perceptions through reaching wider audiences with high-quality theatrical work.

The three young writers expressed similar views in their interviews at the Theatrescience Archive:

*JR: I've never done anything so closely linked between science and theatre and yeah, it's an absolutely brilliant idea.*

*SM: My previous thoughts of theatre and science put together were that only naff theatre came out of it... strange sort of TIE theatre might have happened around that, was my opinion initially. But having seen how Theatrescience work, what they're doing, it's not that at all. There's nothing naff about putting science and theatre together – it actually makes a lot of sense, especially when all the science is exactly right, not played around with.*

*KO'K: I don't think I really had any feelings at all on science/theatre combinations. I'd never thought about it. So the fact that I now do think about it is quite significant I suppose. The thing is, though it's not the only work that Theatrescience does, the plays they commission aren't about science: they're about people. It just so happens that these people, and their stories, happen in the context of medical and ethical issues. Every aspect of the plays (the science, the ethics, the story), is sensitively handled and well researched. This seems unique to a collaborative process that involves writers, scientists, and those with first-hand experience of the issue in question.*

However, as noted above, one of the key aims of recruiting emerging writers such as these was to influence them at the start of their careers in the hope that they would continue to explore science and theatre. The success of this aim can be seen from the comments above and the end of project questionnaires, which indicate that all three of these young writers will continue to explore science and biomedicine in their writing.

#### **4.2A two-way street**

In the answers to Questionnaire 1, as in discussions in the broader culture, respondents tended to focus on how theatre could benefit a non-scientific audience and not the other way around. It is rarely considered that it could also have benefits for the scientists themselves, although one respondent wrote that a potential benefit would be:

*Gain fresh perspectives through dramatic narrative, characterisation and exploration of deep meaning, at best.*

This response does not specify who might gain these fresh perspectives, but in practice, scientists and clinicians often find their own understanding enhanced and expanded through theatre. For example, when asked if participating in NMF had made him think differently about genetic inheritance, one scientist responded:

*Yes. It emphasised for me the extraordinary power and impact of drama in bringing scientific concepts, and the consequent personal and social issues, to life.*

Similarly, another participant, a general practitioner, said that participating in NMF 'has given me many more insights into the personal experience' [of genetically inherited illness]. For a GP with many years of experience to feel that this project

greatly increased his understanding of what it is like for those with these conditions demonstrates the immediate and powerful impact that good drama can have.

Speaking at the *State of Nature* panel discussion, Tony Pinching explained it thus:

*Watching this play we have a series of revelations which enable us to work differently, witnessing deep insights into people and journeys. In one hour – so compressed – it's revelatory. It's another way of getting people to think in a new way, not only in a mechanistic way, solely about the losses.*

As he says here, even a short play, if it is good, can enable those with experience of a condition to understand it in a new way.

However, this flow of information is often not recognised, with both scientists and theatre practitioners generally assuming that theatre which explores science works in one direction only: transferring knowledge *from* scientists *to* the audience *via* theatre makers.

In fact, the true picture is much more complex, with scientists and clinicians reporting a shift in their understanding of their own work as a result of the productions, and the audience's feedback bringing new perspectives to those who have created the theatre work.

During the panel discussion at the *State of Nature* launch, Professor Pinching was asked about how working with Theatrescience had influenced his teaching at Peninsula College. He replied:

*The arts – visual arts, drama, music, and so on – are all media through which we can get windows into people, the way they function, the way they are in their society and in themselves, and through which disease is played. We are looking after one part of a person through one bit of their journey. To be effective in looking after someone we have to have a sense of who that person is and what they're about and how to be in touch with them – and the reality is that drama is one of the many arts that can illuminate that. [...] Narrative lets us see the person not as a trainee case study but as a human story playing out – you can bring that back to the consultation.*

This eloquently expresses the very real impact that drama can have on clinical practice: perhaps particularly important in long-term degenerative illnesses such as dementia. Theatre can be a very powerful way for clinicians to become more effective in caring for their patients; this makes it important to consider how to involve



or connect with those scientists who don't have previous experiences to draw on. What can be done to interest people who want to remain firmly on their side of the great cultural divide?

### **4.3 Case studies**

How do theatre practitioners and scientists work together in practice? As 'Not My Fault' demonstrates, there is no single 'Theatrescience development process': a rigid, prescriptive model of working together. Instead, the process is an ongoing exploration of ways of co-creating, depending on the individuals involved.

This evaluation now looks more closely at two new collaborations which took place during this project.

In order to analyse the development process, the evaluator, in consultation with the Theatrescience team, chose two plays as case studies to be examined in greater detail: one by an established playwright (Alison Falconer) and one by a young writer (Sophie Macdonald).

The evolution of these two plays is tracked throughout the writing process, from the original pitch through to final performance/publication, in particular appraising the role played by each writer's interaction with their scientific advisor.

In addition to interviews with the writers and their scientific advisors, both of the writers agreed to keep a journal throughout the process to document important milestones, discussions and meetings with their scientific advisor, and any other significant turning points. Juxtaposed with a 'paper trail' of pitches, notes, drafts, et cetera, these make up an overall picture of how each play has developed.

#### ***Case Study 1: 50/50 by Alison Falconer***

**Scientific advisor: Dr Peter Turnpenny, Clinical Genetics Department, Royal Devon & Exeter Hospital**

Alison Falconer worked in journalism before writing for theatre and has an MA in Creative Writing from the University of East Anglia. Her first play, *Sweet Sixteen*, was produced at the John Clare Theatre in Peterborough. Other plays include *The Three Lives of Anna Thomasian* (Norwich Puppet Theatre, funded by Arts Council England)

and *Gerald* (a community commission). Alison is currently being supported by the Arts Council's Escalator programme and is also under commission with BBC Radio 7 for *Man In Black*.

Alison attended the Writers Weekend in November 2009. The following month, she pitched two initial ideas to the Theatrescience team which were rejected. The team then suggested a list of topics for her to consider:

1. *IVF/PGD, but not 'saviour sibling' specific.*
2. *Genetic Counselling.*
3. *Personalised/Genetic Medicine.*
4. *The effects of Emotions and Environment on Gene Expression (cancer, asthma etc.)*

Following discussions with the team, Alison submitted a further pitch in April. The pitch was for a play called *Over My Shoulder*, the story of two brothers separated as children. Jack was sent to Australia as a child migrant and never knew his family, while his younger brother Henry, who stayed with the family in England, has lived for years knowing that he carries the gene for Huntington's. In the grip of a midlife crisis, Jack has come to England to trace his family, leaving his pregnant ex-girlfriend in Australia:

*Jack finds Henry and crashes into his life. Henry didn't know he had a brother. His mother, now dead, had never mentioned it. Jack wants to know all about them. Henry doesn't want the responsibility for this man he doesn't know. Jack wants to know all about his father who left, his mother who'd died.. why she died.*

*Henry is just about hanging on – he's coping with the knowledge of his own condition. This isn't fair. He's jealous – everything has been easy for Jack, he didn't see his mother die and he hasn't had to live with the knowledge that he'll be following in her footsteps. This knowledge is a huge burden to Henry but he can't get rid of it.. He gets advice, all sorts of helpful suggestions from the counsellor, but finally blurts it all out to his brother.*

*Jack decides he'll be fine. 50 per cent chance of a child with the same gene. If Henry's got it he can't have – that would be 100 per cent.*

She was interested in exploring the increasing medical understanding of Huntington's, in particular estimating the age of onset of the disease:

*That knowledge is becoming more precise. They know that the time of onset is related to the length of the gene. This knowledge is growing and can't become unknown.*

More broadly, Alison proposed that this play would be an opportunity to explore what difference it makes to have foreknowledge of death, or of a fatal condition. In her first interview, she explained that she wanted to write a play inspired by Huntington's, but not 'about' it:

*I don't want to write a play 'about Huntington's' but rather something with a universal theme that is relevant to all. The knowledge of death – the idea of 'life expectancy' – the midlife crisis is the idea of death on the horizon. What I want to do is nail that down more.*

In keeping with this, in her first draft the word 'Huntington's' is not mentioned until nearly the end of the play (p. 36 of 40).

The team found a scientific advisor for Alison: Dr Peter Turnpenny, a clinical geneticist at the Royal Devon and Exeter Hospital. Alison made initial contact with him in April. Interviewed at the end of June, Alison explained the contact she had had so far with Dr Turnpenny:

*His answers have already made me rethink some of the play – for example I'd read that the age of onset of Huntington's is related to the length of the gene and had an idea that this could feature in the play – knowing what age you would be likely to become ill. PT has said this is not at all realistic to find that out at the moment – very useful to know.*

In this instance Dr Turnpenny was able to clarify and correct the information that Alison had gleaned from her own research, enabling her to distinguish between current medical realities and theoretical future possibilities.

Asked if the scientific input had altered the direction of the play, she replied:

*A bit early to say if science has altered the dramatic direction of the play. It's brilliant to not have written a play based on a wrong assumption (that you could know the age of onset). As a non-scientist, it's difficult to know which claims are overblown and to get a feel for what's currently realistic. That's where the scientist's perspective has been invaluable.*

This demonstrates the importance of having a scientist involved from the outset, rather than coming in at a later stage to simply 'fact-check'.

She also continued to do her own research into Huntington's, reading several books on the subject, and met with Jeff Teare to discuss the dramatic possibilities of the play:

*We talk about the prospect of a comedy. The key challenge of this play will be dealing with such a depressing set up in a way that an audience will actually want to see it. The other challenge is to make 'ideas' emotionally engaging and I keep re-reading and analysing Blue Orange because it's the play I think is most successful in doing that.*

Jeff continued to help Alison with the dramaturgy of her play as it developed, and later accompanied her on a visit to Dr Turnpenny at his workplace, where they also met genetic counsellor Vicky Hunt.

Alison explained how this differed from previous collaborative writing projects she had undertaken:

*Working with a scientist from the beginning of the play is new to me – having access to someone who can answer questions. I'm looking forward to working more with him but he's very busy [...] I envisioned more of an ongoing relationship with an individual scientist, that would develop organically from the Eden weekend, imagined collaborating with someone I'd come to know well, but this seems unlikely to happen due to the constraints on scientists' time. I think PT sees himself as an advisor not a collaborator.*

Dr Turnpenny confirmed this when I interviewed him. He said that his reason for wanting to take part in the project was to ensure accuracy of the scientific information:

*JM: In terms of Alison's play, do you see your role primarily as checking the accuracy? How would you describe your role?*

*PT: Accuracy yes. Also providing information on which the writer can base their story. When Jeff and Alison came to visit we had a very full discussion which I hope they found helpful – you'd have to ask them!*

Alison did indeed find meeting with Peter and Vicky Hunt extremely useful: in particular seeing the hospital department where people receive the results of their genetic tests: '*I'd imagined it as more domestic and less medical, but it was a very clinical environment - waiting room with hard chairs, etc.*'.

While Alison found the visit very useful in terms of getting an idea of the clinical environment and also asking some specific questions, she felt that the most important effect was to establish a more personal and open working relationship with

her scientific advisor. In her journal she noted: *'Some interesting information but the main significance of meeting face to face will come later as I am much more able to ask difficult questions'*. A number of participants made similar points, which emphasises the importance of having a genuine relationship in order to achieve successful collaborations. Theatre makers may often feel nervous of scientists:

*Yes, it was definitely worth going to see PT [at work] – just phone or email is I, not enough to overcome the barriers, for example the fear of asking 'stupid' questions. It is vital to ask questions as my understanding of genetics is minimal – it was better once I felt relaxed enough to ask him.[...] Some of our discussion was new information, some was making a relationship – making it easier to [subsequently] email more honest questions.*

As well as asking Peter about the science of Huntington's, she also discussed the ethics of sharing knowledge about the disease, an important issue in her play. In her original pitch she had written:

*Knowledge can't be restricted to an individual when it has implications for whole families, so how should that be controlled? Is it up to Jack or his girlfriend to decide if the foetus is tested, or told of the possibility of Huntington's if it's born.*

In her discussions with Dr Turnpenny she was struck by his unequivocal response to these questions:

*Peter Turnpenny's answers to my initial questions indicates a clear view among medical professionals that knowledge about someone's medical condition belongs to them and should be given to them – regardless of the consequences (although this should be delivered with counselling and support.) To him this is obvious, although I remember as a young child that doctors would sometimes withhold information from incurable patients. Although the era of Doctor as god is long past, I wonder if this shifting of responsibility from doctors to patients is entirely in the patient's rather than the doctor's interests. Patients and their families are faced with endless dilemmas – such as whether to sell a family home to gain a few months extra life for a cancer patient or suffer increasingly hopeless IVF treatments so they don't feel they've given up.*

In October 2010, Alison submitted the first draft of her play, now renamed *50/50* to refer to the risk that a child of someone with Huntington's will also carry the gene. It begins with Henry, the younger brother, who is in the process of committing suicide by taking an overdose of pills. Surrounded by voices from his childhood, in the midst

of this Bill appears; initially seeming to be another imaginary figure, it becomes apparent that he is in fact really there. He saves Henry's life, and as the play unfolds, the two brothers share the stories of their lives. In the final scene, Bill and Henry find out the results of a DNA test which will tell them whether or not they are actually siblings. Alison discussed this with Jeff, while writing it::

*Jeff points out that the end of the play, where the two are about to find out if they're brothers from the result of a sibling DNA test – will have hugely different significance if it's possible to tell from this kind of test whether Bill also has Huntington's. I contact Peter who confirms that the test wouldn't do so but also that this kind of sibling test can be very accurate.*

In this instance, having a scientific advisor with whom she had an existing relationship, and could quickly get an accurate answer to her question, had important consequences for the dramatic development of the play. In the final scene of the first draft, the brothers are about to open the envelope containing the results of their DNA test:

*Henry: It's just a thought, just a simple piece of information in your brain. Whatever reality exists now, will still exist after you've opened the envelope but your life will be completely different because you will never be able to unknow it. That one decision, to open that envelope, will force you into more decisions. If you are my brother, you'll know there's a fifty fifty chance you've got Huntington's, so if you do nothing else, you'll wonder every minute of the rest of your life if you're about to start on a hideous downward path. If you forget a name, you'll imagine that your short term memory is being lost forever or that it wasn't clumsiness that made you drop a cup but the neurons dying in your head. You'll feel obliged to tell anyone with whom you want a relationship that you may be about to make their life hell – or that your babies will have every chance of inheriting it. and there's only one possible way out of it...*

*Bill: No.*

*Henry: I mean, making the next decision – having the test because you might just be worrying about it all unnecessarily.*

*Bill: And you might not.*

After getting feedback from Jeff on the first draft, Alison began reworking the penultimate scene of the play for the showcase at Eden. This time she sent the whole scene to Peter Turnpenny, seeking his advice:

*I work on the penultimate scene instead and Peter Turnpenny looks it over quickly for me, which is very helpful. As the scene is out of context, he is*

*concerned that I've misunderstood – as Bill does – that if one brother has Huntington's the other can't have but I was able to reassure him on that. He also pointed out that someone who had developed even very slight unsteadiness in their limbs would also have their speech affected; that it would occasionally be slurred, hesitant and staccato-like. I pass that onto Jeff for the reading but it means I have a lot to think about as I work on the second draft. This hadn't occurred to me as a possibility.*

The scientific guidance provided here has implications for the dramatic development of the play. While 'slurred, hesitant and staccato-like' speech can clearly be seen as a clinical symptom, style of speech also makes a big difference to how that character is perceived, particularly in a dialogue-heavy play such as this, in which banter and fast repartee between the two main characters is key to the play's development. (For more on this question, see 4.4 'Blurring the boundaries', below.)

