

The Embodied Mind

*Report of a symposium held at the Squire Bancroft Studio,
Royal Academy of Dramatic Art, London, 12 December 2008*

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INTRODUCTION

Siân Ede, Arts Director UK Branch, Calouste Gulbenkian Foundation

Background to the Symposium

The UK Branch of the Gulbenkian Foundation has a 12 year history of encouraging artists to engage with new thinking and practice in science and technology, through open grants programmes,¹ salons, symposia and conferences, commissioned anthologies and books, and through contributions to debates and publications nationally and internationally. Salons are organised to bring together experts from the arts and sciences and from philosophy and psychology, to air ideas around particular topics.

The idea for this symposium arose from an informal conversation I had had with geriatrician, philosopher and writer Professor Raymond Tallis around our shared understanding that the human mind has evolved by means of interactions with the physical world through the body, that the mind therefore is 'embodied' and, for that matter, the body 'enminded' – as Antonio Damasio was to point out at the Symposium, introducing his term, 'en-minded body'. Ray has written much about his interest in phenomenology, the study of structures of consciousness as experienced from the first-person point of view, and has, of course, had years of first-hand (interesting metaphor) experience as a medical doctor. I have worked in the arts all my professional life with a background in theatre, and had a hunch that some of the recent ideas emerging from neuroscience would be recognised by theatre and dance practitioners and teachers who are daily thinking *through* their bodies, investigating ways of communicating that might have been influenced by the great theorist/ practitioners in their fields – Stanislavsky, Laban, Lecoq, Japanese Noh theatre, and so on – but which are further developed along personal trajectories. Ray expressed an interest in exploring the ways in which physical form might influence people's states of mind. He talked about observing old people slumped unhappily in their nursing home chairs. If they were encouraged to change something as simple as their posture, they might feel different.

I was intrigued by this. There is an orthodoxy in popular psychology that our feelings influence our physical behaviour and not the other way round. In performance theory, Method acting has a similarly perceived orthodoxy. I was reminded of the joke in which an American Method actor (I think it was Dustin Hoffman or Marlon Brando) is said to have described to the distinguished British actor Sir John Gielgud how much work he had undertaken to get into his role by trying almost literally to live and feel the part. To which Gielgud is said to have retorted, 'But why don't you just *act*, dear boy?' How far are there distinctions between actually being in the moment and *simulating* being in the moment? What is the relationship between Function and Form? These were questions being examined in both performance studies and neuroscience and each could learn from the other.

A lot of neuroscientific discovery has been made through observing people with brain *dys*function, highlighting, for example, functional areas in the brain's anatomy, its likely neural pathways, or by identifying particular genes associated with the dysfunction, in order better to comprehend the workings of the 'normal' brain. By contrast, dance and theatre practitioners possess a *super*function, training themselves to observe their own processes, attaining often astonishing feats of 'body memory', spatial awareness and unspoken physical communication with each other and with audiences, and turning this into a new composition, a work of art. Clinicians are sometimes amazed by the brain/body's determination to cope with injury or illness, its flexibility and plasticity, and an insight into this could inspire dance and theatre artists not just to understand and challenge their own practice but to create new artworks that

¹ Now no longer in operation.

communicate differently. It would be fascinating for both sides to learn more about the ideas of the other. In addition to this, there were things to be learned from and by health practitioners who are daily in touch with their patients' experience of being 'unwell'. The interfaces between 'normality' and illness, between objective and subjective experience, between mind and body are tenuous.

Outline of the Day

There are two basic rules to the Gulbenkian Salon: no one is to discuss funding or money; no question is too stupid. Academics and practitioners must leave their professional pride at the door and be prepared to listen and learn. The Symposium is a larger version – an invited audience so there is a manageable number of active participants (in this case 85) and instead of a general, though chaired discussion, there is a series of presentations, usually of arts and science practitioners who have actually worked together or who can present reciprocal views.

For the Embodied Mind Symposium, there were some obvious choices:

Choreographer and director Siobhan (Sue) Davies and neuroscientist Jonathan Cole discovered each other at a Symposium on Neuroscience and Dance we held in November 2007 (report available from our website: www.gulbenkian.org.uk/publications/arts/mind-brain-and-performance) and have since been in discussion. Sue wanted to involve dance artist Deborah Saxon to demonstrate a performance of a dance piece recently created.

Theatre director Suzy Willson of The Clod Ensemble has pioneered *Performing Medicine*, an award-winning course for medical students; she suggested pairing up with Britain's leading authority on mask work, director and performer, John Wright, and invited actors Matt Steer and Rachel Donovan to give demonstrations.

Choreographer Wayne MacGregor has been working closely with arts researcher Scott deLahunta and neuroscientist Phil Barnard for some years, undertaking ground-breaking scientific research into the mental processes involved in creating dance and, in turn, making new dance pieces inspired by an exposure to science and clinical medicine.

For the afternoon sessions, we brought together two pairs of speakers: acting teacher Ken Rea and neuroscientist Mark Lythgoe; theatre teacher Lorna Marshall and physiotherapist Nicola Hancock, both pairs of whom I had introduced to each other previously and who had found an immediate rapport.

Besides these pairings we were fortunate to be able to invite two prestigious speakers to ground the practice research in conceptual thinking. The neuroscientist and writer Antonio Damasio is much respected in the arts world for his research into the emergence and significance of emotions and feelings in humans. Suzy Willson had invited him to participate in a series of talks on *Performing Medicine*, giving a public lecture at Tate Modern and a private session for director Katie Mitchell and actors at the National Theatre Studio, and Gulbenkian was pleased to support his visit. Raymond Tallis has been a practising geriatrician and important adviser on public health, an author of a number of books on philosophy, much persuaded by the writings of a number of significant theorists and philosophers also highly respected by arts academics.

All the audience/participants were themselves experts in their fields, coming from the range of disciplines embraced by the general term 'neuroscience' (anatomists, experimental psychologists, brain imaging experts, physiologists, clinicians, physiotherapists, and so on) and

within the general term 'performance' (artists from dance, mime, mask-work, theatre, physical theatre, performance art, poetry, and so on). In fact, everyone present already subscribed to the notion of the Embodied Mind – there were no Cartesians in the room. The contribution of these participants enriched the day, although it is impossible to reflect the many expert responses in the final plenary session.

Great thanks must go to all concerned. This includes the Royal Academy of Dramatic Art (RADA) for providing a working arts laboratory, while allowing the scientists to show their work through efficient electronic presentations. I would also like to thank Professor Patrick Haggard from the Institute of Cognitive Neuroscience, University College London who is an important source for me on the neuroscience of dance but who was unfortunately unable to attend the Symposium.

I hope that readers' imaginations are stimulated by this written report of a most stimulating day. They will have to imagine the sprightly delivery of the speakers and the interested response from the audience and will miss out altogether on sessions where dancers and actors actually performed – highlights of the day to which no language can do justice. We do provide, however, references to books, research papers, and email and website addresses to be followed up and would encourage readers to see performances created by dance and theatre practitioners in order to consider why created performance can have such a profound impact on our bodies and minds. I have already heard of new collaborations and meetings being set up between people who actually attended and hope some readers may follow up ideas too. We shall try to revisit the subject in a year or so to find out.