I asked Peter Turnpenny for his thoughts on this:

*JM: For me this is an interesting area – if you advise that a character would have slurred speech, for example, that seems fairly clearly a clinical or scientific fact – but when you get onto other characteristics, such as for example a propensity to aggression, it seems to me that you're getting quite close to creative input into what type of personality this character will be. The line between scientific and creative input is not that easy to define.*

*PT: Yes... you'd have to ask the writer about that!*

*For me if you're trying to portray disease it has to be reasonably true to life. There are lots of creative aspects [to Huntington's] that would be good to explore, such as how it affects a family – it has a devastating impact. There are any number of human stories around this condition.*

While Dr Turnpenny sees his role as ensuring accuracy and providing information, there is potential for him to expand that role by suggesting some of the possible 'human stories' of Huntington's: his extensive experience of dealing with people with Huntington's in a clinical setting means he is ideally placed to explore its 'creative aspects'.

In November 2010, Alison came to Cornwall to see this scene read at the Lost Gardens of Heligan and the Knowledge Spa Truro. In her journal, she commented:

*There is a significant medical presence in the audience, so I understand Jeff's choice [of scene to be read]. I am called on to answer questions and put it in context. For no very good reason, I hadn't anticipated this and, having been awake all night, am not particularly coherent but I think about it so that next day when there's an extra performance of State of Nature and the scene's*

*read again, I'm much more on the ball. Being asked to explain what the play's about to people who know nothing about it is actually very useful, if not comfortable.*

Alison answered questions on her choice of subject matter (explaining that she had chosen Huntington's as one way of approaching writing about death) and the comic tone of the play (to balance the darkness of the material).<sup>3</sup>

After the reading, Alison returned to complete her second draft. This second version gives a much stronger impression that, as Alison wrote in her journal, '*In many ways, I think Bill is Henry having had a different life*'. In this version, the similarities between the two brothers are heightened, for example their gestures and clothing, to emphasise the fifty per cent chance that determines whether or not a child of a person with Huntington's will develop the disease themselves, as Henry explains to his brother in this scene:

*Henry: I've got Huntington's disease, just like my mother had. What else does it say about it on the fucking computer?*

*Bill picks it up and fiddles with it.*

*Bill: It's broken.*

*Henry: Well so am I. One little gene to make my brain disintegrate slowly, all the little neurons one by one. There are around a hundred billion neurons in the human brain so it takes quite a while. First it affects your short term memory, I might begin to forget why you're here, for example, and motor co-ordination, getting a bit shaky as you noticed, then there are personality changes, increased aggression, and then they all get worse and worse so you can't walk, can't feed yourself, can't talk, can't remember who you are or what bastard stopped you being dead. I hope for your sake that you're not my long lost brother because, what you would have discovered if you hadn't smashed up the fucking computer, is that every child who has a parent with the disease has a fifty per cent chance of inheriting it.*

*Bill: I'm sorry.*

*Henry: Did you hear what I said?*

*Bill: I get why you had to do the IVF thing now...*

*Henry: A fifty per cent chance of inheritance. That's what you've discovered.. mate.*

*Bill: Fifty/fifty, one in two and for once you're the unlucky one.*

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<sup>3</sup> This reading and the Q&A session can be viewed at the Theatrescience Archive.



Alison sent this second draft to Peter Turnpenny, who wrote back with his comments on the play:

*I enjoyed reading Fifty-fifty and have a couple of comments. First the stuff relating to HD and genetics.*

*Overall, it is certainly pretty accurate with respect to the illness, with the small possibility of a 'disconnect' between Henry's memory / cognitive level and his suicidal ideation. In other words, for someone with suicidal thoughts he is performing well. But this is a small point only.*

*More significant is the fact that no-one, to my knowledge, is going to conduct DNA fingerprinting on a few strands of hair. The Forensic Science Service might be able to do so but one of the commercial companies – I doubt it very much. You have built in some artistic licence here – or are we too [sic] believe that Henry goes off to have a blood test and signs the consent forms, etc?*

This feedback may be used to shape future versions of the play. Again, it can be seen here that scientific input can have a broader use than simply ensuring that the medical science is correct; Peter is also able to offer guidance on the real world commercial considerations.

At the time of writing, the Theatrescience team had just heard that the grant application for a production of *50/50* has been turned down. The future of the play is currently open.

Regardless of how the play is taken forward, Alison was very positive about her experience of collaborating with a scientist throughout the development process, and was very keen to extend this experience:

*JM: What about the future- would you like to work in a similar way again?*

*AF: Ideally I'd like a week's intensive living and talking with scientists – so we could organically produce ideas together. Or maybe go to conferences and meet scientists. I'm definitely getting interested in ideas of working with scientists.*

Peter too spoke in very positive terms about his involvement and said he had enjoyed taking part in the project.

**Case Study 2: Life in Ben's World by Sophie Macdonald**

**Scientific advisor: Dr Steve Watkins, Community Sub-Dean for Cornwall, Peninsula Medical School**

Sophie Macdonald holds a BA in Theatre from Dartington College of Arts and a Btec in Performing Arts from West Herts College, and is currently studying towards a Psychology degree from the Open University. She has written site-specific monologues for the Hidden City Project, a narrative for a dance performance of *Two Thirds Blue*, the main performative event of the Ocean Project, and a series of short pieces for the Barbican Theatre, Plymouth.

Sophie was one of the five young writers who attended the Eden Writers Weekend in November 2009. She subsequently pitched her idea to the Theatrescience team:

*I see the three characters being demonstrative of three different ages and stages of life. For example: 18 years old, 30 years old, 50/60 years old. I want to explore how these different age groups view life/health/illness – How do they experience and perceive these notions? How does this change as we age? Who or what do we blame for our frailties and strengths?*

*I see a development happening around the ideas of:  
Tolerance of discomfort – Choice/Chance – Perception of illness.*

Sophie was commissioned in early 2010, and agreed with the Theatrescience team that Dr Steve Watkins, who had addressed the group at the Writers Weekend, would be the scientific advisor for her play. She made initial contact with Steve in April 2010:

*I sent him emails [...] introducing the subject matter I wanted to deal with – pain and tolerance of discomfort. Steve suggested sources I could consult (books and internet). This early research was useful as these sources made me decide it was too big a subject to take on for this project. So having looked into these, I then shifted the subject to age, and perception of age. Steve shared some of his experiences as a GP with young and old people. That was really helpful – reading that tied in with what I was writing.*

Sophie submitted an initial draft of her play, entitled *You Get What You're Given*, to the Theatrescience team on 29 April. In this initial draft, [set in the grape vines in Eden Mediterranean Biome] the three characters are discussing a medical procedure called 'Gene Freeze', which the young man, Ben, wants to undergo.

*Ben: but it's incredible technology!*

*Marilyn: I'm sure it is. Exactly what do they stop from aging then?*

*Ben: your body! Your skin, your muscles, your organs! It all gets stopped at the point where you want it. 25, 32, 43? You name it and they'll freeze it up good!*

*Marilyn: it stops? What do you mean, freeze it?*

*Ben: at the point of regeneration...you know, new cells replacing old ones, they freeze them. Well, they don't freeze them, you know, they just stop them, stall them. Make them stop aging. I think it's called Cryonobiosis, though I can never say it right. But from what I've heard it's just an injection or two and then you're all good to go.*

After the completion of this draft, Sophie wrote to Steve

*I've begun to look at ageing more recently, and cell regeneration with questions being raised such as do young people believe its [sic] a given that they are healthy - and if problems occur what effect does this have on them? Are older people less likely to use medication to deal with illness? Basically how the old and young might view the question and affects [sic] of illness upon them.*

Steve responded by email, answering her questions about age and perception of illness:

*Can't give the 'scientific' answer to these questions but thoughts from my own experience.*

*Young people and illness – you're right that most previously fit young people do, indeed, believe that they will live forever – and to some extent they are right when considering that much of illness is an issue for older people.*

*A problem when they become ill is that they often enter a state of denial – which I've seen, particularly in teenagers being diagnosed c Diabetes.*

*As one gets older there is more of an expectation of illness but still people often ignore signs and symptoms of illness – which can be a serious matter if, say, we are looking for early diagnosis and treatment of cancer.*

The influence of this can be seen in Sophie's subsequent draft, written in May and retitled *Life in Ben's World*. In this new version, rather than the 'Gene Freeze' technology already existing, Ben is fantasising about the possibility of it being invented in the future:

*Robin: why have you got such a problem with getting older?*

*Ben: I don't really. I mean, I'd like for my body to grow a bit, you know, maybe get a bit taller? And rip myself up. Because sure, I want to look like a man.*

*But then, I think I'd like it to stop when I'm happy with it. I don't want to go over the other side.*

*Robin: but what if the other side is as good as this side? From what I've seen men only get more attractive as they age, whereas women seem to be idolised when they're young but as soon as they reach a certain point they become over looked for the younger model.*

*Marilyn: err... I am still here you know.*

*Robin: but you know what I'm saying. Even I get it- there is something about an 18 year old that drives everyone wild.*

*Ben: well I don't want to drive everyone wild....or perhaps I do. I just don't want to get all those aches and pains that come with being old...older. Who wants to be on drugs for your heart, your blood, your bones, your mind? Not me. I think everyone would be a whole lot happier if we all just had some kind of injection where they could just stop your body from ageing any more.*

*Robin: an injection. And would this be compulsory?*

*Ben: no, you'd have to pay for it. And it wouldn't be cheap. It couldn't be. You'd be changing your body's chemistry after all! Yeah, imagine that. Choosing when you could kind of stop your body...at the point that you most like it!*

Later in this draft, the older characters Marilyn and Robin attempt to convince Ben that illness is an essential part of life, and not something which can be avoided:

*Marilyn: What goes on inside your head affects your body and vice versa, it's essential to our wellbeing, or ill-being.*

*Ben: But...*

*Robin: Yes people have to be ill don't they? It's all part of the process after all: part of life. And what's this business about it messing up your kids? Would you have to have them first, in order that they weren't harmed by the weird body chemistry you'd done to yourself?*

*Ben: yeah, maybe you're right with the kid's thing...that might be best I suppose. But this ill thing you two have got going on...I don't agree. Can't you imagine a world without people being sick, or in pain, or grumpy?*

*Marilyn: I don't think you're going to cure the world of miserable people by making sure no one is ever ill.*

Echoing what Steve had written in his email, the young character Ben fantasises about immortality while the older characters are more accepting of the realities and complexities of ageing.

The development of Sophie's play was also influenced by Jeff as mentor who advised Sophie that there would need to be some sort of 'disclaimer' to indicate 'that Ben doesn't know what he's talking about', as 'the public often take scientific supposition as fact'. Sophie emphasised how helpful Jeff had been in guiding her:

*When I sent the first idea to Jeff he made it clear that the Wellcome Trust really want the science to be correct and factual – not science fiction. He guided me in a better direction. So I think the Wellcome Trust's expectations influenced the play from then on. I didn't want to make a 'silly' piece of theatre, but one which was equally scientific and accurate as the other plays.*

In terms of achieving this level of scientific accuracy, Sophie did plenty of research herself, but asked Steve to verify it in each draft. This shows the relationship between dramaturg, writer, and advisor, with Jeff guiding the overall direction of Sophie's work and Steve steering its scientific content.

Steve was also able to answer Sophie's questions about cell regeneration and development. Although not a specialist in this area himself, he was able to provide her with reliable and accurate information via his contacts; this shows that the relationship with a scientific advisor can be broader than just providing information on their own area of specialisation, but also more generally a way to access reliable information and to mentor or monitor the accuracy of the scientific information in their plays.

With the basic structure in place, Sophie continued to redraft and to hone her play. (Marilyn was changed to Joe due to practical necessities of casting – the young writers plays had to use the same actors cast for *State of Nature* – although the dynamic of the piece seems to work better with an older man in this role.) Steve commented on a further draft of it, and ensured that the science was all correct.

The final piece, as performed in Cornwall in November 2010, included not only ideas about potential ways to alter the ageing process but also discussion of the possible social consequences of such technologies, as well as linking more explicitly to genetic inheritance and risk:

*Joe: Keeping people young inside sounds misleading. You'd really stop people having the process of growing 'older and wiser'?*

*Ben: Hmmm... I guess really what I'd like to do is stop all those horrible old age diseases...what if there could be a selection process, you know, people who had a family history of, say, Alzheimer's, dementia, Parkinson's and so on could be given an extra shot of...something...erm... [Shy to share his*

*knowledge but still wanting to sound like he knows-it-all] which I've actually looked into and...On the end of every chromosome is this thing called a telomere and it decides how long a cell will last, or live, for. So I'll just invent a telomere injection to be given maybe once a year, depending on family history of course, and hey presto! Everyone has youthful bodies and healthy minds!*

*Robin: You have been doing your homework. But how would we tell how old anyone else was? That is kind of an important thing, don't you think? Will you make everyone wear 'age badges'? Yes, they could get a new badge every year with their injection of age extension!*

*Ben: Yes! No! Robin! You're being really silly! People would be grown up about it! Their behaviour would have to change! We're talking about inventing, me inventing, a whole new version of society! Everything and everybody would change obviously! They'd have to!*

At the *State of Nature* launch, following the first performance of *Life in Ben's World*, I interviewed Steve Watkins about his role in developing the play. He had enjoyed the play very much:

*I thought it was great. More rounded than I expected – more 'of a piece', more of an entity than I'd imagined. And funnier – I didn't see the jokes when I read it. Very impressed with Sophie's art in honing it and the actors' skill in projecting it. More polished and much less amateurish than I'd expected!*

However, he was uncertain about how helpful he had been during its development:

*When I was asked to be Sophie's mentor I was interested, intrigued but uncertain whether I'd be a great deal of help. Initially she referred back to what we'd done at the [Eden Writers] weekend and sent me a first draft. I sent back comments, then there were 3 or 4 further email contacts. I wasn't sure what I could offer her.*

I asked him if he had felt any sense of being a co-creator on watching the play:

*I think my involvement was more marginal. I feel less like a parent, more a distant uncle! What I saw today, I didn't see much of me in it. But I did have a feeling of pride that I may have been an influence.*

However, Sophie was much more positive about how important Steve's input had been:

*It was important [...] There was one email in particular [...] I'd asked him about his experiences with different ages of patients and how they respond to*

*illness/pain differently. In his email in response he explained that many older people self-medicate, and discussed the reaction of young people to hearing they have a serious illness – disbelief as they feel invincible. That particular email helped quite a bit in terms of my thinking about different ages. So his input was definitely helpful and useful, and it did help me to form some of the ideas*

Although Steve was uncertain about the value of his own involvement, he was very enthusiastic about the experience in general, saying that participating in 'Not My Fault' had 'given me many more insights into the personal experience [of genetic inheritance]' and made him 'more appreciative of the links between art and science and especially medicine'. He was extremely keen to take part in further art/science projects:

*This was my first experience of seeing a play develop from idea to performance. It reawakened my thinking that I wouldn't mind doing more of it. Not from a strong messianic zeal to make the world a better place – but it's fun!*

This then is an example of one specific collaboration, in which an emerging playwright has been guided not only by a creative mentor but also by a seasoned medical professional, who was able to share the benefit of his experience and also cast a 'scientific' eye over the work as it developed. It also had benefits for him in learning about the theatrical development process.

#### **4.4Evolving relationships**

It is not a simple case of 'realising' that science and theatre have something to offer each other, and henceforth being 'engaged'. Rather, each collaborative project can become deeper and more reflective as the co-creators become more interested in each other's perspective.

In a previous Theatrescience publication, playwright Simon Turley, director Jeff Teare, and scientific advisor Professor Anthony Pinching gave an account of their collaboration on two plays about CFS/ME, *Sleeping Beauties* and *Something Somatic*.<sup>4</sup> In this essay, they suggest that genuinely creative collaboration involves:

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<sup>4</sup> Anthony Pinching, Jeff Teare, and Simon Turley (2008), 'Dramatic Clinical Spaces', in *Creative Encounters: New conversations in science, education and the arts*, eds. Ralph Levinson, Helen Nicholson and Simon Parry (London: Wellcome Trust), pp. 90-108.

*discovering each other's spaces, and creatively working within and across them. This has taken time (and several plays). Respect for the expertise and experience in those other spaces has been interlaced with a guided exploration of each other's domains. This reached a point where we could, albeit briefly, even consider changing places.*

This same team of three worked together again on *State of Nature*, extending the creative relationship again. Jeff Teare commented:

*The relationship between Tony, Simon and I is a real collaboration, after three plays together. Tony makes dramatic suggestions, I discuss the science, the demarcation lines are very blurred. For a scientist Tony is particularly interested in theatre.*

Speaking at the panel discussion on the launch day of *State of Nature* Professor Pinching said:

*The thing we've done more and more is what I would describe as a deeper authenticity – that's been fun to do, based on my own clinical experiences, working with some of my colleagues, drawing in patient narratives but it's fabulous working with somebody who can bring it to life in such a particular way. [...] Every now and then we cross over with each other – he really wants to be a scientist and I really want to be a playwright. Occasionally I'll try and do something, but I know when I'm an amateur and when I'm a professional.*

This particular collaboration has thus developed over time from one with very clearly distinct roles (director, writer, scientist) to a more complex and overlapping relationship. As Professor Pinching comments on a video on the Theatrescience Archive, 'while there is a respect for role, as we've carried on working together, equally there is much more blurring of the boundaries between roles'. Or as Simon Turley puts it in the same video, 'We kind of try on each other's shoes a bit, and have a little march around'.

In keeping with this idea of 'trying on each other's shoes', when Simon was asked 'How would you like to see this work developing in the future?', he said:

*The beginnings of a further idea are there ... something to look at bio-medicine from the clinician's view-point (something which I certainly haven't addressed before).*

So in fiction at least, this particular writer – after writing three plays in close collaboration with a scientist – is stepping into the clinician's shoes.



The complexity of these relationships, and the blurring of the boundaries between scientific and dramatic input can be seen in the notes from the *State of Nature* rehearsals on 30 October 2010, when Professor Pinching attended to give scientific input. This gives an insight into how scientific guidance can alter the development of a play at rehearsal stage.

The cast performed the first ten pages of *State of Nature* for Professor Pinching. His observations were particularly concentrated on actor Timothy Block's portrayal of the older Patrick, suffering from Lewy Body dementia:

*Lewy Body patients often experience a reduced level of mental alertness and therefore an inability to converse and interact at their previous (pre-condition) speed. It as [sic] suggested for Tim to establish early on this slowness of speech and of thought (manifested in the repetition of "Maura", and the several attempts it take to get "fat-arse" out). It was also suggested that Emma, in playing Louise, might slightly speed up her speech in the early stages of the performance, to highlight this difference for the audience.*

This extract from the day's rehearsal notes offers a very interesting example of the narrow gap between scientific and dramatic input. Whereas the suggestion that the dementia sufferer (played by Tim) should 'establish early on this slowness of speech' can be seen as scientific/clinical guidance, the accompanying suggestion that Emma 'slightly speed up her speech [...] to highlight this difference for the audience' crosses the line into dramatic direction.

Speaking on video at the Theatrescience Archive, Jeff commented on Professor Pinching's suggestions:

*Tony gave very clear notes as to how Lewy Bodies dementia would present, which was great for accuracy, but was rubbish dramatically, because it slowed everything down. And this is always an issue with Theatrescience work – it has to be accurate, but it also has to be dramatic, and there is often a tension between those two things.[...] So we've spent the last week trying to find dramatic ways to speed it up again, without the presentation of the disease being wrong. And we'll find out more tomorrow, as Tony is coming back into rehearsals again, to see if what we're doing is any better than it was last week.*

This demonstrates Theatrescience's approach of not simply having a scientist attend rehearsals once, to provide input, but repeatedly throughout the process, in order to shape the play as it develops.

Professor Pinching also saw and commented on the young writers' short pieces. On Jack Redmond's monologue, *Caroline*, he noted:

*The emphasis on the oscillations she experiences between angry, sad, and lucid need to be greater, as this is one of the key defining symptoms of bipolar depression. To achieve this, the opening section needs to be delivered in a hypomanic way – elated, at speed, regulated, the words/ideas make sense but are simultaneously “outrageous” but delivered deadpan (i.e. she’s talking about suicide but she’s very detached from it, very matter of fact, delivering at speed. All the words run into one another).*

Again, while the information about symptoms of bipolar disorder can be seen as purely clinical information, the suggestion that the actor delivers her lines in a 'deadpan' way could also be interpreted as directing.<sup>5</sup>

A similar blurring of the boundaries between scientific and dramatic guidance can be seen in Peter Turnpenny's responses to *50/50*, discussed in section 4.3 above. Having commented on the clinical picture and the practicalities of DNA testing, he also offered feedback on the characters' interaction and dialogue:

*That’s my ‘expertise’ bit. As a general reader I’d like to comment on the use of expletive if you don’t mind. [...] I can definitely see the place for some strong language as a way of Henry and Bill expressing the depth of emotion from their different pasts, but would two long-lost brothers actually start swearing as soon as they met each other? My guess is that they would not – until they were easy in each other’s company and knew one another a bit. So – I could see the place for a measure of strong language later on, as the emotions wind up, but not early on when some of the audience, including myself, might be asking, “What have I come to watch?” I have seen several hundred people with, or at risk of, HD in my clinics – swearing is very unusual, and on this scale unknown – though I realise your play is not set in a genetic clinic!*

Although he frames these comments as coming from 'a general reader', he is in fact drawing on his extensive clinical experience here (having seen 'several hundred people' facing a diagnosis of Huntington's) in order to question the way that the characters Bill and Henry speak to each other.

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<sup>5</sup> It would be interesting to further examine the notion of illness as a performance and clinical interaction as drama: something which has been proposed by writers such as Oliver Sacks (for example, in *Awakenings*). However, this falls outside the scope of the present report.

This could be seen as simply a 'human psychology' question, firmly in the realm of drama rather than science, but Dr Turnpenny is in a position to make quite authoritative statements about how people in this position really do behave (with the proviso that, as he writes, the play 'is not set in a genetic clinic'). Similarly, Steve Watkins offered his views to Sophie Macdonald (above) with the following preface: 'Can't give the 'scientific' answer to these questions but thoughts from my own experience.' In this sense the value of the advisor is less in terms of actual 'science' and more in terms of their experience of the human side of clinical narratives. The playwright can then shape these experiences into an artistic narrative which distils them into a single story which communicates a deeper truth. Literal authenticity is, of course, not necessarily the aim of the playwright; however, clinicians understand a great deal about how people respond to these extreme emotional situations, and thus are in a position to make suggestions which, if not necessarily authoritative, are at least worth consideration.

This is not to imply that these suggestions can be definitively categorised as either in the 'scientific' or 'dramatic' domain, and thus the property or responsibility of one person in particular. But rather to demonstrate that in order to create this kind of theatre using this kind of process, the two domains cannot be fully separated, and the roles of director, writer, and scientific advisor will inevitably overlap.

#### **4.5 Key points from this section**

- There is a persistent prejudice that 'science plus theatre equals poor plays' despite increasing evidence to the contrary
- Most NMF participants believe that science is represented too simplistically in the arts, where it is represented at all
- Both scientists/clinicians and writers generally need some experience of science-based theatre before they appreciate what it can offer them
- Theatre makers, scientists and audiences can all offer each other new insights
- It is important for writers to have a good relationship with their scientific advisor and to be able to seek guidance throughout the writing process
- The relationship with a scientific advisor can be broader than answering specialist questions; they can also act as mentor and open pathways to reliable information
- Dramatic and scientific direction cannot be fully separated

- Collaborations tend to lead to an increasing overlap of roles between individuals

## **5. Conclusions**

### **5.1 Feedback from participants**

At the end of the project, a questionnaire was sent out to participants to assess the effect of the project. Nine completed questionnaires were received, from five writers, two scientific advisors, and two members of the Theatrescience team.

#### **Q2. For you personally, what were the most useful outcomes of taking part in 'Not My Fault'?**

All of the writers commented positively on the development of their own writing:

*The most useful outcome for the project for me was furthering my editorial skills and learning from a director how to get the most accurate and best portrayal from my writing and the ideas behind it.*

*I got to write a play which I otherwise wouldn't have written: it turned out to be a very personal piece, in ways which I didn't anticipate, and didn't even properly realise until I saw it in performance at Eden. I was able to explore, further, what it is that I am trying to do as a writer with Theatrescience. The nature of the collaboration was, partly different this time ... But there were also ways in which it was a continuation along a path that I have travelled before. I'm clear in my thinking about what I want to do next.*

*The process of pitching a play which then has to turn out at least something like the pitch!*

*Dealing with contractual deadlines.*

*Having a consultant willing to answer what must seem like a random selection of questions.*

*Seeing Simon's play and how successfully he'd written about illness without it seeming remote.*

Two commented on their increased interest in science and/or interdisciplinary collaborations:

*Another useful outcome is having a greater interest in science – and how it now lies behind much of my thinking in regards to future projects.*

*Further enquiry into the nature of interdisciplinary practice – exploring the boundaries (real and imagined) between science and art and finding new ways in which they can nourish each other. Through continued discussion of what contributes to or hinders successful collaboration, and seeing how that has been realised in the development of the plays, I have gained a lot of knowledge that I feel will be useful to my own work, and is already forming a starting point for creative conversations with other artists.*

Others praised the overall experience of taking part:

*The whole journey from preconception to performances*

*Re-engaging with theatre process. Engaging with new (to me) practitioners.*

### **Q3 What did you most enjoy about this project?**

There were a variety of individual answers to this. Several respondents mentioned the (questionably punctuated!) Writers Weekend:

*The writer's weekend was great because we had so many interesting discussions and everyone seemed to be there to learn or share something.*

*Also the writers' weekend was great, really nice way of introducing that kind of project. Nice pasties too!*

Some mentioned the overall atmosphere of the project:

*I really enjoyed the ethos of the project. There was always a positive attitude behind everything – even in the face of floods. And where some of the project dealt with difficult problems and issues there seemed to be a forward thinking approach.*

*Getting together with the whole TS team.*

Most really enjoyed seeing the culmination of the project in the performances:

*Seeing the outstanding performances of some really excellent plays – it all came together wonderfully.*

*Fascinating experience – enjoyed working with the whole group and especially c Sophie. All the plays were great and much enjoyed (even if in Heligan and not Eden)*

*Rehearsals.*

*Support of Eden staff.*

*Reaction of Eden audiences.*

*Walking up through the Tropical Biome, surrounded by students that I work with, hearing the Allegri playing, and the place feeling like the 'secular cathedral' of which we'd spoken at the inception of the project ... And everyone getting warmer as we got higher up in the Biome. And I just had this feeling of vindication, really. I thought that it would be like this – that it would work .... and it did.*

**Q5 asked: Has participating in NMF made you think differently about genetic inheritance? If so, in what ways?**

Responses were as follows:

	<b>Writers</b>	<b>Scientists</b>	<b>TS Team</b>	<b>Total</b>
<b>Yes</b>	4	1	2	7
<b>No</b>	1	1	0	2

Some described how it had increased their general level of interest and engagement with the subject:

*I think the project has made me more aware of genetic inheritance and the issues surrounding it. I'm more inclined now to listen when something comes up on the news or when reading the newspaper if genetic inheritance, or something regarding genetics in general, is mentioned.*

*I did a lot of research between meeting all the scientists at the Writers Weekend and writing the play and I will probably do more before the production. It mostly made me want to know more.*

Others described specific things they had learned:

*I was definitely surprised at how complicated it is, that it's never as simple as one gene making you pre-disposed to certain behaviour/ illness/ whatever.*

*Partly, I read a lot that I wouldn't otherwise have done and understand more about the potential of personalised medicine. I can also see the concomitant risk of all life becoming medicalised.*

Director Jeff Teare replied:

*It's probably less important than I used to think.*

Asked to expand upon this, he explained:

*When we started Theatrescience in 2002 it was very soon after the Human Genome Project – a very simplistic linear relationship between genetic predisposition and disease was being peddled. Since then it has got much more complicated. Epigenetics etc. So we need to present a more complex picture.*

*When I saw the schools project, as an audience member (as I hadn't had the chance to be involved in the preparation) I thought that we should stop presenting such a simple nature/nurture dichotomy. But it's dramatically complicated to deal with such an amorphous issue. With the simpler idea it was easier to find a dramatic handle.*

Of the two respondents who said 'no', both added comments as follows:

*Although it has given me many more insights into the personal experience*

*No ... I think it has made me feel differently about genetic inheritance.*

Thus even those who responded 'no' did feel that their attitude towards genetic inheritance had been changed and developed by taking part in the project.