Siân Ede

PROGRAMME

Professor **Raymond Tallis** opened the day by briefly establishing a framework to the philosophical context to the notion of Embodied Mind.

Purpose of the Day

- To explore the relationship between the body and the mind
- To narrow the gap between the approaches of artists and scientists to the living, breathing, creating person
- To bring together artists (in the broadest sense) and scientists (in the broadest sense)
- To break down the split between mind and body, subject and organism, person and carnal machine
- To offer an opportunity for cross-fertilisation

Key philosophers

The ideas of René Descartes, Baruch Spinoza, Martin Heidegger, Maurice Merleau-Ponty underpin the notion of the Embodied Mind

Descartes is not as uncomplicatedly dualist as he is painted

He has the image of a dualist – a thinking substance attached to a carnal machine but in reality he is more complex:

'Nature teaches me by the sensations of pain, hunger, thirst, etc that I am not merely lodged in my body as a pilot in a ship, but that I am so closely united to it that I seem to compose with it one whole.' [Note the word **seem** however]

Spinoza saw mind and body as aspects of the same substance:

Extension (body) and Thought (mind) are not separate
The human mind is the idea of the human body and shares its complexity

Heidegger also rejected dualism:

There is no separation of mind and body
Human consciousness is not tucked away in a cabinet called 'the body' or 'the brain'
The primary human reality is being-in-the-world or 'being-there'

Merleau-Ponty argued for the primacy of 'the embodied subject':

The separation between body and mind is an artefact
The primary element is the human person
It's a case of the embodied subject not organism plus mind

Raymond Tallis expanded on these arguments in his talk at the end of the day, see page 21.

REPORT ON THE SYMPOSIUM

SESSION ONE

Tensions between feeling and form

Professor **Jonathan Cole**, neuroscientist and co-author of *The Invisible Smile*, a new book about Möbius Syndrome, in dialogue with **Siobhan Davies**, choreographer and director of The Siobhan Davies Dance Company, with dance artist **Deborah Saxon**.

Jonathan Cole began by describing the small sea slug which sits at the bottom of the ocean and has just one function – to move. It possesses a ‘brain’ only when in motion but otherwise digests its brain.

Movement (the concern of this Symposium) can be defined as *locomotion*, which is both instrumental and expressive/communicative and is manifest through posture, gesture, [body] language, prosody, facial expression and creative movement. As we have evolved to focus on facial expression, we have lost our sensitivity to reading posture. Our minds are now so clever at prediction, we seem no longer to need such sensitivity.

What are we trying to express and communicate? Knowledge, expertise, intentions, feelings, moods and emotions. It is interesting to consider how much experience we have in common and can share. And how one *feels* is communicated through body language.

Significant sources of thinking in this field include:

Lev Vygotsky (1896–1933)

‘Thought is not begotten by thought; it is engendered by motivation, i.e. by our desires and needs, our interests and emotions. Behind very thought there is an affective-volitional tendency, which holds the answer to the last ‘why’ in the analysis of thinking....’

‘To understand another’s speech, it is not sufficient to understand his words – we must understand his thought. But even this is not enough – we must know its [affective-volitional] motivation. No psychological analysis...is complete until that plane is reached.’

Thought and Language, Lev Vygotsky (Cambridge, MA: The MIT Press, 1986, pp 34-5)



Maurice Merleau-Ponty (1908–61)

‘...my love, hatred and will are not certain as mere thoughts about loving, hating and willing: on the contrary the whole certainty of these thoughts is owed to that of the acts of love, hatred and will of which I am quite sure because I perform them...I make my reality and find myself only in the act...It is not because I think I am, that I am. The whole certainty of love, hatred or will is that I perform them.’

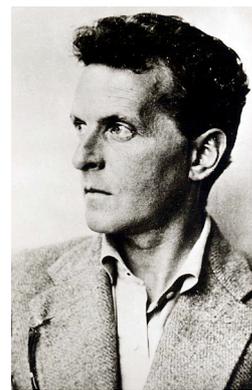
The Phenomenology of Perception, Maurice Merleau-Ponty (Routledge, 1962, p 91ff)

Ludwig Wittgenstein (1889–1951)

“We see emotion.” – As opposed to what? – We do not see facial contortions and make the inference that he is feeling joy, grief, boredom. We describe a face immediately as sad, radiant, bored, even when we are unable to give any other description of the features. Grief, one would like to say, is personified in the face. This is essential to what we call “emotion.”

‘The content of an emotion – here one imagines something like a picture. The human face might be called such a picture...’

Remarks on the Philosophy of Psychology, Ludwig Wittgenstein (University of Chicago Press, Chicago, 1980).



Charles Bell (1774–1842)

‘The thought is to the word as the feeling is to the face.’

Essays on the Anatomy and Philosophy of Expression, Charles Bell (John Murray, London, 1824)

Jonathan Cole went on to describe his work on Möbius Syndrome, a condition in which sufferers lack facial expression and an ability to move the eyes in the head. He had worked with a patient called Celia whose reflections on her condition had provided him with thought-provoking insights. After many operations and hospital stays she was aware of having lived a severely limited life: ‘I never thought I was a person...just a collection of bits. Other children had a body language I didn’t have.’ She was not aware of feeling emotion as a child. As an older woman she felt ‘like a rusty car’, recognising the need to be especially articulate in spoken language to compensate for her lack of embodied expression.

Another patient was a man in his 50s who reported that he lived his life entirely ‘in his head’. Another young woman created her own ‘character’ conveying personality through imitation not actual experience. She felt more at ease in Spain where she thought people had a more exaggerated body language and this helped her experience feeling for the first time in her life.

Working closely with such patients has helped Jonathan Cole ponder on the function of the ‘normal’ brain, particularly in relation to the way we present ourselves and communicate with each other.

Jonathan Cole’s analysis of Möbius Syndrome is in his latest book, co-authored with Henrietta Spalding, *The Invisible Smile: Living without facial expression* (Oxford University Press, 2008)

Siobhan Davies delivered the following paper, her ideas demonstrated by **Deborah Saxon’s** dance piece.

Views from the Choreographer and Dance Artist

Siobhan Davies and Deborah Saxon

Dancers are the subject and the medium. There is no ‘other’, no book, no instrument, no painting. Our edited selves become the material that we choose from. We are the stuff of our creativity.

In order for a dance artist to build up a shared understanding with their audience, the particularities of thought and feeling which brought the movement language into existence needs to remain as information embodied in the performed action. The thought, feeling, emotion and movement are all contributors to the whole expression. The performance is in the present, but the history of its making informs its doing.

What happens within the body which gives the movement expert – whether in the dance studio or dealing with physical impairment – is a more articulate way of being and communicating through movement, reaching an 'isness' which is able to project a sense of coherence. In dance, expressiveness can be embodied beyond the gestural. The dancer can place movement anywhere within her body for it to have a unique demonstrative energy. Every movement can have a value, whether it is conceptual, figurative or relating to space, place and timing. A collection of moves can then become formalised through choreographic decisions. This formalisation can protect and enhance the thought and sensation that triggered the physical material in the first place and it might do that by unsettling the expectations of movement, re-arranging actions in order to sensitise us to what dance is capable of.



Deborah Saxon in *Two Quartets*. Photo by Pari Naderi.