It can be concluded that the project was very effective at engaging those who took part with issues around genetic inheritance.

**Q6. Would you say you are more engaged with science generally as a result of taking part in NMF? If yes, how does this manifest itself?**

Responses were as follows:

	<b>Writers</b>	<b>Scientists</b>	<b>TS Team</b>	<b>Total</b>
<b>Yes</b>	4	0	1	5
<b>No</b>	1	2	1	4



All but one of the writers said they were more engaged with science generally. The exception said '*No (I've always been engaged with scientific ideas, and how they cross-over into the arts. All be it from a layman's P.O.V!)*'. Others commented:

*I am definitely more engaged with science after being a participant in the NMF project. I am more aware, and ultimately, more interested in science. I know there are things mentioned during the project that I still want to explore, for personal interest but also in regards to future work that I want to make.*

*Well, it has re-awakened that curiosity and (I hope) openness to what is happening in bio-medicine, and to what (in terms of the bigger picture) science does – for us ... and to us ...*

As might be expected, the scientists did not think that the project had made them more engaged with science. However, they did say that it had made them view it differently in relation to the arts:

*Probably not, but I am more appreciative of the links between art and science and especially medicine*

*It emphasised for me the extraordinary power and impact of drama in bringing scientific concepts, and the consequent personal and social issues, to life.*

The Theatrescience Project Manager, Mel Scaffold, explained her increasing interest in science as a result of working with the company. Her perspective is interesting as she is not someone who was actively engaged in a collaboration of her own but nevertheless found her views on science/arts collaboration evolving as a result:

*Having been forced to decide on my own educative route and self-classification as a teenager, when the science/art binary is enforced through subject choices, it wasn't until I began working with scientists and clinicians through Theatrescience projects that I began to see both the creative possibilities of this collaboration, and to develop a strong interest in areas of science sparked off by these projects. Having realised that there is no exclusive barrier around science as a discipline I've become interested not only in the biomedical issues raised by the projects and plays, but other areas including particle physics and astrophysics.*

**7. Has this project changed your view of theatre and/or the arts in general?**

**Yes/No**

**If so, how?**

	<b>Writers</b>	<b>Scientists</b>	<b>TS Team</b>	<b>Total</b>
<b>Yes</b>	1	0	0	1
<b>No</b>	4	2	2	8

Interestingly, while several participants had their view of science, and the bringing together of theatre with science, changed as a result of the project, only 1 of 9 respondents answered 'yes' to this question. (She commented: 'It's made me think more about the reason some plays get commissioned and whose agenda controls those decisions – not necessarily in a negative way – the more people who fund theatre the better.')

The other 8 respondents answered 'no', although one or two expanded on this with comments:

*I don't think it has really changed my view of theatre and arts. I was aware before the project of the diverse ways of using theatre and of site specific theatre in general. I think NMF has let me see that science and theatre can work together and as the science informs the theatre, the theatre makes the science accessible.*

*Only in so much as making me want to go further down this path of collaboration with scientists in a creative sphere.*

So participants did not consider that opening up to science/theatre collaborations actually altered their view of theatre in any way.

**Q 8. Would you be interested in taking part in further science/theatre collaborations?**

	<b>Writers</b>	<b>Scientists</b>	<b>TS Team</b>	<b>Total</b>
<b>Yes</b>	5	2	2	9
<b>No</b>	0	0	0	0

*Yes, definitely, if you want me – but now as a 'retired' doctor/academic  
Fully accept that you might want active people involved*

*Yes, I would. I think combining the two is a great way to produce stimulating work for both maker and viewer.*

*Yes!*

*Absolutely.*

*Yes.*

*Yes. The relationship between science and theatre is also continuing to inform my own performance research, having developed a piece about the performance of medical history as identity last year, and now looking into bioart practices. I don't think I would have considered these as areas of interest for my own practice without involvement in this project.*

*Absolutely, I am already developing new projects that will hopefully have science/theatre collaborations.*

*Yes.*

*Yes, without a doubt.*

These unanimous and unequivocal answers demonstrate that the NMF participants found this project a really positive experience and can see the value in bringing science and theatre together. Considering that of this group of respondents over half had no previous experience of science/theatre collaborations, this can be taken as a very strong indication of the project's success.

## **5.2 Feedback from the company**

For the Theatrescience team, the experience of putting on the plays at Eden was challenging. Director Jeff Teare, interviewed at the end of the project, had some concerns about dealings with the Eden Project:

*The project was more ambitious than I bargained for... I would have been much more hands on with Eden earlier in the process. I don't think I'd been there enough to know what problems we were facing – their management structure made it hard to get answers to questions. We ended up with a lot of*

*goodwill, but they couldn't answer questions due to a lack of knowledge – nobody's fault but the management of the project was more difficult than anyone predicted.*

*Moving the location within Eden caused big problems. The second location was a fall-back. Artistically we'd conceived it for the first location, and it was cancelled two days before the set design was finished. This was the biggest problem.*

Project Manager Mel Scaffold also commented on the difficulty of dealing with the Eden Project, while also emphasising the goodwill:

*The relationship with Eden as a whole was not easy to manage – there were enthusiastic staff there but no one single person had the production as their responsibility from the beginning, and therefore it was understandably hard to get them to prioritise the work. Setbacks like a change of performance space after it had been confirmed caused a massive knock-on problem in terms of time and cost, which a small company is hard pressed to absorb.*

Some team members felt that they had not received enough support in dealing with the floods:

*I was disappointed by Wellcome Trust's rather formal and un-encouraging response to the request for help to put on the plays again, given the flood problem. They could have been a bit more positive and sensitive!*

*Obviously the flooding of the venue was by far the largest practical challenge faced, and I think the cast and production team worked exceptionally well to salvage what we could, and to maintain a level of enthusiasm and commitment that meant we could transfer some of the work to alternative spaces, and maintain a good relationship with our audience. It would have been useful to have more support from the Wellcome Trust during this difficult and trying process.*

There were also internal issues within the company, exacerbated by the geographical scattering of the key team members (variously based in Bristol, London, Plymouth, Exeter, and Wales). Project Manager Mel Scaffold explained:

*Communications as a whole were problematic on several occasions. The physical distance between the management team meant that it was often hard to obtain and act on decisions, and therefore some processes took much longer than was needed. The limited budget was obviously a*

*contributory factor to this – had we been able to afford more regular face-to-face meetings I think some problems could have been anticipated further in advance, or dealt with more clearly. However there were some areas where lines and areas of responsibility were not as defined as they could have been, which sometimes created conflict or hindered the progression of the work.*

In terms of preparing for performance of *State of Nature*, the director also felt that the writer should have been in rehearsals more and that his relatively low attendance caused difficulties:

*Rehearsing was the most difficult part of the project, for the obvious reason: the writer wasn't there enough. With all three plays I've done with Simon, he hasn't been there enough, because he has a full-time job. It's not a model I've used previously. I, the actors and Tony started making decisions without the writer being party to it. This is a huge problem – it's structural. He's a very good writer but if he has doubts about the way it's presented dramatically, he needs to be in rehearsal.*

These views were echoed by Simon himself:

*Being a full-time teacher, I wasn't involved enough in the production-decisions, and in enough of the rehearsals. I feel that the either the text was a draft short (given the staging form that was selected), or that the staging form wasn't the best possible to the text ... If I'd been around/available all the time, then I'd have realised this in time to debate it properly with the production team.*

As these issues (unlike the floods) could have predicted in advance, they should have been discussed and solutions agreed to the best of everyone's ability in advance in order to avoid problems during the course of the project. With unavoidable time constraints, geographical distance, and other commitments, it is vital to make sure that there is as much consensus and understanding as possible within the team, in terms of how roles and responsibilities will be handled.

Both of Theatrescience's Co-Directors, Jeff Teare and Rebecca Gould, emphasised the extra difficulties caused by the company's lack of core funding. Jeff explained how this had affected the project:

*It has proved beyond doubt that we can't function without core funding. just going from project to project. It's feasible for small projects, fringe theatre, but a project on this scale of ambition needs core funding. If we can't achieve that, which is not unlikely in the current economic climate, I don't know how we can continue. We simply can't operate at this level because we can't afford it. We got away with it this time, but we really didn't have the resources.*

*For example with the floods. The essential thing is, that coming from small-scale theatre, we will always manage to do something. But that's not the same as structuring it properly.*

While Jeff felt that the project delivery would have been improved with core funding, Rebecca also identified issues with taking the project forward without the financial or strategic resources to commit to it:

*The largest problem Theatrescience met is the absence of core funding and the relative scarcity of funding for this kind of work from mainstream arts sources. This means the company exists on a project to project basis, with the directors (outside of specific Theatrescience projects, for which they receive modest fees) working for free. Both directors have ambitious plans for the Theatrescience project and a significant amount of experience in the public engagement field, however they also work on a freelance basis for other theatres, meaning that their time and focus is often limited and divided. Even when a project is successful and is deemed to have 'worked', as with State of Nature, there is no support (strategic or financial) to take the project forward and develop it further, seek out new audiences or dialogues. Therefore the investment which has been made in the project is not 'sweated' as much as it could be.*

This point is discussed further in section 5.4, 'Moving Forward', below.

Despite these challenges, the team praised the project as a whole:

*SoN is a very good play – it deserves to be done again. And hopefully the other two (Selma's and Alison's) when they are finished, will also be very good plays.*

*Lisa from Wellcome coming to Eden was a very positive thing, for someone from Wellcome to actually see what we do.*

*It's clarified to me the problems we face at Theatrescience, as to how we could move things forward.*

*We worked with good people – a good team which we could call on again. You need a group of people you can trust to understand what you do – we now have 20-30 people we would want to work with again.*

*As with all Theatrescience work, the investigation of a particular biomedical theme over an extended period has deeply enhanced my interest in that particular area. I have a much better understanding of the complexity of the*

*interplay between genetics and environment, and the myriad ways in which that can be expressed.*

*This has been a wonderful programme to be involved with, transformational at many levels. It is one of the few things from my current portfolio of activities that I would be willing to continue after my retirement next year! That says a lot about how much I value this work.*

### **5.3 Assessment of original objectives**

*1. bring together leading scientists and clinicians, playwrights, director and actors on an equal footing, inspiring and supporting them to co-imagine new plays with biomedical science at their core*

This objective was met through the Eden Writers Weekend and subsequent collaborative relationships. Whether this initial meeting was on 'an equal footing' is debatable; the practicalities of different occupations mean that scientists and clinicians tend to be very pressured for time, and not all of them begin with the desire or the ability to 'co-imagine' new drama. Writers also needed to get over the 'confidence gap' of being able to ask what might be seen as 'stupid questions'.

However, the evidence gathered for this evaluation indicates that scientists became more interested in theatre and valued its potential more highly as a result of taking part in these collaborations, even if initially they only wanted to take part to ensure accuracy. Those who were already positive to start with also become more engaged, taking an increasing interest in the dramatic and artistic, as well as factual, aspects of the plays.

As collaborations develop, the roles tend to become more blurred, as scientists' interest in theatre grows, and vice versa. When the same individuals collaborate on multiple projects, their roles increasingly overlap.

In terms of 'inspiring and supporting them to create new drama', the writers were grateful for the high level of support they had received throughout the project.

*2. create exciting new pieces of theatre and present them in an unexpected space*

This objective was met; six new plays were created, of which four have been presented, both in the expected 'unexpected space' of Eden, and the entirely unexpected spaces of the Lost Gardens of Heligan and Truro Knowledge Spa.

The remaining two plays may also be produced and presented in appropriate spaces if funding can be secured.



*State of Nature* will be restaged if funding can be obtained (see 5.4 below for further discussion).

*3. engage the public with the science of genetics and what it means for them personally*

As the audience feedback above demonstrates, the plays were effective at engaging the public with questions of genetic inheritance.

Those with personal and/or professional interest in the subject matter of *State of Nature* indicated in their feedback that they had learned more about genetically inherited dementia as a result of watching the play.

*4. offer audience members the opportunity to discuss the issues raised through post-performance discussions with theatre and science professionals involved in the project*

On the *State of Nature* launch day, the panel discussion as well as the Q&A sessions enabled the public to enter into discussion with professionals. The online discussions, which audience members were invited to join, also enabled ongoing discussion to take place.

*5. continue our work of using innovative forms of learning to engage with school pupils, particularly those at risk of exclusion*

This objective was met. This was a particular success of the project, as it successfully engaged difficult-to-reach students with both drama and science. Committing to a public performance with these students was a bold move but it was borne out by the great success of the performance.

*6. reach out to new audiences, primarily through the Eden Project*

This objective was met. The majority of the audience at the Eden Project consisted of visitors to Eden who were not regular theatregoers, but happened to be passing. These would have been even greater in number were it not for the floods which caused the cancellation of five of the scheduled eight performances. However, even with only three performances there were people who attended because their family

members recommended the play. In summary, presenting the plays in this unusual space succeeded in reaching new audiences.

#### **5.4 Moving forward**

##### *Education*

The Ridgeway School project was strikingly successful at engaging young people with an antipathy to conventional methods of science learning. An important part of this was the students being aware of their position within a wider world, both as part of a bigger project and as performing to an audience of the general public – not as part of a school performance or an invited audience with specialised interest – which perhaps gave them a sense of importance and responsibility. This model could be extended to future projects and more students.

Following the Cornwall performances, producer Rebecca Gould gave a guest lecture in the Theatre Studies department at Manchester University on the second-year module *Science, Theatre and Performance: from the Age of Apocalypse to the Age of Stupid*. The module, led by Simon Parry, explores 'how scientific ideas and developments have impacted on theatre and performance since 1945', and the session explored key practical and thematic considerations for theatre makers engaging with contemporary science. Rebecca showed video clips of the rehearsals and performances, and talked about the 'Not My Fault' project and the Theatrescience development process. This project is clearly of interest to the academic worlds of both science/medicine and Theatre Studies, and this is an avenue which could be explored further.

##### *Branding*

One participant commented that 'Not My Fault' seemed to be a 'backstage name' only; the project was not publicly promoted under that banner. Asked if he thought the project as a whole had been coherent, director Jeff Teare commented:

*The schools project was the clearest example of 'Not My Fault' – they even used the phrase regularly. If you broaden it out to the writers, their take on NMF is six different viewpoints – you have to look with an overview to understand how it all hangs together.*

The six pieces (seven if you include the schools project) do indeed 'hang together' thematically, as different but complementary interpretations of, and responses to, the

ideas raised at the original Writers Weekend: genetic predisposition, knowledge, power, family, self-determination.