Jonathan has introduced me to the precise self-reflection of some of the people/patients with whom he has worked. We both recognise that some of our enquiries run on parallel lines, even though they spring from very different needs and for that reason our conversations over the last two years have been a terrific highlight for me. I am an artist, I choreograph, I collaborate with dance and other artists. In a few minutes you will see a solo conceived by me and made real by Deborah Saxon. Some of these movements come from within all of our common language and some go beyond familiar physical language. Instead, the body becomes the imagination made visible. Live actions exist in the here and now but we work on how foregrounded, everyday physical expression can appear to dissolve or become transparent, revealing a movement that *is* a feeling, *is* a state of being, and those movements are the ones that become another kind of evidence about us, what or who we are.

I will try and tell you how this solo was made before you see it – not to *explain* the performance but to open out the rehearsal process so you may get an insight into how the dancer can aim to detach herself from the movement so that the moves become objects and the dancer is then able to apply a fuller range of critical questions. As the rehearsals progress towards the performance, dancers have to close the gaps between themselves and their material. By the time of the eventual performance, they wish to be neither a translation nor a representation, but to be what they are doing.

The process began with my request that Deborah (one of four dancers in the piece) and I find a way of making a 'portrait'. This is not the best way of describing what I was driving at but it worked as a provocation. I do not mean a self-portrait or biography. We would have no one in mind but would build up a series of movements that would become the evidence of various essential personal states. Our aim was to try and show through movement both figurative states and more abstract ones, to see if we could demonstrate those flickers from thoughts to

feeling, from senses to the imaginary, without losing the thread of one person experiencing them.

At the beginning Deborah gathered fragments of movement material from different sources, different stimuli, for example, looking at texts, or drawings, or finding emotional or situational events to draw on. I am now using some of Deborah's words – 'Most fragments had a clear intention which was the initial engine for the movement, for example, by having a thought I could immediately source the physicality.'



Deborah Saxon in rehearsal for *Two Quartets*. Photo by Pari Naderi.

The process of finding the fragment is a strange one. Why do certain movements trigger a response in both the maker and the watcher? In the studio we fight hard against our movement habits but wonder if there are some primal connections where movements are validated by some part of our unconscious. Even though they do not belong to common usage they arrive out of an intelligence and a sensual recall. Certainly, finding these fragments was not a linear process. Quoting Deborah again – 'I needed to come to the thought from many different directions.' She tested each fragment to find the boundaries of where it could expand – 'within the body, out into the space, and within different time structures, but without losing any clarity'. These fragments were then grouped into similar 'families', or Deborah found contrasting fragments to clash up against each other. Each family of fragments gained strength through both opposition and cohesion. They were then spliced or woven together through various structural devices. These elongated phrases were then done over and over again until the action arrived immediately in the body.

It is at this stage that further counterpoints can layer over the basic foundation of actions. Deborah says – 'The solos are made with a small number of movements, with many repetitions, but through putting the movement in different situations we can constantly revisit the action with a different emotional weight, rhythm, timing and texture.'

One way in which Deborah can subtly change the quality of what she is doing is to shift the alignment between thought and action. For instance, the thought and its relevant action would be done together, then Deborah would jump the thought to the next action but her body would linger in the first. This layering changed the intonation of the actions and stopped the practice of moving in blocks of phrases. In order to jump a thought backwards or forwards Deborah needed to have a stable movement memory. That underlying stability allowed her to be intuitive and in the moment with the top layer of actions.

Deborah is always watchful and alert, ready to find a particular quality, texture or emotion. There is a terrific moment in the solo where she asked 'Could this material tell a joke if it kept

being interrupted by an outside source?' The movement is built up in lengths and layers. The body develops experience through the movement. Occasionally a movement becomes unnecessary by the end of the choreographic process but the experience it gave during rehearsal is sustained and maybe the emotion made by that experience remains too. The forms that build each part of the material articulate the feeling. The dancers and I are wary when the performance looks as if it is being done by someone under an 'enchantment'; by someone 'taken over' by the movement. It requires a balance to find a movement language that connects the performer to the audience but allows the embodied imagination of the dancer to engage them at the edges of what they can recognise. At these rims of recognition we might be able to bring into the fold a series of states that we all may feel but which normally have no common place for them to be acknowledged.

There followed a dialogue between Jonathan (JC), Sue (SD) and Deborah (DS). Among other points, the following observations were made:

JC: During the development of a dance performance, do dancers have feelings that are more 'enlightened'? Do they experience feelings they don't normally have access to? Perhaps performance offers a tightrope between experience and communication?

DS: Performance seems to offer a balance between being in the moment and recreating what is prepared – so one's emotional state doesn't overwhelm what has been made.

SD: Many choreographers use everyday actions. Something draws me to use other movements recognizable in us as actions that use the integration of imagination, thought and feeling, which seem to bring us to the rim of recognition. If we can do this, more of our 'realness' may become known (by being able to introduce some of our more fine grained human states they may become more recognizable, unnamed now, but hovering above us).

JC: I understand – only accessible through movement 'in the act'.

SESSION TWO

The Expressive Body

Suzy Willson, Artistic Director of The Clod Ensemble and creator of *Performing Medicine*, a programme which works through the performing and visual arts to help medical students become more physically aware, in dialogue with **John Wright**, Britain's leading authority on mask work. Their ideas were demonstrated by two actors, Matt Steer and Rachel Donovan.

This session is impossible to reproduce because its essence was performance itself.

Suzy Willson demonstrated the kind of work she does with medical students which encourages them to explore the way their physicality may impact on their own wellbeing and on the wellbeing of their patients. She used an exercise of Jacques Lecoq called The Seven States of Tension to demonstrate her ideas.



Further information may be found in Lecoq's books: *The Moving Body: Le Corps Poetique* (Methuen, 2002) and *Theatre of Movement and Gesture* (Routledge, 2006).

The Clod Ensemble's website is: <http://www.clodensemble.com/clod.htm>

The Performing Medicine site: <http://www.performingmedicine.com> *The Uses of Arts in Medical Training*, Suzy Willson, *The Lancet*, Vol. 368, Supplement 1, December 2006:

http://performingmedicine.com/downloads/06sup_p15_p16lancet.pdf



Kiss My Echo The Clod Ensemble. Photos by Richard Nicholson.

John Wright began his session:

'In the 1970s I read about Jacques Lecoq, the first director to use masks in Europe. In one demonstration he covered the face of a very self-conscious actor with a handkerchief and she was then able to relax. And when she was given a mask she blossomed. I was fascinated by this – why did it happen? Through my work I have come to recognise the power of masks as agents of release and control, both concealing and revealing. The mask – 'warms the heart and cools the head'. Masks appear to change their expression, sometimes just because of the way the way the light plays over them.'

John went on to demonstrate with the actors how masks displaying fixed facial expression appeared to the audience to convey different mood states. The actors' body language helped support this illusion but the performances also demonstrated how we are programmed to predict and interpret expression, even when it doesn't actually change.

Fuller information can be found in John Wright's books: *Why is That So Funny? A practical exploration of physical comedy* (Nick Hern Books, 2006).

See also The Wright School website:

<http://www.thewrightschool.co.uk/>



The Fool and the Huntress, School for Masks by The Wright School. Photo by Becky Kitter.