However, the project would have benefited from a stronger 'branding', especially with a short and direct title such as 'Not My Fault', which has immediate communicative value. Some possible ways in which this could have been achieved include a distinctive logo and more promotion throughout the project: for example a regular email newsletter or blog, more press releases, perhaps even competitions to win copies of the play, play tickets, or other prizes.

It is possible that stronger branding might have resulted in greater media coverage, beyond local media. But press coverage was also limited because of limited funding, meaning the company could not secure an experienced press officer.

### *Dissemination*

This evaluation's primary recommendation for the future is to consolidate, disseminate and promote 'Not My Fault' with an event, series of events, or document (s) which brings together everything which was achieved during this project.

The end of project questionnaire asked 'How would you like to see this work developing in future?'. Many respondents expressed the wish for the work to be disseminated much more widely:

- i. Get some of the powerful plays that have been created out on the road, and maybe radio. More people need to see / hear them.*
- ii. Continue to develop new plays and extend the partnerships.*

*Certainly worth trying to get these shows out to a wider audience. TV?*

*SoN would be a very powerful TV play – a very good portrayal of dementia. Not necessarily completely realistic, but a theatrical impression of dementia – this is more powerful than a totally true-to-life portrayal because it's more focused.*

*I think it would be a huge shame if the momentum and energy put into this large-scale project were not continued further. I want to see the production of other works resulting from this commissioning process, particularly Selma Dimitrijevic's piece, and ongoing relationships with partners like the Alzheimer's Society, who reaffirmed my belief in the ability of this work to*

*contribute to social change. Having developed this model for commissioning and developing new writing I want to know what the next step is – how do we keep the process fresh, how do we evolve rather than replicate the process? Rebecca Gould's proposal for a collaboration with Ansuman Biswas around the experience of autism is particularly exciting; unfortunately it is not being supported by the Wellcome Trust at this stage, but I think as a concept it has a lot of potential and is a sound artistic progression of the work.*

Some possible forms which this could take might include:

- a panel discussion with experts which could be recorded and/or broadcast;
- a presentation at a conference;
- an article in a journal of theatre practice and/or science communication;
- workshops with scientists, theatre practitioners, and people living or working with dementia;
- radio or television broadcast of one or more of the plays;
- recording a performance onto DVD to use for training medical students and other professionals;
- publication of all plays as playtexts for future performances by other theatre companies/amateur companies

#### *Further productions*

Regardless of the format(s) that it takes, it would be a great shame if the excellent work that has been produced, and the learning that has taken place, does not reach a wider audience. In particular, since the feedback from both participants and audiences about *State of Nature* (including those with and without a personal connection to the subject matter) has been so positive, the play unquestionably has value for dementia sufferers, carers and professionals, as well as the general public, and should be produced again, with a variety of accompanying events and documentation.

As noted in the panel discussion at the *State of Nature* launch, the UK is facing an 'explosion of diagnosis' of dementia, with an expected increase of 45-50% in prevalence by 2021. This makes this play even more valuable in terms of increasing understanding of dementia, perhaps particularly among those involved in a professional or caring capacity.

The question of future productions of *State of Nature* is open at the moment. There is a definite view among all who have been asked that the play should be remounted and seen by more audiences. However, it has not yet been decided whether to apply to extend the existing grant, by bringing out the play's theme of genetic inheritance, or whether to apply for a new grant, in order to focus instead on the social aspects of dementia. The play itself addresses both of these themes, on the one hand the inherited aspect of the disease, with Patrick, his father, and his niece and carer Louise (possibly) all sufferers from the same dementia, and on the other hand, the broader issues around relationship of carer to dementia patient, questions of independence, memory, and emotions. The emphasis can be shifted not only through directorial/staging decisions but also in terms of the surrounding material and events (e.g. post-show discussions) and what subjects these address.

### *Communications*

As discussed above, there were difficulties working with Eden, despite plenty of goodwill and enthusiasm, which have been ascribed to 'their management structure' and the fact that 'no one single person had the production as their responsibility from the beginning'. This caused the company serious difficulties when it meant that the location of the performances had to be changed at the eleventh hour.

A recommendation for future projects is that the company should have a policy of having one point of contact in any partner organisation. It is recognised that it is not possible to control how other organisations, especially one as big as Eden, conduct their business; however, if Theatrescience at least has this as an official working practice, and tries to achieve it wherever possible, this might help to avoid future problems of this type.

In a complementary way, Theatrescience should also ensure that anyone who is dealing with them knows who their primary point of contact is. For example, Education Director Kevin Johnson said that he sometimes felt confused about conflicting information from different members of the company. In future, it should be made clear who is responsible for communications with any given individual or organisation.

It is also important that the company ensures its internal communications are as clear and organised as possible in order to avoid conflict or confusion in the course of the project. Physical meetings can be difficult with all the members of the team so widely dispersed and with individually busy schedules; however, time could be set

aside for more regular virtual meetings, using the company's existing virtual office on Basecamp.

### *Funding and the future of the company*

As discussed above, both of Theatrescience's co-directors have repeatedly emphasised the difficulty or impossibility of continuing Theatrescience's work on this scale without an ongoing source of funding. It is a shame that the momentum, cohesion and enthusiasm which has been built up is subsequently lost as everyone who has worked on the project disperses. Core funding would enable the company to lay down long-term plans and ensure that the project can be developed to its maximum possible extent.

The current plan is for Theatrescience to become a separate not-for-profit company (this is intended to go through within the next four weeks), while Tinderbox Consultants Ltd will revert to the sole directorship of Rebecca Gould. Theatrescience has always been a non-profit project but this will now formalise its status. How this will affect future Theatrescience projects remains to be seen.

Thinking strategically about how the company can move forward, Rebecca Gould suggested that there should be more feedback and 'cross-pollination' to the project's funders and others involved in the Public Engagement field:

*The Wellcome Trust have been Theatrescience's main source of income for the past seven years, but unlike other funding bodies in the arts there is no ongoing dialogue or strategic planning with the Trust. [...] This discussion on a more informal and officer-led level could result in a further blossoming of PE activities and a striving for greater reach and excellence. An overall greater sense of partnership between the Trust and those that it funds in this area, which is largely made up of Not for Profit companies and charities, would be beneficial to the overall health of the sector.*

Therefore another way in which this project could be developed is to take what has been learned during the course of the project and to bring it back to the wider community of those involved in Public Engagement work.

## **5.5 Recommendations**

Based on the discussions above, the recommendations arising from this evaluation are as follows:

- Build on the work produced for this project by disseminating it as widely as possible
- Work on a stronger 'brand' for projects and promote it throughout the process
- Improve relationships within the team by agreeing in advance how much time each team member will spend on each part of the project and defining roles as clearly and unambiguously as possible
- Try to ensure there is one person as a point of contact within all partner organisations
- Develop further contacts with the press, with the academic Theatre Studies community and with dementia support groups
- Feedback as much as possible to funders, in particular the Wellcome Trust, and to others in the Public Engagement field, to maximise the benefits of the project and plan strategically

## 5.6 SWOT Analysis

<p><b>Strengths</b></p> <p>New collaborative relationships formed, and existing ones deepened</p> <p>Reached new audiences</p> <p>Developed relationship with Eden Project</p> <p>Produced new high-quality drama which raised difficult subjects</p> <p>Contributed to professional development of writers and scientists, and personal development of school pupils</p>	<p><b>Weaknesses</b></p> <p>Limited media coverage</p> <p>Project not always presented as a coherent whole (branding)</p> <p>Communication issues within the company</p> <p>Communication difficulties with Eden Project</p>
<p><b>Opportunities</b></p> <p>Developing long-term relationships between artists, partner organisations, and venues</p> <p>Dissemination of project online and in book</p> <p>Production of plays not yet performed, and further productions of <i>State of Nature</i></p> <p>Building links with academic Theatre Studies</p>	<p><b>Threats</b></p> <p>Lack of core funding</p> <p>Flooding causing disruption</p> <p>Having to move location within Eden</p>



## **6. Appendices**

1. Evaluation questionnaires 1 and 2
2. Discussions with Ridgeway School pupils
3. Audience feedback card
4. *State of Nature* panel discussion (transcript)
5. *State of Nature* flyer (PDF)
6. Writers Weekend notes
7. *State of Nature* review from the *British Medical Journal*
8. Theatrescience team biographies

### **6.1 'Not My Fault' Evaluation Questionnaire 1**

1. How did you first hear about the 'Not My Fault' project?
  
2. Why did you want to take part in the project?
  
3. How would you describe the way that science (scientists, scientific practices, institutions, and ideas) is represented in arts and culture?
  
4. What do you see as the potential benefits and dangers of using theatre to explore science?
  
5. Have you previously taken part in any projects which brought together scientists and arts practitioners (writers, theatre makers, etc.)? If so, please give details.

*Please type your responses above and return this questionnaire by email to <jessicamordsley at yahoo.co.uk>.*

*Many thanks.  
Jessica*

## **6.2 'Not My Fault' Evaluation Questionnaire 2**

December 2010

1. Which events did you attend as part of 'Not My Fault'? *please delete as applicable*  
Writers' Weekend at Eden  
Ridgeway School performance at Eden  
*State of Nature* launch day at Lost Gardens of Heligan  
Short plays at Eden  
*State of Nature* at Eden  
Other e.g. workshops (please specify)
  
2. For you personally, what were the most useful outcomes of taking part in 'Not My Fault'?
  
3. What did you enjoy most about this project?
  
4. What did you find most difficult or challenging about this project?
  
5. Has participating in NMF made you think differently about genetic inheritance? *Yes/No*  
If so, in what ways?
  
6. Would you say you are more engaged with science generally as a result of taking part in NMF?  
*Yes/No*  
If yes, how does this manifest itself?
  
7. Has this project changed your view of theatre and/or the arts in general?  
*Yes/No*  
If so, how?

8. Would you be interested in taking part in further science/theatre collaborations?
  
9. How would you like to see this work developing in the future?
  
10. Any further comments

*Please type your responses above and return this questionnaire by email to <jessicamordsley at yahoo.co.uk>.*

***Please indicate if you are happy for your responses to be attributed to you in the evaluation report, or if you would prefer to be anonymous.***

***I would like to remain anonymous: Yes/No***

*Many thanks.*

*Jess*

### **6.3 Discussions with Ridgeway School pupils**

How would you describe the experience of performing at Eden today?

How would you describe the workshops over the last few weeks?

What was your favourite part of the whole project?

What was your least favourite part?

If you were offered the chance to take part in another project about drama and science, would you say yes?

Why?

Is there anything else you would like to add?

## **6.4 Audience feedback card**



### ***State of Nature: Theatrescience at Eden***

We'd love to know what you thought. Your feedback will form part of the evaluation for 'State of Nature' and will contribute to future developments and funding applications.

1. What did you enjoy most about the play?
2. What, if anything, did you not enjoy about the play?
3. Do you feel that 'State of Nature' has contributed to your understanding of genetically inherited dementia?

Yes – a lot    Yes – somewhat    Not very much    Not at all

4. Why did you choose to attend today's performance?
5. Any other comments? Please continue on the back of this card if necessary.

Thank you very much for taking the time to give us your feedback. If you would like to hear more about future Theatrescience events please visit [www.theatrescience.org.uk](http://www.theatrescience.org.uk), join us on Twitter or Facebook, or provide your email address: \_\_\_\_\_

### **6.5 State of Nature Panel discussion**

20 November 2010, Lost Gardens of Heligan, Cornwall

Chair: Dr Richard Davies, Director, Parthian Books [RD]

Panellists:

Simon Turley, Playwright, *State of Nature* [ST]

Professor Anthony Pinching, Interim Vice Dean for Undergraduate Medical Education & Associate Dean for Cornwall, Peninsula College of Medicine & Dentistry [AP]

Shelagh Otway, Locality Manager for Devon, Cornwall and the Isles of Scilly, Alzheimer's Society [SO]

Dr Davies introduced the panellists.

RD: Writing a play about God set in the biome might have tempted fate [laughter]  
What first attracted you to the idea?

ST: We started with the workshop Selma referred to earlier – the three days we spent last year at Eden Project listening to and talking with scientists about genetics, and had a good look round the Eden Project. I was most attracted to the tropical biome because it was so different from the UK – I wanted to wrangle it so that a story could work there.

RD: How did you approach the visual presentation of this particular form of dementia in the play?

ST: There were personal connections for me to the subject of Lewy Body dementia as my uncle was diagnosed with it and died a couple of years ago (and also possibly my grandmother suffered from it). The way that illness presents – the hallucinatory symptoms were attractive to me as a playwright – a lovely door that was opening into showing a world beyond the naturalistic.

RD: With this particular dementia, you actually visually see that?

ST: Yes, absolutely.

RD: Professor Pinching, you've been involved in the Theatrescience process from the start, and you've written a little bit in this book [*State of Nature*] about how you've integrated that into your teaching at Peninsula. How do you think your involvement with Theatrescience impacts upon your teaching?

AP: If you think of the engineer theme in *State of Nature*, the way Paddy thinks of the body as a machine – the moment of the ankle, etc. In a sense for centuries the study

of medicine has been a mechanical thing – something goes wrong, you go down to the garage and get it sorted out. But I think patients have increasingly said – hang on, there's something else we need from you guys. And that is about the Art of Medicine. Our emphasis on this in teaching here in Peninsula, we have a strong Medical Humanities programme to try to ensure our students graduate with not only a strong understanding of 'the science' [of medicine] but also the art. The arts – visual arts, drama, music and so on – are all media through which we can get windows into people, the way they function, the way they are in their society and in themselves, and through which disease is played. We are looking after one part of a person through one bit of their journey. To be effective in looking after someone we have to have a sense of who that person is and what they're about and how to be in touch with them – and the reality is that drama is one of the many arts that can illuminate that. I was in tears this afternoon several times because this speaks the narratives of our own personal journeys, our own losses and people we've looked after – this brings it to life.

Human beings are storytellers. Hearing the human story makes it live in a particular way - Narrative lets us see the person not as a trainee case study but as a human story playing out – you can bring that back to the consultation. In some ways the main story is the person, and illness is the side-story. It's something we should explore with our students. Medical students should be professionals in the widest sense, not only scientifically and technically competent, but able to go on that journey with patients.

RD: How have you found the creative process, working with this ... bohemian writer?

ST: I think anyone who knows me would question that description!

RD: You mentioned this meeting in a West Country chip shop?

ST: Yeah, that's really boho...