SESSION THREE

Principles of Choreographic Thinking

Choreographer **Wayne McGregor** and arts researcher **Scott deLahunta** in dialogue with **Dr Phil Barnard**, MRC Cognition and Brain Sciences Unit, Cambridge.

This three-way discussion gave a flavour of the research being undertaken through Random Dance Company's research project, R-Research, which is both theoretical and practice based.

A Summary: Principles of Choreographic Thinking

Phil Barnard, Scott deLahunta, Wayne McGregor (London, December 2008)

If purpose here is construed simply as 'having a theory of choreographic thinking', what use is that? It should not merely be an object for the chattering classes to talk about, it should have some function in deepening understanding, educating students, or most ambitiously perhaps, as a tool to assist choreographers themselves in augmenting or otherwise extending their processes or creative capabilities in dance making.

The key questions: How can we uncover more about the kinds of intelligences (choreographic thinking) that are involved in contemporary dance making and make this information available to choreographers in a format that is useful (augmentation)?

(1) We have identified three challenges to getting at 'choreographic thinking'. Two involve the communicative practices of natural discourse or language (ref: the work of linguists Michael Halliday and Paul Grice). The third and related challenge we face is that much of the knowledge we want to get at is governed by latent (hidden) knowledge, but this does not mean that the rules or constraints cannot be uncovered and rendered explicit using modelling and empirical methods from cognitive science.

(2) Choreographic thinking is not just something that equates with creativity in this particular domain of artistic expertise. It is set in the broader context of a larger social system defined by the world of performance arts. In developing a production, the choreographer interacts either directly or indirectly with dancers, composers and musicians, set designers, performance spaces, stage managers, publicity specialists and more. A particularly critical part of that "and more" may relate to the social and intellectual sources of inspiration for a work as well as how a particular finished piece is received and evaluated by audiences, critics and peers. Creativity is not just something that happens. It requires constant drivers and husbandry to sustain developments that continually surprise, challenge and please over time. Stasis is its natural and powerful opponent.

(3) We offer three conceptual representations for supporting a wide-ranging analysis of choreographic thinking: (i) the **Bridging Model** characterising the bigger picture within which choreographic thinking is embedded – construing choreography as a 'situated' collection of processes involved in creative design and development; (ii) the **Process Model** characterising at a more detailed (but far from complete) level of specification, the key processes called into play in the course of creating a piece of work, from its opening conceptualisation to first public performance; (iii) the **Interacting Cognitive Subsystems Model** represents one perspective

on the full range of mental resources (thinking components; forms and flows of imagery) the choreographer may be using in choreographic thinking.

(4) We are particularly interested in the conceptualisation or 'ideation space' that governs the process of making; our aim is to develop personal tools for the choreographer to help him or her re-structure this ideation space. We envision a notation system related to this conceptualisation process that has enough expressive power that choreographers can 'write their own formula'. We hypothesize that we can invent a way of fine-tuning the interaction between the three types of imagery (spatial praxic imagery; verbal imagery and semantic imagery), but we need more information about what the drivers of change in this space are and how connections are made (mapped). We do not want to explain the entirety of 'choreographic thinking' (nor do we think this is possible), but we do want to try and expose part of what may be currently considered latent or hidden in 'intuition'.

For more information, see the R-Research section at: <http://www.randomdance.org>



From ENTITY, Wayne McGregor | Random Dance. Photo by Ravi Deepres.

SESSION FOUR

Keynote Talk: Brain, Body and Emotion

Antonio Damasio, David Dornsife Professor of Neuroscience, Director, Brain and Creativity Institute, University of Southern California and author of *Descartes' Error: Emotion, reason and the human brain* (Vintage, 2006); *The Feeling of What Happens: Body, emotion and the making of consciousness* (Vintage, 2000) and *Looking for Spinoza: Joy, Sorrow and the Feeling Brain* (William Heinemann Ltd, 2003). This talk is co-authored with Dr **Hanna Damasio**, Dana Dornsife Professor of Neuroscience and Director, Dornsife Cognitive Neuroscience Imaging Center University of Southern California.

Below is a slim summary of some of the main points made in the talk but readers are advised to read Antonio Damasio's books for a much fuller appreciation of his ideas and their relevance to performance theory and practice.

Professor Damasio introduced the term 'en-mindment' as a counterpart to the notion of 'embodiment' to emphasise the way the human organism has evolved as a whole, with the brain as an intrinsic part. Central to his analysis is the concept of *homeostasis*, the constant self-regulation required by the organism as a whole to maintain a dynamic, survivable, functional equilibrium. This operates largely at an unconscious level and is present in simple cells. In humans it evolved preceding the development of complex brains and consciousness. The mind developed as an instrument of self-regulation for the whole organism, connecting body/mind processes with the outside environment, and continually re-mapping and re-connecting internal and external conditions. The notion of 'self' emerges from this dynamic process and allows humans to extend the reach of the organism's autonomous regulation, enabling it to be aware of encounters in its environment and to take deliberate action in response. All of our actions, both unconscious and aware, relate not just to the basic survival of the organism but to its optimal well-being. Humans are social organisms so being alert to and communicating with others is part of our extended self-regulatory activity. From such communications arise societal organisations, a sense of morality, economic structures, communities of religious belief – and the arts, which make an important contribution to our well-being.

'The immune system, the hypothalamus, the ventromedial prefrontal cortices and the Bill of Rights have the same root cause.' All these elements relate to homeostasis.

Emotions are distinct from feelings: they are action-programmes related to homeostasis, operating below the level of consciousness and are not subjectively controlled in any way. Animals have complex emotions which allow the organism to re-act in response to internal or external stimuli. This occurs in order to benefit the organism's well-being without the intervention of mind. Fear is such an example and it may manifest itself in different ways. Research with monkeys shows that different stimuli and contexts elicit different physiological responses and behaviours. An urge to flight increases the blood-flow to the legs: if a still response is more appropriate the blood is evenly distributed through the body. Such emotions are autonomic, beyond control.

Feelings, on the other hand, are composite perceptions which indicate: (i) a particular state of the body, actual or simulated; (ii) or a state of altered cognitive resources; or, (iii) the

deployment of certain scenarios for action. Just as the brain has the capacity to map the state of the body, it also has, through the extended body, a capacity for feeling and for being aware of emotions which give rise to feeling. A state of altered cognitive resource is very important in an analysis of social emotions, such as admiration or compassion. In studies of people who have been told a story or watched an enactment about someone demonstrating the kind of exceptional courage that elicits admiration, brain scans show that while all levels of the nervous system come into play, particular patterns of response can be observed which engender identifiable thought and behaviour 'packages'. The brain changes reflect physiological changes in the body. Heightened admiration stimulates a physically calmer frame of mind, manifest in heart-rate changes and deeper breathing. Such responses also encourage imitation in others. Admiration for the virtuosity of a pianist or dancer evokes sensations of excitement, tingling and chills, and cognitively leads to an urge to feel a need for self-improvement.

Why do we need feelings? The evolved mind with its capacity to map the state of the organism engenders feelings whether one wants them or not. Feelings become embedded in memory and this has a function in triggering future responses. An awareness of feelings enables us to reflect on our behaviour and on that of the wider world about us and can stimulate us to change.

AUDIENCE QUESTIONS raised some of the following points:

Ray Tallis: A lot of contemporary definitions of consciousness are 'daft'.

Antonio Damasio: Evolution is not an inevitable process, not bound to develop one way. There may turn out to be a better way of understanding the way the mind works, but given the challenges we currently face, the notion of consciousness is useful.

Jonathan Cole: Consciousness is a socially induced process and one of its functions is to help us predict what someone else will do.

Ken Arnold, Wellcome Trust: Is there a feedback from feelings to emotions? Are young people's emotions the same as old people's emotions?

AD: Feelings change a lot according to context and at different stages of life. Emotions may change, but there's not much evidence for it. There are also cultural differences in emotions – there have been studies on this comparing the expression of feelings in, for example, Los Angeles and Beijing. The expression of feelings may be manipulated by cultural influences but basic emotions in themselves are universal and intrinsic and cannot be influenced.

Bob Bloomfield, Natural History Museum: What about the relationship between the self and the super-organism? I'm thinking for example of the behaviour of individuals in species which swarm or flock like fish, ants, birds, where the self is subsumed into the collective body.

AD: Ants are individual organisms which operate according to the overall master organisations of the colony and have evolved to respond to complex methods of signalling. The neural circuitry within an individual mammalian brain may be doing a similar thing. One's sense of self, therefore, is the result of a massive neural operation involving millions of circuits of millions of neurons. What the brain does is largely hidden in its intrinsic operation. The brain consumes 20% of the energy of the body. A feeling, however, consumes only around 2% (a little jitter in the brain). What is in question is what is the process that consumes the energy.

SESSION FIVE

Open Dialogue: Presence, Imagination and Creativity

Ken Rea, Senior Acting and Improvisation Tutor, Guildhall School of Music and Drama, with **Dr Mark Lythgoe**, Director of the Centre of Advanced Biomedical Imaging, University College London.

The dialogue pursued the following trajectory [incompletely conveyed here]:

ML: I work in a pre-clinical imaging department that designs new imaging techniques for heart and brain function and I also work with animal models, sometimes using genetically modified viruses to mimic human conditions.

KR: I have worked in acting and improvisation for 30 years. I am intrigued by the notion of 'success' and 'excellence' in performance. How much is due to innate mindset? How much can be taught? Where actors have exceptional presence or charisma I'd like to know what is going on in the brain. I have studied some formal investigations into the art of rhetoric and tried to explore the ways in which performers receive a form of energy from the audience and, in turn, give it back. I studied in Japan with a teacher who used a system of exercises based on martial arts – lowering the sense of one's centre of gravity and using *ki* energy. This has been useful in my devising a number of principles in actor training. A lot of what I teach deals with the notion of economy – in effort, in everything.

ML: Yes. A lot of communication depends on focusing attention. Humans have an amazing capacity to attend to things, such as reading book on the tube, blotting out the rest of the world. The downside of this is that we sometimes close our minds, 'build walls'.

KR: I'd like to know more about the function of adrenaline which actors are much aware of in the subjective sense. The adrenaline of performance makes it more difficult to relax, but if the actor is too chilled out, nothing happens. Paradoxically, the organism can become very inefficient under pressure – actors find ways to deal with this, but is there an optimum state that one could aim for in a controllable way?

ML: I suppose the aim is for actors to achieve an unself-conscious, fluid way of thinking. Adrenaline affects this. But if the searchlight of self-awareness moves from the front of head to the cerebellum (which plays an important role in the integration of sensory perception, coordination and motor control), too much attention can have a negative effect.

KR: To be present in the moment is difficult.

Siân Ede (chairing): I'd like to introduce the notion of what some neuroscientists call qualia – the vivid sense of being in the here and now and experiencing a sense of vigorous reality – the aroma of a cup of coffee, the softness of a baby's skin. The experimental psychologist Richard Gregory has pointed out that qualia are needed to indicate that we are indeed in the present moment and this is necessary for survival reasons – we need to distinguish the present from the blur of memories of the past and anticipations for the future which may co-exist as mental states. Perhaps actors are trying to simulate this sense of immediacy, mimicking reality in order to convey to the audience a sense of conviction and urgency so that we may share their emotions and feelings in the here and now. To develop this state they use what Stanislavsky

hailed as the power of the imagination. I'd find it interesting to explore what distinguishes the real experience from the synthetic, the performed or imagined one from the actual.

ML: Neuroscientists now know that we communicate with each other through what are called mirror neurons, so that when one observes another person feeling and acting in a certain way, the neurons in the same areas of the observer's brain are alerted, not just those involved in simply perceiving but also those that make us ready for action. We therefore recognise and are able to empathise with the actor and share his physical impulses, though not necessarily in an identical way. Interestingly, research has shown that imagining an action really does have a physiological effect. In one study a group of body builders were asked simply to think about doing a muscle curl in a focused part of the body and after a period of time it was found that they had actually increased their muscle capacity by 8%.

KR: That's interesting because when actors are effective something happens in the audience. It is as if they express empathy in an almost involuntary way. I'd like to find out how performers can maximise audience empathy. I'm interested in what you and Antonio Damasio have said. It means that if observers are involuntarily responding to actors by presenting similar facial expressions and gestures then their feelings and emotions are also involuntarily stimulated.

ML: Some research has shown that an ability to recognise different emotional responses in the face varies greatly between men and women.

KR: That's interesting. But one must allow the audience to participate on their own terms too and not do too much for them. Empathy is a given, but sometimes a performer can burst into tears and leave the audience cold. Observers also need to take a consciously objective approach and not just swing from one emotion to the next. Different parts of the brain need to be engaged and some emotional detachment may be required by the writer and director. I'm interested in the way in which energy is transferred through both empathy and thought, often simultaneously.

ML: I agree. Too much attention can be detrimental to creativity. An actor perhaps should aim to 'bring down the walls' in the observer's mind, break concentration and lower the latent inhibition that normally controls our focus on the things most vital to our immediate survival. Only then can connected creative thinking can take place.

See Appendix for Ken Rea's notes, page 30

SESSION SIX

'By my body's action teach my mind'

'I will not do it,
Lest I surcease to honour mine own truth
And by my body's action teach my mind
A most inherent baseness.'
Coriolanus, Act III, Sc II, William Shakespeare

Lorna Marshall, Honorary Research Fellow, RADA, Visiting Lecturer and Advisor on Training at the New National Theatre, Tokyo, and author of *The Body Speaks* (Methuen, 2001), in dialogue with clinical physiotherapist **Nicola Hancock**, post-graduate research student in stroke rehabilitation at the University of East Anglia and former Chair of the Association of Chartered Physiotherapists in Neurology.

Similarly, this session was an energetic dialogue. Some of the points raised include:

NH: My specialism is helping clients who have received a 'neurological insult' and I try to facilitate movement in clients with serious neuromuscular problems.

LM: As a theatre teacher I help performers gain a greater ownership of the body in order to communicate better to audiences. I began my career as a dancer who used her face – not popular. The body is embedded in culture – physical forms, volume, gesture, 'permitted' expressions of the emotions. When you change the body, you change the emotional response. I help actors to connect – to try to use their bodies without cultural constraints and to 'take on' different characters. I raise questions as to how far it can be said that one owns one's body and which responses one allows into the world, how far one can access the full range of expressions.