AP: We've had lots of fun together doing a number of plays. It could have ended awfully with our first meeting because Simon had written a play around HIV some time ago and I was sent the script and we arranged to meet in a café in Plymouth. And I had to break it to him having read the script the night before that there were one or two major factual problems with the script – it was a great play but it was a disaster in a couple of factual areas – this could have been the end of a beautiful relationship! But in fact we met and managed to have a good natter – the play was intact – the facts got sorted very easily technically and that was great. Simon will absorb the facts – the drama will play out – the facts need to be right but drama is the core of it. So we were working to make sure there was veracity there, but the thing we've done more and more is what I would describe as a deeper authenticity –



that's been fun to do, based on my own clinical experiences, working with some of my colleagues, drawing in patient narratives but it's fabulous working with somebody who can bring it to life in such a particular way. One of the last plays we did, *Something Somatic*, there were people who saw the character in that and said 'I know that patient' – they didn't, it was a creation of Simon's, but he absorbed the reality of those stories, and then came out with this real sense of authenticity.

Every now and then we cross over with each other – he really wants to be a scientist and I really want to be a playwright – occasionally I'll try and do something, but I know when I'm an amateur and when I'm a professional.

RD: Shelagh, you're the Locality Manager for Devon, Cornwall and the Isles of Scilly for the Alzheimer's Society. What does that involve?

SO: I look out for services for people with all types of dementia – over 200 of them, not just Alzheimer's, and their carers, in the area. We will support people before, during and after diagnosis, and offer support and help to the people who are caring for them as well. Our aim is to that the person with dementia 'keeps their voice', so they don't become a flat, two-dimensional or even one-dimensional entity sitting in a chair, but we keep them as a four-dimensional human being, the person that they were that is being taken over by the illness which is in their brain.

RD: How will the ageing population affect healthcare for dementia in the future?

SO: It's looking dire, but dementia isn't an age-related disease, it's a brain disease. We are doing a lot of work supporting younger people with dementia. More and more commonly people in their 30s are getting dementia – usually Alzheimer's but there are other dementias. As far as healthcare goes, especially with an ageing population overall, there are a lot of demands being made on the system. The pot is getting smaller and smaller. In terms of dementia prevalence in some areas we are seeing increases of 45-50% by 2021 in small areas. We are looking at an 'explosion of diagnosis'. There are also many people who haven't been diagnosed, who are coping with symptoms of dementia, because it presents in many ways. We are looking at difficult times ahead. In Devon and Cornwall, 98% of funding for Alzheimer's Society services comes from the public donations and fundraising, not statutory funding. Which is a great shame because we can provide some excellent early intervention and post-diagnosis support.

ST: People hang on to different forms of communication longer than language, for example music. Can be a way through when language has gone.

AP: We did work with Paul Robertson, to access people's inner being through music. He's done a project similar to what we were discussing earlier. It's that sense that dementia is a series of things being lost – things critical to being, but the person remains in the lacunae, still there but expressed differently. But we depend so much on language, we think when language has gone, the person's gone, but music can speak in different ways.

SO: We run 'Singing for the Brain', a project the Alzheimer's Society has worked on – a very structured 2 hour group session for people with dementia and their carers can come to sessions and sing (or tap feet, or join in in whatever way). For example a man with late-stage dementia (who had difficulties knowing where he was, couldn't remember how to sit on his own, the shuffle as shown so convincingly in *State of Nature*) this chap was an amateur dramatics performer when he was 'pre-dementing' who had taken the lead role and sung 'Oh What a Beautiful Morning'. He stood up and sang, despite his lack of awareness otherwise. 'Singing for the Brain' does genuinely truly work, not necessarily on the first, second or third session, but done regularly.

Jeff Teare: I was doing similar work in hospitals in Exeter in 1972, why has it taken so long for this idea to be picked up?

SO: I really can't answer that one. We would like things to be happening, there are lots of services that the society can and will offer, most of the time it's the great God Mammon I'm afraid. There are plans to move 'Singing for the Brain' into hospitals, to make it part of long stays in hospital, in Devon and Cornwall certainly. We are becoming slightly more aggressive – saying we must accept there are things we can do to help people through a dementia and we can't do it for free.

TP: I'm a trustee of Cornwall Music Therapy Trust. We have very strong music therapy work going on. Music therapy has only recently been recognised as one of the medical professions so there is progress, albeit slow by the standards we would wish. Having been with someone with increasing dementia - we shouldn't wait for the professionals to do this – singing songs from when people were young – it's not complicated to do. I'm not plugging the Big Society! If you're sitting with someone who's telling you the same story for the fifteenth time – 'and know the place for the first time', as Eliot said – the idea that here is another tool, you could sing a song, ask them what songs they sung in their youth, can open up things. This is about enabling carers. Being aware that there are other ways of getting through. There are some great examples of this in *Musicophilia* [by Oliver Sacks]. But it isn't only music. Also smell –

SO: Yes.

TP: Helping the carers. Having some other vocabulary.

RD: There was a question earlier about the process of the Theatrescience project. Could you tell us some more about that?

Audience member: I was interested in this three-day workshop you mentioned. Was the Eden event the starting point for all these plays today?

ST: Yes – but better if Rebecca answers!

Rebecca Gould: Jeff and I about eight years set up a project – we started with Imagining the Future eight years ago. We wanted playwrights to write about what the future had in store for us. I'm generalising but many of the writers were scared of dabbling in science. It seemed to us in terms of the political and economic changes, many of them were going to be driven by advances in biology and the biosciences. We talked to Wellcome [Trust], and Simon Parry who also worked there at the time, who were interested in why people shy away from writing about science (unless you're Michael Frayn) particularly if you consider yourself to be a socially or politically engaged playwright. It's like all things – it's about relationships – and these people [i.e. scientists and playwrights] generally don't meet each other – very different to what we've found in India when we've done residencies at NCBS, the scientists there are playwrights, musicians, they do everything. I don't want to generalise too much but in Britain, these are divided communities. So we thought let's get these people in a room together and maybe they'll get on and maybe they'll share some stories and that's exactly what happened So we developed that into a model which we did in Plymouth and then in Bangalore (funded by the British Council) then when we came down to the Eden Project to do Simon's play about two years ago, we were aware we needed to move things on so we decided to do a site-specific version of this workshop: let's throw in responding to an environment as well as responding to a scientific idea and see what happens creatively. So that's how it developed.

Steve Watkins: With Theatrescience, how much is the science a vehicle for the drama, how much is it pedagogical – teaching the world about science?

ST: I tend to shy away from the second of those – don't want to be too didactic a writer. I don't think that's what Theatrescience is about. The key for me is getting hold of this stuff, really, and if I can get hold of it, then maybe people in audiences who don't feel they can, can too. It's more about raising questions than providing answers.

SW: Playwrights haven't historically been shy of engaging with political and social concepts, so why the anxiety about scientific ones?

ST: I think I'd be the same no matter what type of issue I was writing about

RG: The way to teach is to show not tell.

ST: I'm aiming to reproduce an experience rather than tell people what to think about it.

TP: One of the aspects of getting things technically right is to make sure the technical bits are correct – otherwise it's a distraction – but also ensure it's authentic. You have to make things right. The science is there as part of the landscape. What has been fantastic for me to witness and participate in has been the way the dramas have revealed, opened up, explored broad areas which the medicine and the science are opening up but we haven't got the vocabulary to deal with, but which society needs to be able to articulate. There are new stories – fresh angles on the world which emerge from the science – but it's not the scientists who write it, it's people in the media, playwrights. I think what's really important is not to see this as 'the sciencey thing' but as the world which happens to take the science with it rather than leaving it behind.

Selma Dimitrijevic: I haven't done much work with Theatrescience – just one play still in development - but I see it as working from two different sides, at the moment very separate: I as a playwright trying to produce a work of art that has a basis in science and is inspired by it, also hope that the art gives the scientist a new way to communicate and understand their work. I'm trying to find new ways of presenting the questions. Trying to find a middle ground with scientists.

Rowan Rutter: It's a poignant idea that Louise has this sword of Damocles hanging over her – her fear of developing dementia through genetic inheritance herself – and I saw the reaction in the audience when Shelagh mentioned people in their 30s developing dementia – Simon, were you aware of young people with dementia whilst writing?

ST: Because it appeared in my family – and my grandmother had dementia although we don't know which type – it's always kicking around in the back of your mind. I didn't know the statistics but had family experience. When it's come up with students at school there are always 5-6 people out of every 10 who have direct experience of this of someone directly related to them. That motivated us through this whole project

– Jeff's talked about the idea of genetic determinism – the idea that it's written into your genome, that it's predetermined. But in fact it's ten times, or much more, complicated than that. But that idea out there, coagulating in people's minds, made it a good area to explore.

TP: When you start to cast a new light into areas that were previously in shadow, you're reinterpreting things – whether genetics or whatever – e.g. we did previous play on chronic fatigue syndrome. Like young people with dementia, it's not new, it's just been in the shadows, so when you start to do work about it... The other thing the new genetics brings up is the possibility of testing – a future that might be you. Being part of the family, getting back to your roots, can put you in touch with the bad genes as well as the good things. You can test for these things, such as Huntington's – do you want to? is there a treatment? Poignantly brought out in the vignette we saw [50/50]. In a way all these stories are out there but at different times society feels able or feels it has the language to articulate them – refreshing our views allows us to talk about them – one of the liberating things about the work we're doing is opening up discourses. They've been there but haven't been as deep or as broad

Audience member: Is Alzheimer's easier to discuss these days – more in the public domain? Does that help your work?

SO: Yes it helps – we are campaigning to destigmatise. We want it to be as freely spoken a word as cancer or HIV/AIDS. There is no shame around dementia, it's not a chosen illness. There is this shame and this feeling that it needs to be hidden. We are destigmatising so people are more likely to visit GPs and get an early diagnosis. People don't want to admit to dementia symptoms but they could also be symptoms of a brain tumour or even depression.

SW: I think that's a very interesting point. I was a GP for a long time. The 'un-OK word' is 'Dementia'. We invented 'Alzheimer's' which is in fact a very specific illness because people hated the thought of being 'demented'. So it's used too widely [to refer to all types of dementia] It's ok to say Granny is 'suffering from Alzheimer's'. I think this misuse or false use of words/euphemism around illness is interesting. I'd be interested to know if we really are getting rid of the stigma.

SO: I think we are getting beyond the overuse of Alzheimer's. We have a group in Torbay with four people who are all diagnosed with different dementias who discuss issues around dementia which will then be fed into the strategy for Torbay. then to Devon and beyond. The actual views of people living with the disease who are the

real experts. The individual sitting there with their dementia, their personality/likes/dislikes feeding into it, they are the very people we should be turning to to ask: what do you need? What can we do to help when you have what is a horrific disease no matter what the name of the dementia? What can we do to make you live better? Earlier intervention is better, while the brain is still functioning well enough to learn and to make plans – to blow away myths, to take away the unknown - that in itself reduces the fear and the stigma, and also helps the carers. It's about information and educating people. That in itself reduces the stigma. We still get instances when GPs send people away, saying what do you expect at your age? So there's still awareness raising to be done across all levels. And something like today is brilliant.

TP: In today's drama which was put together as a team effort, there were transformational moments for those who are witnesses and players in this process. Watching this play we have a series of revelations which enable us to work differently - witnessing deep insights into people and journeys. In one hour – so compressed – it's revelatory. It's another way of getting people to think in a new way, not only in a mechanistic way, solely about the losses.

SO: The way Simon Turley brought out the texture of the life of the person living with dementia, and also the carer – often represented as one-dimensional – “the person who opens the door” - but *State of Nature* showed the carer as a full person with their own fears, own thoughts, own tragedies in their own life. Their need to help but not sure how because... There were moments there I recognised from my own experiences: the parts where the carer corrected him wrongly – the conversation about the pyjamas being from India not Egypt – she was right but it wasn't what he was talking about. But that's her natural reaction, she thinks she's sorted that out, can't understand why he's still going on about it. That character was allowed to illustrate that becoming a carer is not a sanctification – that was beautifully illustrated. You still have your own personality, your own emotions, guilt to deal with.

RG: Thank you all very much for coming.

## 6.6 State of Nature flyer (PDF)

This is an embedded PDF document. If reading on-screen, please double-click on the image below to open the full document in Adobe Acrobat.

*The eden project becomes cornwall's most unusual venue for new theatre, as theatrescience brings 'state of nature' by simon turley to the rainforest biome.*

'State of Nature' is partially set in a Bengali tropical forest. Patrick has an aggressive form of dementia: Lewy Body. When his niece, Louise, comes to live with him and care for him it is both an act of love and a research project.

Patrick's life, in his large, rambling house in the Cornish countryside, is shot through with another world of memory – of the Naxalbari Uprising in India, where his commitment to radical politics brought him together with the love of his life. As the division between past and present disintegrates, Patrick's inner world refuses to be contained, and breaks out all around him.

Also: look out for short plays taking place throughout the mornings in the Mediterranean Biome. All supported by The Wellcome Trust and Arts Council England.

<b>Dates:</b>	17 – 25 November (except 22 November)	
<b>Times:</b>	<b>'State of Nature'</b>	1.30pm daily, duration 1 hour
	<b>Pocket-sized plays</b>	11am onwards daily
<b>Venue:</b>	Eden Project, Bodelva, Cornwall, PL24 2SG	
	<b>'State of Nature':</b>	Rainforest Biome
	<b>Pocket-sized plays:</b>	Mediterranean Biome
<b>Booking:</b>	Limited seating, booking essential. Call box office on 01726 811972	
<b>Tickets:</b>	<b>Locals for a fiver!</b>	
	If you live in Cornwall or Devon (TR, PL and EX postcodes) just bring proof of residence and some photo ID to get in for £5.	
	All other tickets £10	

Recommended age 14+  
If you have any access requirements please call [01726 818825](tel:01726818825).

The Rainforest Biome is a 10-minute walk from reception. Please ensure you arrive on site at least half an hour before the start. Despite the cold November days it will be warm in the Rainforest Biome. Please wear light clothes and bring a bottle of water.

For more information, interviews with the cast and creative team and news from the rehearsal room please visit [www.theatrescience.org.uk](http://www.theatrescience.org.uk)

   

## **6.7 Writers Weekend notes**

### **Overview**

#### **Notes from the Theatrescience 'Not My Fault' Writers' Weekend, Eden Project, Cornwall, 21-22 November 2009.**

Theatrescience invited five established playwrights and five young emerging writers to spend a weekend at the Eden Project to learn about current issues in genetic science. Five scientists/clinicians attended either for single sessions or longer.

The aim of this was to inspire and inform them to devise ideas for new theatrical pieces to be performed at Eden (and in other venues) next year.

The programme consisted of five sessions in which experts in the scientific, social, legal, and clinical aspects of genetics gave an overview of current thinking in their field, followed by discussions with the writers.