NH: With my clients, a sense of ownership has disappeared. They have very low muscle tone and have lost control. How do you exhibit your sense of self and ownership when you can't move? They cannot express confidence. I try to facilitate expression through physiotherapy but also take into account the need to restore a sense of ownership.

LM: Performers often display a wilful denial of choice, for example, opera singers often distrust their bodies. I am interested in exploring the philosophical reasons as to why individuals should feel they own their bodies – or not.

NH: Movement, touch, anti-gravity all play a part in helping people express themselves. After all, it is a most unnatural thing to be lying in bed without touching or being touched. My work is to make movement meaningful. We advance through small incremental stages – if a patient manages to take a couple of steps, or simply raise his arm, even if it's with the help of four physiotherapists, that gives us all a sense of achievement and pleasure.

LM: I am interested in how people can stretch their capabilities through imitation or imagination. I had a case of a boy actor who was not very agile choosing to take on the persona of a yoga teacher and he then found he could move with surprising flexibility. It made me recognise that the idea one has of one's own body and the reality of that body are quite different. There are zones of tension and release in the body. The gaze connects to emotion – and the mouth. Over

use of the face looks wrong. The face – the site of social presentation – varies in different cultures.

NH: I work in rural communities. With elderly men, for example, there is a great reticence over the idea of touching and being touched.

LM: I think this emphasises how much we are influenced by social norms of behaviour – it affects the way in which we control, almost subconsciously, how our bodies move, respond, express feelings.

NH: Although we are working at different ends of the spectrum, I with people with severe disability, and you drawing out exceptional modes of presentation from professional performers, we are both concerned with the same things: how to find ways of expression that may be outside the social norm, and how to give people as much ownership and control of their bodies as possible. I am particularly interested in the relationship between Form and Function – how learning to present a posture or expression alters one's feelings.

LM: There is much each can learn from the other.

SESSION SEVEN

The Embodied Mind: Neurological Rehabilitation Beyond the Mind-Body Split

Professor **Raymond Tallis**, formerly Professor of Geriatric Medicine at the University of Manchester, consultant physician in Health Care of the Elderly, Fellow of the Academy of Medical Sciences, philosopher, writer.

Raymond Tallis has provided the following summary:

The Cartesian division between a non-extended mind and an extended material body – the notion of a ghost in a (carnal) machine – is fraught with philosophical problems. It is particularly inadequate in clinical medicine. The barrier between so-called diseases of the mind and those of the body is being eroded by increasing acknowledgement of the ‘mental’ impact of ‘physical’ diseases and the ability of ‘mental illnesses’ (themselves recognised as having some basis in brain dysfunction) to bring about ‘physical’ disease. In neurological rehabilitation, the role of the ‘mental’ environment and of the sense of being in control in promoting ‘physical’ recovery also has increasing prominence in the literature. However, we may need to revise the Cartesian dualist framework for understanding disease more radically. Identifying the mind with the activity of the brain deals with the deficiencies of dualism but at the cost of espousing materialism, which leaves no room for first-person being, the self, and free will. We therefore need to start again from ‘the embodied subject’ – in which mind and body are not separate – though even this approach presents many problems. At the very least, we have to admit that we do not yet have a way of understanding the relationship between, on the one hand, the thoughts and actions of the self-conscious human being and, on the other, the biological mechanisms necessary for those thoughts and actions to be possible. Unless we do so, we shall not make genuine progress.

The background to this talk is to be found in the following books by Raymond Tallis: *The Explicit Animal: A Defence of Human Consciousness* (Macmillan, 2nd edition 1999); *The Hand. A Philosophical Inquiry into Human Being* (Edinburgh University Press, 2003); *I Am. A Philosophical Inquiry into First-Person Being* (Edinburgh University Press, 2004); *The Knowing Animal. A Philosophical Inquiry into Knowledge and Truth* (Edinburgh University Press, 2005).

The Plenary Session was lively, referring to the day’s talks and also raising new observations. We have tried and failed to summarise this live event. Readers are encouraged to look at the list of participants and professional details if they wish to acquaint themselves with the research being undertaken. And, of course, they should keep making their own original connections.

Siân Ede
Louisa Hooper
Calouste Gulbenkian Foundation, February 2009

SPEAKERS' BIOGRAPHIES

Philip Barnard is on the research staff of the MRC Cognition and Brain Sciences Unit in Cambridge, UK. Having spent much of his career researching human interaction with information technology, his primary research interests now lie in the area of human cognition and emotion. His experimental research focuses on how the mind processes meaning and on how that changes in disorders of cognition and affect like those that occur in states of depression, mania, anxiety and psychosis. He has participated in a number of interdisciplinary projects including arts-sciences collaborations involving both dance and cinematography. Phil has been working on research projects with Wayne McGregor and Scott deLahunta since 2003.

Jonathan Cole is a consultant in Clinical Neurophysiology at Poole Hospital and an academic at Southampton and Bournemouth Universities. His main research areas are in motor control without peripheral feedback and in pain. As a student he studied with Oliver Sacks and he has always been interested in the subjective experience of neurological impairment. He has written books on living with sensory loss, (*Pride and a Daily Marathon*), facial difference (*About Face*) and on living without movement or sensation in spinal cord injury (*Still Lives*). His latest book, with Henrietta Spalding, *The Invisible Smile*, on Möbius Syndrome, was published in October 2008.

Siobhan Davies studied at London Contemporary Dance School, and became a leading dancer and choreographer for London Contemporary Dance Theatre, subsequently working for both Richard Alston and Ian Spink as well as on projects such as *The Seven Deadly Sins* for English National Opera. In 1980 she formed Siobhan Davies and Dancers, which later joined forces with the Ian Spink Group and Richard Alston and Dancers to form Second Stride. From 1988 to 1993 she was Associate Choreographer for Rambert Dance Company. She founded Siobhan Davies Dance Company in 1988, and has made 22 works for the company. In 1999 she made *A Stranger's Taste* for The Royal Ballet, as part of the opening celebrations for the refurbished Royal Opera House. She also made *13 Different Keys* in collaboration with classical and contemporary dancers, produced by Artangel at the Atlantis Gallery, London. Much of her work has been filmed for television including *White Man Sleeps*, *Wyoming*, *White Bird Featherless*, *The Art of Touch* and *13 Different Keys*. Siobhan Davies and Siobhan Davies Dance have been recognised by numerous awards. Her company's landmark new home, Siobhan Davies Studios, opened in 2006 and provides a meeting ground for artists and creative thinkers as the UK's first artist-led dance space and resource.

Scott deLahunta works from his base in Amsterdam as a researcher, writer, consultant and organiser on a wide range of international projects bringing performing arts into conjunction with other disciplines and practices. He currently has the following long-term relationships: Associate Research fellow at Dartington College of Arts (since 2000); Affiliated Researcher with Crucible, University of Cambridge (since 2001); Research Fellow, Amsterdam School of the Arts (since 2006); he has been research coordinator with Wayne McGregor | Random Dance since 2001 and Research Director since 2008. He serves on the editorial boards of Performance Research, Dance Theatre Journal and the International Journal of Performance and Digital Media.