It also included a tour of the Eden Project in order to view the potential theatrical spaces, and plenty of opportunities for informal discussions between the writers, scientists, and the Theatrescience team.

In addition, Jeff Teare and Simon Turley led a workshop for the five young writers. This included an 'automatic writing' exercise and another exploring reaction to location. The writers' initial response to some of the science input was also discussed as well as reactions to the Eden Project.



## **Those present**

### *Theatrescience*

Jeff Teare, Artistic Director

Rebecca Gould, Co-Director

Simon Turley, Writer

Professor Anthony Pinching, Associate Dean (Cornwall), Peninsula Medical School, Scientific Advisor

Mel Scaffold, Administrator

Dr Jessica Mordsley, Evaluator

### *Playwrights*

Pamela Carter

In-Sook Chappell

Selma Demitrijevic

Alison Falconer

Lorna French

### *Young Writers*

Ben Behrens

Sophie Macdonald

Jack Redmond

Bea Roberts

Kate Turley

### *Scientists*

Dr Oonagh Corrigan, Senior Lecturer in Clinical Education Research, Institute of Clinical Education, Peninsula Medical School

Dr Dennis Francis, Lecturer in Molecular Biology, Cardiff University

Dr Atina Krajewska, Lecturer in Law, Exeter University

Dr Steve Watkins, Community Sub-Dean for Cornwall, Peninsula Medical School

## Session 1: Jeff Teare and Anthony Pinching, Introduction

### **Background to the project**

The **Wellcome Trust** invited funding applications for projects dealing with genetic variation and health. Theatrescience have already done extensive drama work in schools on the subject of genetics.

Recent ideas from system biology and other developments in this fast-moving research field have opened the subject up further and suggest **new directions for drama work**, moving beyond issues such as the question of nature/nurture, monogenetic illnesses (e.g. Huntingdon's disease), the possibilities of 'designer babies', etc.

Why Eden? As well as existing relationship with Theatrescience, it is an **inspiring space**. Plant genetics is an obvious specific link between the setting and the science. However, JT explained that there was no requirement to set the plays in Eden itself, although the work would need to be sensitive to its surroundings.

### **Theme: Genetic variation and health**

AP asked the participating writers to say what the word 'gene' meant to them in less than one sentence. Answers included:

- *The things behind who we are*
- *Inheritance*
- *Building blocks*
- *DNA*
- *Illnesses*
- *Physical and emotional make-up, and how much self-determination we have*
- *My mistakes, and my parents' mistakes*
- *What we've received from our past, who we are, what we'll pass on*
- *Evolutionary human nature*
- *Belonging, matching, things fitting together*

AP suggested that the writers should bear these answers in mind when thinking about their work, and what ideas and assumptions audiences are likely to bring to it.

As a society, we are on a journey in which we are conceptualising genetics and its cultural implications as the science and technology develop.

Scientifically, there's a movement from examining monogenic illnesses (those caused by one gene) to polygenic conditions, which are less deterministic.

Society needs to explore the broader implications of new scientific discoveries, for example the implications of reopening unsolved murder cases.

The kind of questions currently at stake are:

What is the extent of **predetermination**? Is genetics the new religion?

The difficulty of **predicting illness**. The need for dialogue between research science and clinical practice.

The difficulty of **interpreting genetic information**. The Human Genome Project sequenced the entire genome of one man, Craig Venter, but all it tells us is that he's the kind of person who wanted to encode his own genome. Information in isolation is not useful.

The **complexity** of genetic information. For example, 40 genes so far discovered which correlate to heritable part of height, but these account for only 5% of the heritable part. Data analysis is a huge difficulty.

The **'good gene/bad gene'** story. Why would 'bad genes' be passed on? Some 'bad genes' also have beneficial effects that may not yet be known, e.g. asthma may correlate to intelligence. But that's unlikely to explain the persistence of the gene. More likely it offered immunological protection against certain parasitic diseases, a benefit less evident in our society because of cleanliness and lack of parasites.

An advantageous gene can become disadvantageous e.g. B27 gene which offered protection against infection by causing strong autoimmune response, also makes people more likely to die of HIV/AIDS.

Important to consider this in terms of genetic therapy, testing, or manipulation; you could unknowingly destroy a positive benefit if you eliminate a 'bad gene'.

**'Dark areas'** of genome (previously known as 'junk DNA') supposedly encode for nothing. But they do have influence, perhaps as regulators of other genes. Still much further research to be undertaken.

**Nature/nurture**. Is the pendulum swinging back towards nature? Are we more determined by our genes than we thought? Are genes more mutable than previously believed? Research demonstrates that DNA can be permanently altered by childhood emotional abuse, suggesting that life events can alter the genetic code: a very significant discovery.

**Obesity**: historically perceived as a choice, dependent on behaviour, but this has started to shift recently. Lifestyle is necessary but not sufficient; in the presence of sufficient calories, other factors (genetic) come into play. It is strongly heritable.

Existing cultural discourse on family resemblance shows that people recognise importance of heritability on a common sense level. Some monogenetic causes of obesity exist (e.g. the OB gene, leptin), but most will be polygenetic. Genetic cause suggests gene therapy possibilities. Bariatric surgery (gastric bypass etc.) – ambiguous implications if obesity is genetically determined. Does this make surgery more or less appropriate?

Q. If obesity is genetically determined, why is there more obesity among socially disadvantaged groups?

A. Possible answers: Co-migration with other genes which correlate to social deprivation. Limitless availability of cheap calories and lack of social discouragement to obesity means that genetic predisposition shows itself.

The difficulty of establishing what counts as '**normal**' or '**abnormal**': height, weight, hormone levels. Will genetic science alter our prejudices? Change our judgements?

The session concluded with some suggested questions to think about throughout the weekend, such as:

To what extent does knowledge about our genes shape our thinking, change our behaviour, affect our emotions?

How should we respond to discoveries about genetic information, as individuals, patients, clinicians, families?

Is there a duty to warn? A duty to act? A duty to future generations?

## Session 2: Atina Krajewska, Genetics and the Law

Dr Krajewska is an expert in Tort Law and Medical Law and Ethics. Her research developed from an interest in the legal status of the embryo, and the possibilities of human genome mapping and genetic manipulation in relation to IVF.

There are three main questions in law relating to genetics:

1. How far can we go? A legislative question. John Harris, philosopher of law, has suggested we are moving from an era of 'chance' to an era of 'choice'.
2. State intervention – how far should the state intervene in private life? Tension between state taking care of its citizens, and individual autonomy. Medical ethics and law places a high value on autonomy; genetic determinism suggests otherwise.
3. Evidence-based medicine – what counts legally as evidence?

Since the discovery of DNA, there has been a leaning towards genetic determinism. But in 'the post-genomic era', following completion of the Human Genome Project, has been a realisation of how little is known about the workings of genes, and the interrelation of environment and genetics.

Is there an argument for state **preventing those with genetic diseases from reproducing**? Legal, philosophical, and ethical questions. Susceptibility to diseases relatively simple to define with monogenetic illnesses such as Huntington's, but becomes very complex with polygenetic conditions.

**The right (not) to know.** Codes of practice for clinicians: some binding, some advisory. The responsibility and burden of advising someone facing a prospect of possible future genetic illness.

Example of legal/ethical/clinical dilemma: a woman has a child with serious learning disabilities and discovers that this is due to a genetic defect. Her sister is currently pregnant. The woman is deeply opposed to abortion. Does she, or her doctor, have a legal obligation to advise her sister of this information, knowing the sister is likely to choose to terminate the pregnancy? Should the sister's right to know (her autonomy) outweigh the woman's right to privacy?

The European Convention on Human Rights is ambivalent on this point; puts the onus on the individual doctor to decide.

**Legal status of genetic information** as property. Icelandic research study: daughter objected to collection of DNA from her deceased father, arguing that while deceased have no property rights, his health/genetic data is also hers. Not satisfactorily resolved.

Genetic information is not simply one individual's info, but is shared with family. Hence **problematizes individual autonomy**. How far can you

prevent family members from taking part in research which would benefit whole society, on the basis that their genetic data is also yours?

**Genetic exceptionalism.** To what extent is genetic information different in kind from other types of data? Is genetics a special kind of information/evidence?

Is more protection of genetic info needed? Definitions of what counts as genetic data or as genetic illness e.g. the right to select embryos pre-implantation in case of 'severe illness' – what counts as 'severe'? What counts as normal, diseased, disabled?

**UK law regarding genetics** is most interventionist in Europe e.g. British law against selecting *for* disability e.g. Deafness. UK only country in Europe which allows such extensive intervention by legislator in individuals' right to reproduce. Also UK's indefinite preservation of DNA samples from those never charged with a crime. Arises partly because UK has common law system based mainly on precedent (plus Parliamentary statute), in contrast to European system.

How do **control and responsibility** need to be rethought in the light of genetic discoveries? There were many questions relating to the recent legal decision in Italy to reduce a murder sentence because of the perpetrator's genetic code. Italian law takes into account whether the perpetrator acted 'voluntarily' and 'with intention'. Did this man's genetic predisposition to violent behaviour reduce his intentionality or volition? Did he have less choice because of his genes?

Q. Does history of **eugenics** have an effect on contemporary views of genetics in law?

A. Yes; for example in Germany there are far more stringent restrictions on selecting on genetic basis, pre-implantation genetic diagnosis (PGD) of embryos is illegal.

Q. Is there an argument for state intervention in individual's autonomous right to choose if it has an effect on the wider society? For example, the materially different sex ratios in Asia due to selection for male babies.

A. Possible need for **cost-benefit analysis**. There may be inadvertent effects of genetic engineering, e.g. eliminating 'bad genes' with unsuspected positive effects, which we should consider carefully before intervening.

### **Session 3: Oonagh Corrigan, Social and ethical aspects of the new genetics**

Dr Corrigan's research developed from exploring fundamentalist and deterministic ways of thinking. Her dissertation on religious belief led to post-doctoral work in pharmacogenetics. She held a special appointment in the Sociology Department at the University of Cambridge, on project *Social Aspects of Human Genetics* (2002), working closely with Prof. Martin Richards.

She is interested in the real practical ethical issues that result from new developments in genetics, more than abstract philosophical or moral questions.

The promise of genetic medicine; personalised drugs based on individual's genetic make-up. News stories played on **Hype, Hope, and Fear**.

Many political issues: stories that weren't being told. Drug companies taking and storing samples of DNA during drug trials, without seeking separate consent.

**UK Biobank project** funded by Wellcome Trust with Department of Health. The aim is to build a national genetic database with samples from 50% of the healthy population aged 40-65 years old, so that patterns will emerge over time when people develop diseases or die. Much ethical debate around this project.

Less attention has been paid to the many other smaller databases of genetic information, for example from small research studies.

#### **Issues around biobanking**

Sensitive info – predictive and diagnostic.

Unknown long-term implications, e.g. should you contact someone whose genetic data you hold if you discover that one of their genes has a particular consequence, unknown at the time of sampling? Current practice is not to inform.

Financial interests – who holds property rights in the body?

Ethical questions around collection – e.g. China offers DNA sample 'with or without consent' – consent is more expensive.

#### **Genetic risk**

Over 1000 genetic tests are now available, including predictive and carrier testing.

**Difficulties of interpreting and acting on results.** Test results can potentially lead to women choosing to terminate pregnancy, to prophylactic surgery, etc. 'Breast cancer gene' – increases risk but by no means a certainty – what to do if you have this gene? Hidden motivations of some tests e.g. online 'pink ribbon questionnaire' which claims to tell your risk of breast cancer. This drastically reduces if you are taking Tamoxifen. Questionnaire in fact produced and disseminated by

pharmaceutical company which manufactures Tamoxifen, but this is not stated anywhere on website.

**Uptake of tests** has been lower than predicted, even for Huntingdon's etc. People may prefer uncertainty than knowing the worst. Difficulty with choosing not to know about propensity to specific diseases (e.g. Alzheimer's), but it may turn out that a gene is linked to a disease not previously suspected. Some genetic testing companies have gone bankrupt because the info provided was not what people wanted – not specific enough.

### **Obesity and genetic testing**

Dr Corrigan outlined the work of Faruki and O'Reilly, who discovered role of gene which controls leptin deficiency in causing obesity, and Shirlene Badger's PhD research into severely obese families and the impact of receiving a genetic diagnosis for obesity (MC4I study).

### **PGD**

Often used with pre-existing genetic conditions. The 'save your siblings' idea – controversial. Moral obligations of screening?

The floor was then opened to questions. The writers asked questions about the respective responsibilities of the NHS and the individual in terms of **health costs, insurance, and genetic testing/screening**. Should those prone to genetic disease be required to take out extra insurance? How can we balance individuals' rights against the burden on society?

There was discussion around the idea that, by screening out genes which cause **sudden death**, we are passively choosing to become a society where all die expensive, slow, painful deaths. Life-prolonging drugs and treatments, plus more possible interventions for non-life-threatening illnesses, are increasing costs to the NHS. Perhaps we should encourage sudden death? Most people said they would prefer this – it would certainly be cheaper!

There was discussion of the difficulty of **interpreting risk** and people's skewed perceptions of relative risks, and the effect of verbal cues on this. Are we seeking an impossible 'risk-free environment'?

The idea that a genetic illness may still be seen as somehow 'your fault' e.g. a theory of genetic susceptibility to HIV, which could have potentially explained its faster spread in Africa, led to accusations of racism. This implies that on some level, people believe it *is* your fault (or your parents' fault) if you have a certain gene.

Many questions were asked around the subject of **obesity**. There was controversy over the question of ideal body shape, of cultural variation in views of female beauty, and whether there is an evolutionary reason for this. Are bigger women seen as more fertile, and therefore more attractive? Does excess weight simply signify availability of food? Are there limits to this?



Is there a qualitative distinction between '**normal**' and '**morbid**' **obesity**? Should we distinguish between those who are severely obese which is more likely to be genetically determined, and those who are slightly overweight in which case behaviour plays a larger part?

The ethics of prescribing appetite suppressants, and the genetic determinants of being attracted to, or able to resist, food, and one's attitude towards eating.

It was suggested that emphasising genetic determinants of obesity could **demotivate** individuals from trying to change their behaviour or environment. If you give the impression that "you can't do anything about it", is this likely to discourage any attempt to change behaviour?

## **Session 4: Dennis Francis, Chromosomes, cells and genetic modification**

Dr Dennis Francis works in the Molecular Cell Biology research group in the Biosciences department at Cardiff University. He researches genetic manipulation of tobacco plants, specifically the gene CDC25 which plays a role in altering the plane of cell division.