Antonio Damasio, David Dornsife Professor of Neuroscience, is an internationally recognized leader in neuroscience. His research has helped to elucidate the neural basis for the emotions and has shown that emotions play a central role in social cognition and decision-making. His

work has also had a major influence on current understanding of the neural systems, which underlie memory, language and consciousness. Damasio directs the newly created University of Southern California (USC) Brain and Creativity Institute. He has published numerous papers and won many prestigious awards. His publications include: *Descartes' Error* (1994); *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (1999) and *Looking for Spinoza: Joy, Sorrow and the Feeling Brain*. (2003).

Siân Ede is Arts Director for the UK Branch of the Calouste Gulbenkian Foundation where she led the first arts funded *Arts and Science* programme to encourage artists and arts organisations from across the art forms to engage with new thinking and practice in science and technology. She has worked with science institutions to develop arts programmes and arts organisations to develop science residencies. She regularly runs salons for artists and scientists and has commissioned and edited diary and poetry anthologies addressing art and science. She frequently advises, writes, speaks and chairs debates on Art and Science in Britain and internationally, and gave the Royal Society's annual Wilkins-Bernal-Medawar Prize Lecture on Science and Society in 2008. She is editor and co-author of *Strange and Charmed: Science and the contemporary visual arts* (2000), and author of *Art and Science* (2005).

Nicola Hancock graduated from the University of East London with a First Class Honours in Physiotherapy in 1992. She moved from Addenbrooke's Hospital, Cambridge to the Queen Elizabeth Hospital, King's Lynn in 1996 to lead the Physiotherapy input to the region's largest Stroke Unit and was instrumental in the development of neuro-rehabilitation services for the Trust. She has recently departed clinical practice to undertake an MRC funded PhD at the University of East Anglia, investigating the effects of cycling early after stroke, under the supervision of Professor Valerie Pomeroy. Nicola is the immediate past Honorary Chair of the Association of Chartered Physiotherapists interested in Neurology (ACPIN) and is a current member of the Intercollegiate Stroke Working Party (ICSWP) at the Royal College of Physicians, London. She is continually inspired by a fascination with adult human movement.

Mark Lythgoe is Director of the Centre for Advanced Biomedical Imaging at University College London, where he develops novel imaging techniques for investigating brain and cardiac function. Mark is also interested in the emergence of artistic creativity and has followed the unusual case of TM who felt an insatiable need to create, from painting and drawing to writing and sculpting, following a stroke. Mark is Director of the Cheltenham Science Festival and in 2005 received a Biosciences Federation Science Communication Award, which rewards bioscientists who make an outstanding contribution to communicating science to the public. In 2007 Mark was awarded membership of the European Dana Alliance for the Brain, which is a society that is committed to enhancing the public understanding of brain research. In the last 15 years Mark has collaborated with a wide variety of artists to create works from sculpture to theatre, including Katie Mitchell and Caryl Churchill's *Dream Play* at the National Theatre. Recently Mark has explored the split between the Two Cultures in a two-part series 'The New Two Cultures' for BBC Radio 4. Mark has presented several other documentary programmes on BBC television, Channel 4, Discovery Channel and BBC Radio 4 and is developing a five part series for BBC Radio 4 on images of medicine that changed the world.

Wayne McGregor is a multi award-winning British choreographer, renowned for his physically testing choreography and ground-breaking collaborations across dance, film, music, visual art, technology and science. He is the Artistic Director of Wayne McGregor | Random Dance, resident company at Sadler's Wells Theatre in London; Resident Choreographer of the Royal Ballet (appointed 2006) and the government's first Youth Dance Champion (appointed 2008). McGregor is also a frequent creator of new work for La Scala, Milan, Paris Opera Ballet,

Nederlands Dans Theatre, San Francisco Ballet, Stuttgart Ballet and English National Ballet, as well as movement director for theatre and film (including *Harry Potter and the Goblet of Fire*). His production of *Entropy* for Wayne McGregor | Random Dance is currently on tour.

Lorna Marshall is based in London, where she has worked for many years as a teacher, director, writer and theatre consultant. She studied Japanese Theatre (Noh, Kabuki, and Butoh), as well as training with Jacques Lecoq and Etienne Decroux. She works in a range of styles including classical drama, circus, opera, and physical theatre, with companies such as the Royal Shakespeare Company, the National Theatre of Great Britain, and the Casa de Musica, Porto. In 2002 she was awarded a post-doctoral Research Fellowship by the Arts and Humanities Research Council of Great Britain and the Daiwa Anglo-Japanese Foundation, to assist her work on creative process. She is currently Honorary Research Fellow at RADA, and Visiting Lecturer and Advisor on Training at the New National Theatre (Actors' Studio) in Tokyo. She also runs workshops across the globe for actors, singers, and directors. In 2008, Methuen published the updated second edition of her book *The Body Speaks* which focuses on her original approach to performer training. She has a long-standing collaboration with Yoshi Oida,, from Peter Brook's company, which has resulted in three books and several productions.

Ken Rea is the artistic director of Koru Theatre and senior acting and improvisation teacher at Guildhall School of Music & Drama. He began his career in New Zealand, where he was recognised as one of the country's leading actors and directors. He runs theatre workshops throughout the world and has taught in the national drama academies of China, Indonesia, India, Italy, New Zealand and Canada. His book *A Better Direction* examines the issues of director-training in theatre, film and television.

Deborah Saxon was born in Australia and worked for numerous dance and theatre companies before travelling to the UK in 1990. She joined Siobhan Davies Dance in 1991. During the last 12 years she has also performed with Mark Baldwin Dance Company, Jeremy James Company and Xoreftes in Athens. More recently she has created two duets with Henry Montes Uncouple and *Humming Solos*. Deborah is a freelance teacher teaching open classes and workshops throughout Europe and Australia.

Raymond Tallis was trained at the University of Oxford and St Thomas's Hospital, and was a Professor of Geriatric Medicine at the University of Manchester and a consultant physician in Health Care of the Elderly in Salford (1987-2006) with responsibility for acute and rehabilitation patients. He also ran a unique specialist epilepsy service for older people. He was elected a Fellow of the Academy of Medical Sciences for his research into stroke and epilepsy and awarded the Dhole Eddlestone Prize for his contribution to the medical literature on elderly people; the Founders Medal of the British Geriatrics Society; and the Lord Cohen Gold Medal for Research into Ageing. His national roles have included: Consultant Advisor in Health Care of the Elderly to the Chief Medical Officer; a key part in developing National Service Framework for Older People, in particular the standard on stroke; membership of the National Institute for Clinical Excellence Appraisal Committee; and Chairmanship of the Royal College of Physicians Committee on Ethics in Medicine. Outside his medical career, he has been awarded two honorary degrees: DLitt (Hon Causa) from the University of Hull in 1997; and LittD (Hon Causa) from the University of Manchester in 2002. In 2004 he was identified in *Prospect* magazine as one of the top 100 public intellectuals in the United Kingdom. He has written numerous medical publications and two major textbooks, while most of his research publications are in the field of neurology of old age and neurological rehabilitation. He has also published fiction, three volumes of poetry, and over a dozen books and 150 articles on the philosophy of the mind, philosophical anthropology, literary theory, the nature of art and cultural criticism. His most recent books are *The Enduring Significance of Parmenides: Unthinkable Thought* (Continuum,

2007), *The Kingdom of Infinite Space: A Fantastical Journey around Your Head* (Atlantic, 2008) and *Hunger* (Acumen, 2008).