### **Cell division**

Dr Francis began by explaining how cells replicate and divide. He outlined in detail the processes of **mitosis** ('the dangerous dance of the dividing cell') and **meiosis** (sexual reproduction).

Mitosis is the normal process by which cells replicate. It is driven by the separase enzyme which splits a chromosome in half, resulting ultimately in two copies, each identical to the original cell. When this process works correctly, the cell is effectively 'cloned' and 'everything is beautiful'. However, chromosomes are extremely sensitive to UV radiation, meaning they can mutate. These mutations are then in turn replicated and thus multiply, causing tumours.

Meiosis is the process by which egg and sperm cells join, to create cells which have a new genetic make-up formed from 23 chromosomes from each parent. This involves 'crossover' of genes between homologous male and female chromosomes.

The writers asked many questions about the intricacies of this process, for example: how does the contraceptive pill affect the process of meiosis? At what point during the process are the male and female characteristics combined? When do these cell processes take place in relation to the individual's life cycle? Are one woman's egg cells (or one man's sperm cells) all identical to each other?

(There was a brief diversion at this point for a Wales vs. England debate about the relative priorities of Charles Darwin and Alfred Russel Wallace. It was decided to adjourn this discussion to a later point...)

### **Genetic engineering**

Dr Francis then explained how plants can be genetically modified.

The idea is to exploit the natural behaviour of a particular agro-bacterium which invades plants and behaves like a virus. It locks into the plant's chromosome, replacing part of the plant's genetic material with its own genes, without killing the plant.

Genetic modification is done by replacing genes in the bacterial cell with other genes selected by the scientist to achieve a desired effect. The process still takes place, but different genetic material ('Your Favourite Gene') is transferred into the plant.

Initial GM experiments created a 'chimeric gene' which was resistant to herbicides and antibiotics. When the plant cells were cultured, only those which had been successfully modified were resistant to antibiotics. These could then be cloned and grown.

Finally Dr Francis showed the group the Bio-Rad PDS-1000 Helium Gene Gun. This is a hardcore device for genetic modification which bombards the plant cells with tungsten particles, coated with modified genes, at high velocity.

The floor was then opened to questions.

Q. What is the mechanism by which chromosomes deal with UV damage?

A. DNA repair enzymes. But their functionality decreases with age, which is why cancers are increasingly common in older people.

Q. Is the agrobacterium a sort of parasite?

A. In a way. It's known as a pathogen. There are other bacteria which have a symbiotic relationship with plants, where there is a mutually beneficial exchange of nutrients, nitrogen (ammonia) and carbon between them.

Dr Francis was then asked about his personal response to the **cultural controversy over GM foods**. His belief is that the primary role of scientists is to focus on scientific data rather than pronouncing on cultural issues. However, he pointed out that no deaths have ever resulted from consumption of GM foods (in contrast to organic foods, which have been implicated in six deaths).

Discussion followed about the legal and economic questions over **patenting and ownership of plant genes**.

There was also a lot of interest in how genetics works as **a scientific field in practice**. What does it really mean to 'discover' a gene? The answer: if you can identify a specific effect resulting from the absence or malfunction of a particular gene, then you have identified the function of that gene (and can name it).

Dr Francis was asked about his **personal inspiration** and what he finds most exciting about his work.

Finally, the group discussed the real-world pressures and difficulties of practising science. Comparisons were drawn between the world of theatre and the world of science, in terms of the amount of time spent composing funding applications, revising publications and negotiating politics, as opposed to practising the art/science itself.

## Session 5: Steve Watkins, Genetics in clinical practice

For the final session, Dr Steve Watkins gave a general practitioner's perspective on implications of new developments in genetic science.

Doctor Watkins began with some general observations about how the general public's 'tolerance of discomfort' has lessened recently. A state of good health is now regarded as a 'right' not good fortune.

Writers asked questions about how to make decisions regarding prescribing medicines or courses of treatment, and if this is affected by an awareness of limited NHS resources and cost-effectiveness.

There was then discussion about the way general practice has evolved in the past few decades and the strain that the job can place on private lives.

The difficulty of balancing a friendly and caring attitude towards patients with the need not to become too emotionally involved. This is taught at PCMD through workshops and roleplaying scenarios.

Specifically in terms of genetics, Dr Watkins was asked how to manage **multiple relationships with different members of the same family**. How do you balance one person's right to privacy with another's right to know about their own genetic make-up? He suggested that this problem is not restricted to genetics, but can occur in many different situations as a family doctor. Common GP experience of discovering that 'family members' are not really related.

With genetic issues as with other types of illness, the **legal obligation** on the doctor is not clear. The General Medical Council permits doctors to breach confidentiality if there is sufficient cause (e.g. duty to warn) but this decision must be justified to their peers.

However, the doctor may feel there is a **moral requirement**, for example in the case of a life-threatening communicable disease, or if a patient diagnosed with epilepsy continues to drive.

The doctor may also wish not to have to take this decision, in order to be able to say "it's not my fault".

Discussion of the role of dedicated **genetics counsellors/teams** consisting of geneticists, nurses, psychologists, et cetera. These provide a safe space for conversation, for patients to explore various possible courses of actions, rather than to be dictated to.

## **Plenum: Jeff Teare, Simon Turley, Rebecca Gould, Anthony Pinching**

To conclude the weekend, the Theatrescience team discussed the way the project would develop from this point on, and offered the writers advice based on their own previous experiences of devising and producing theatrical pieces based on biomedical science.

In particular, Simon Turley and Anthony Pinching spoke about the **interactive process** of developing plays, from the initial notion (possibly a single visual image, sense of characters in a space, single line of speech, or a striking metaphor), then discussion with relevant scientific experts, leading to a brief (1/2 page) plan for the play.

Previous Theatrescience plays have involved presenting fragments to audiences composed of scientific experts, patients, etc. Feedback from these presentations informs the future development of plays. This testing is essential to the final form of the plays. The 'distilled essence' of the play may be present throughout, but often only becomes clear towards the end of writing/development process.

It was explained that there were **further scientists and experts** who have expressed interest in the project but were unable to attend this weekend, and that they would be available to advise the writers as they develop their pieces.

The team advised writers, when devising their pitches, to focus on the experience the audience would have, so that the person you pitch to can visualise it clearly. The longer pieces do not have to be site-specific to Eden, but they do have to respond to the space. Audience size is flexible, with a realistic limit of about 40 for staging within the Eden biomes.

Discussion followed of various **models of dramaturgical development**, for example the 'Royal Court system' where the writer's vision is sacrosanct, and the role of the production/direction team is to fulfil this vision as closely as possible. (There was some debate over the precise workings of this system in practice.) It was acknowledged that the role of the collective (production, direction, etc.) in putting on a play is essential, but that it must begin with the script.

By contrast, in '**ensemble productions**', others, such as the director, scientific or cultural advisors, et cetera, are involved throughout the writing process. It is a much more collective effort. Theatrescience favours this model of multiple relationships, although it can be more difficult to achieve in practice due to financial and other practical pressures.

The writers asked for advice on writing **short pieces** that were complete in themselves, rather than extracts. The work of The Miniaturists was recommended as an example of successful short plays.

It was also agreed that the team would keep writers informed (if they wish) about relevant lectures and other material of interest.

**Other possible subject areas** were **discussed**, including psychosomatic illness and hypochondria, depression and bipolar disorder, the impact on families of discovering a genetic disease. It was suggested that genetic counselling teams could provide useful information about this.

The team asked for writers to submit pitches by Christmas in order to commission the chosen plays early next year.

### **Finally**

Theatrescience would like to thank all participants for their time and contributions. Thanks to Monroe at the Eden Project for the tour and to Eden for providing the space. This event was made possible through funding from the Wellcome Trust.

For more information see

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

## 6.8 *State of Nature* review from the *British Medical Journal*

### VIEWS & REVIEWS

#### REVIEW

## “The illness is the side story”

A play about dementia impressed **Anne Taylor** because the story of the person rather than the illness shone through

#### *State of Nature*

A play written by Simon Turley; directed by Jeff Teare

Shown at the Eden Project, Cornwall,

24-25 November 2010

Rating: ★★★★★

Simon Turley wrote this play, about a 63 year old man with Lewy body dementia, for performance in the steamy Tropical Biome at Cornwall's Eden Project. This venue, he says, offered “another world—an incontestable otherness” in which to situate the production. He even renamed the biome “Patrick's head.”

It is a testament to the playwright's ability and to the consummate performance of Timothy Block (who played Patrick) that when bad weather and floods hit Eden and the production was decamped to the wintery environment of the nearby Lost Gardens of Heligan for its first performance the location became irrelevant.

“If the play succeeds, I think its audience will feel part of Patrick's hallucination,” wrote Turley in advance of the production. For me the play went beyond this benchmark. I came home feeling not just as if I had spent an hour watching Patrick but as if I knew him. I had an intimate knowledge of his life, his history, his personality, his torment, and his losses. I also felt as though I had a window on how it might be to live through this cruel illness.

*State of Nature* was commissioned by the company Theatrescience, which describes itself as a “rolling laboratory” of new plays and workshops aimed at breaking down barriers between arts and sciences and exploring the implications of biomedical science for society. At the core of its productions lies the idea of transforming scientific debate into a human story, opening up biomedical topics to greater public engagement and redefining them as matters of the heart as well as of the head. It is difficult to imagine a finer example of the realisation of this ambition than this play, which has Patrick's story pulsing through it.

Anthony Pinching, professor of clinical immunology at Peninsula College of Medicine and Dentistry in Devon, worked closely with Turley as the scientific adviser on *State of Nature*. He made sure that the science was right but also enabled a “deeper authenticity,” underpinned by patient narratives and stories of his clinical experience and that of others. The characters became a “narrative patchwork of patients and their carers that we all recognise.”

Pinching believes that Turley has succeeded in telling the human story of dementia in a way that is powerful and important and that brings a tear to his eye. “In one hour, so much was so compressed that is revelatory,” said Pinching. “This is another means of enabling people to think differently [about dementia], not to think in a very mechanistic way and solely of the losses,” he said. “In some ways the main story is the person, and the illness is the side story, and this is something we can and should explore.”

Patrick's story is set on two sides of a small stage. One is a rambling house in Cornwall, where he lives now with his niece and carer, and the other is the jungle of west Bengal in 1969, where he is working as a young engineer and is in love with Kalpana, a student radical and courier for the Maoist Naxalite group. The young Patrick, or Paddy, and Kalpana play out this memory—the one to which he keeps returning from his Cornish armchair.



**At the core lies the idea of transforming scientific debate into a human story, opening up biomedical topics to greater public engagement and redefining them as matters of the heart as well as of the head**

The play moves from one side of the stage to the other as words reflect vivid hallucinations and slices of Paddy's story. He refuses to join the revolutionaries, and Kalpana loses her life in the struggle. He returns home to see his father, who has been admitted to hospital with dementia. In the now, he battles with the regrets he has about leaving his only real love and struggles to make peace with himself. Among the torment are shafts of lucidity and bawdy humour and moments of intense sadness, as layers of his life and his illness are peeled back. His frustration and anger are also directed towards his doctor: “I don't like him. I don't trust him. He's a bad doctor. He gave me this thing.”

*State of Nature* also explores the genetic nature of dementia. (The play arose from the Theatrescience project Not My Fault, which explores health and genetics.) Some studies of Lewy body dementia indicate a genetic disposition to the condition that is triggered by other biological symptoms. Patrick's brother died from the disease, as did his father. Louise, his niece and carer, reflects candidly on the fact that it may also be coming her way.

Louise, who loves her uncle, is trying to come to terms with her broken marriage. Although Patrick is an adamant atheist, she voices her deep Christian belief as she struggles to navigate her way through her uncle's illness and the spectre of it becoming her own. This play, as if it did not already have enough to do, also briefly raises the science-religion debate.

A podcast of the play is available at [www.theatrescience.org.uk/ee](http://www.theatrescience.org.uk/ee).

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## **6.9 Theatrescience team biographies**

### *Jeff Teare, Co-Director*

Jeff has over 35 years of major theatre credits to his name, ranging from Associate Directorships with The Young Vic and the Theatre Royal Stratford East (1986-95) in London through to a wide variety of productions throughout the UK, from puppet shows for the under fives to Shakespeare and Chekov. He is a past chair of the British Equity Directors Committee and an advisor to ACGB and London Arts. He has been involved with over 150 school science/drama projects and many workshops, readings and professional productions with Theatrescience. Jeff also writes for the stage and makes films. He's widely acknowledged as a pioneer in using education and theatre to challenge and dismantle the arts/science divide. Jeff is an Honorary Fellow of the University of Plymouth.

### *Rebecca Gould, Co-Director*

Rebecca is a theatre director and producer. She specialises in directing new plays, education projects, and directing plays for and with young people. Her current work includes projects for the Royal Shakespeare Company, National Theatre Wales, British Council and Wellcome Trust. Rebecca was previously Associate Director at the Theatre Royal, Plymouth, Young People's Producer at the National Theatre, London, Director of the English Shakespeare Company's Education Company and Associate Director of Made in Wales Theatre Company, Cardiff. She has a strong interest in working internationally, and has produced and directed productions and festivals in London, Cardiff, Hong Kong, Kolkata, India and Ghana.

### *Simon Turley, Writer*

Simon is a playwright and Head of Creative Arts at Ridgeway School, Plymouth, UK. He has been Theatrescience's lead writer for five years, plays including *Seeing Without Light* (2005) and *Something Somatic* (2007), and *State of Nature* (2010). He has also written for BBC television, and his plays have been published by Parthian Books.

### *Professor Anthony J. Pinching, Scientific Advisor*

Professor Pinching is Associate Dean for Cornwall, Professor of Clinical Immunology, at the Peninsula College of Medicine and Dentistry. He has previously held posts including Louis Freeman Professor of Immunology & Head of Division, Molecular Pathology, at Barts and The London/QMUL. and Honorary Fellow Department of Human Science and Medical Ethics, QMUL. He has published over 250 peer-



reviewed papers and 5 books on HIV/AIDS, CFS/ME, and medical ethics, and has a strong interest in public policy involvement.

*Mel Scaffold, Project Manager*

Mel is passionate about producing and programming new writing, both in theatre and spoken word. Her most recent role was Programme Co-ordinator (South West) for Apples & Snakes, where she developed and promoted performance poets through new events and venue relationships, artist development workshops and innovative education programmes. Her background in arts education means she has supported many people to get their work off the page and onto the stage. As a member of the Arts Development & Education team at Theatre Royal Plymouth she managed primary projects, including 'Playhouse', the new writing partnership with York Theatre Royal and Polka, and most recently she has developed creative projects for children in care with Real Ideas Organisation. She is very interested in work that crosses boundaries – between countries, creative practices and disciplines – and is exploring these ideas through an MA in Performance Research.