Suzy Willson is Artistic Director of The Clod Ensemble, a theatre company that creates theatre, music and performance events in London, the UK and internationally. Productions include *Red Ladies*, *Under Glass*, *Must*, *Greed*. Suzy has spent over seven years researching the area of arts in medical training. This has culminated in the award-winning *Performing Medicine* project which uses the performing and visual arts to help medical students become more physically aware and engaged doctors. She is currently Honorary Non-Clinical Senior Lecturer at Barts and The London, Queen Mary's School of Medicine and Dentistry, University of London.

John Wright is regarded as Britain's leading authority on mask work. He co-founded Trestle Theatre Company and, later, Told By An Idiot, and has directed most of their repertoire including *On the Verge of Exploding* and *Don't Laugh It's My Life*. He is an international teacher and has received numerous awards for his work.

LIST OF PARTICIPANTS

- Dr Aosaf Afzal**, Senior Manager, 2010 Anniversary Programme, The Royal Society
- Wendy Allnutt**, Head of Movement, Guildhall School of Music and Drama, London
- Bergit Arends** Curator – Contemporary Arts, Special Projects and Innovation, The Natural History Museum, London
- Ken Arnold**, Head of Public Programmes, Wellcome Trust, London
- Henrietta Bannerman**, Head of Research and Academic Practice at London Contemporary Dance School
- Dr Philip Barnard**, MRC Cognition and Brain Sciences Unit, Cambridge
- Jane Boston**, Head of Research and Staff Development, Royal Academy of Dramatic Art, London
- Dr Paul Broks**, Senior Clinical Lecturer, School of Psychology, University of Plymouth
- Dr Beatriz Calvo-Merino**, Institute of Cognitive Neuroscience (UCL), Psychology Department (City University), London
- Prof. Johannes Birringer**, Chair in Drama & Performance Technologies, Brunel University
- Dr Robert Bloomfield**, Head of Public Programmes, The Natural History Museum, London
- Dr Thiago Carvalho**, Research Immunologist and Assistant Curator, Instituto Gulbenkian de Ciência, Lisbon
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- Gill Clarke**, Dance Artist, co-director Independent Dance/consultant Trinity Laban Conservatoire of Music and Dance, London
- Martin Connor**, Course Tutor at Guildhall School of Music & Drama, London
- Chris Crickmay**, independent artist, visiting teacher at Dartington College of Arts
- Professor Jonathan Cole**, consultant in Clinical Neurophysiology at Poole Hospital and an academic at Southampton and Bournemouth Universities
- Dr Anne Cooke**, Neuroscience Research Facilitator and Communications Manager, Bristol Neuroscience, University of Bristol
- Laura Curtis**, consultant in community-based sustainable development projects in developing countries
- Siobhan Davies**, Director Siobhan Davies Dance, London
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Nicholas Glass, Channel 4 News

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Siné Singlehurst-Ward, Artist, PhD student in embodied mind

Jackie Snow, Head of Movement, Royal Academy of Dramatic Art, London

Professor Raymond Tallis, formerly Professor of Geriatric Medicine at the University of Manchester, consultant physician in Health Care of the Elderly

Miranda Tuffnel, Visiting Professor of Dance at Department of Performing Arts, Coventry University

Nigel Wattis, The South Bank Show

Suzy Willson Artistic Director of The Clod Ensemble and Honorary Non-Clinical Senior Lecturer at Barts and The London, Queen Mary's School of Medicine and Dentistry, University of London

Dr Matt Wilkinson, actor and science communicator

Alexa Wright, artist, Senior Lecturer in Photography and Visual Culture, University of Westminster

John Wright Co-founder Trestle Theatre Company and Told By An Idiot

APPENDIX

Ken Rea's Notes for Session Five

The science of presence

Acupuncturist - Quest in the East

What is going on in the brain when a charismatic person is turning on their presence?
And how can we nurture that quality in actors?

Supreme economy of energy

Everything comes down to this
Secret of life – eliminating clutter
Finding the optimum state in which to function
Inspiration from the martial artist.
Cf the **ki energy**

Relaxation and tension – with adrenaline.

Leads to relation between these.

The inner and the outer

(Psycho-physical)

How the outer affects the inner

Opposite the Method: a thought can lead to an emotion

Paul Eckman – reproducing facial expressions – say smiling (pencil; between the teeth)

When we adopt these positions, a number of biochemical changes take place and we end up actually feeling the emotion.

So the muscular position, without psychological focus, produces the same results as the real emotion.

Conclusion – can we fool the brain?

Is this why actors learn to develop such a good facility for reproducing emotion?

Finding the form

Implications in actor training, and audience **dynamics**

It's all about finding the form

Dynamics change the signal the audience reads (eg sitting in the chair)

Dynamics also change how the actor feels

They do half the emotional work for the actor.

Cf Yoshi Oida – let the audience in to do some of the work

So, finding the form is important

Compare also Japanese, Chinese, Indian traditional theatre – the form is given and the actor must make it his own.

What changes in the audience

Suggests that when the form is right – authentic, truthful – the audience experiences empathy.

Science shows that empathy in most of us is sometimes involuntary. Eg in the horror movie when the body suddenly falls out of the cupboard.

Mirror neurons

Throws light on catharsis

After 2 or 3 hours of theatre, when laughing, weeping, holding the breath, mirroring the rhythms of what is happening on stage - has something changed in the body of the spectator?

Are they purged through going through the experience vicariously?

It's perhaps even stronger in films – Raiders of the Lost Ark, James Bond.

So is theatre and cinema good for your health?

Training of the actor

Could we train actors in a super psychology, or NLP

So they can understand reproduce more accurately and scientifically all the nuances of behaviour?

Would that kill all spontaneity and creativity in the actor?

Alec Guinness – 'I would hate to have a psychiatrist tell me, this thing that happened in early life was the cause of all my creativity'

Some things - better not to know.

Transference of positive energy

The nature of teaching actors

If I know I can make the other person do it, they'll be able to do it.

If I lack confidence in my ability to do this, the success rate goes down.

Great teachers – Lecoq – great work happens in their presence.

Same with acrobatics teachers

And famous experiment when school teachers were told one class was bright, the other backward.

The science of presence

Acupuncturist - Quest in the East

Supreme economy of energy

Finding the optimum state in which to function (Ki)

Relaxation and tension – with adrenaline.

Leads to relation between these.

The inner and the outer

Opposite the Method: a thought can lead to an emotion

Paul Eckman biochemical changes take place

We end up actually feeling the emotion.

Finding the form - dynamics

Change what audience reads (eg sitting in the chair)

Change what actor feels

Oida – let the audience in to do some of the work

Japanese, Chinese, Indian traditional theatre

What changes in the audience

When form is right audience experiences empathy.

Involuntary. eg horror movie

Mirror neurons

Throws light on catharsis

After 2 or 3 hours of theatre – laughing, weeping, holding the breath, mirroring - has something changed in the body of the spectator?

Purged – experience vicariously?

Films – Raiders of the Lost Ark, James Bond.

Good for your health?

Training of the actor

Train actors in a super psychology, or NLP

Scientifically all the nuances of behaviour?

Alec Guinness

Transference of positive energy

If I know I can make the other person do it – they do it

Great teachers – Lecoq – great work in their presence.

Acrobatics teachers

School teachers experiment