Contents

General Information

Aim

The focus of this meeting is to offer the participants the unique opportunity to understand, criticise and discuss each other's thoughts and approaches to the concept of a soul and the self and further the discourse between topic-related science and philosophy. With this in mind the actual agenda has been designed with an emphasis on discussions rather than lectures. The preparation and presentation of short talks in a non-familiar field will hopefully give further insight and understanding of other approaches.

Structure

The structure of this conference offers three forms of participation. These are participation either as a *panel member*, as a *moderator,* or as a *discussant*:

Panel members have provided a short non-technical summary of what they see as the main issues in their discipline and their personal particular approach to the notions of self and soul. In advance of the event presenters of different disciplines (public discourse / science / philosophy) were paired and asked to swap summaries. Each panel member's actual presentation will constitute a 10-minute overview of the text they received including personal reflections and maybe criticism resulting from their own expertise.

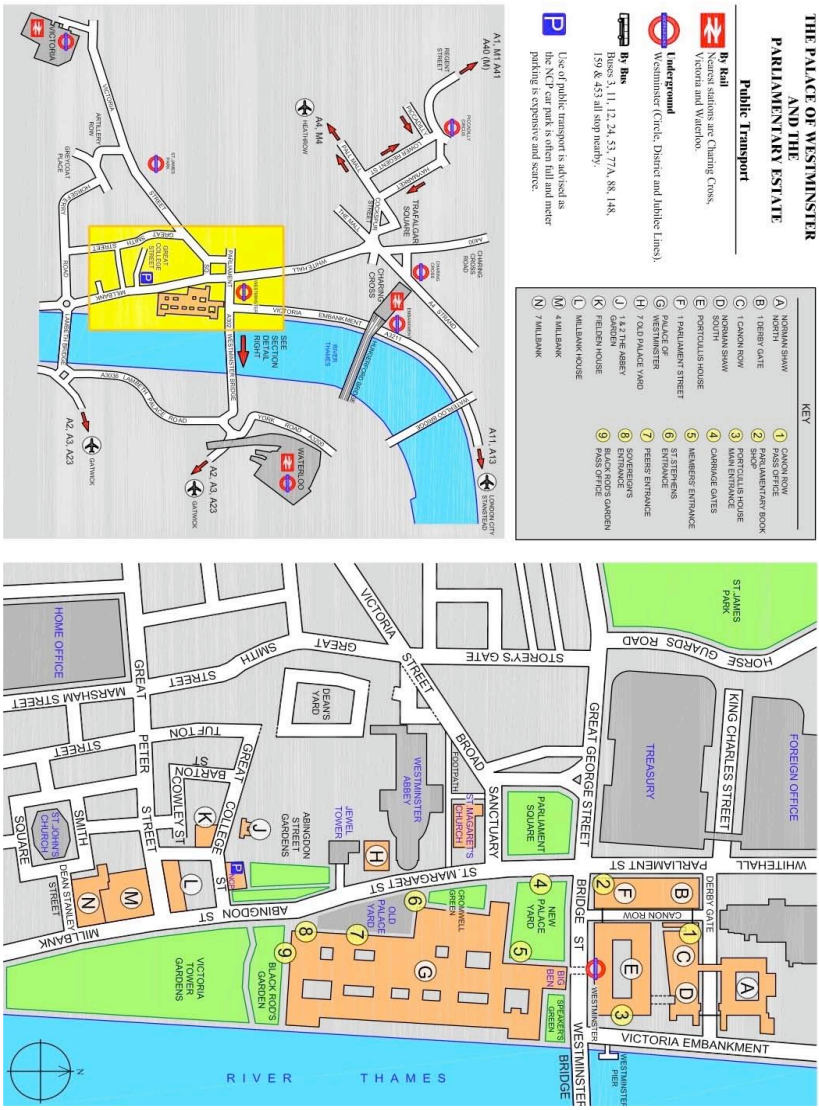
Moderators are asked to chair one of three sessions consisting of two pairs of the above-mentioned presentations and the subsequent 40-minute floor discussion.

Discussants are invited to participate actively in the discussions mentioned above and, of course, throughout the whole day.

This event was organised out of basic scientific curiosity, no funding has been obtained and no publication in relation to this event is planned. This guarantees maximum freedom of speech and outcome. However , if at the end of the proceedings, all participants agree that some form of publication would be profitable the matter can be pursued further. It also means that the organisers will not be able to cover any payment or travelling costs. On the other hand, no cover charge will be raised.

Location

Please enter through Black Rod's Garden / Pass Office (Nº 9 on map). Please ask to be directed to committee room G



Programme

Morning

10.00 General welcome (Russell Wilcox)
10.10 First Keynote: (Susan Greenfield)
10.35 Second Keynote: (John Haldane)

10.55 Coffee break

11.15 Session 1: Concepts of the Self and the Soul
First four presentations (11.15 - 11.55)
Floor discussion (11.55 - 12.35)

Afternoon

12.35 Lunch

13.30 Session 2: Approaches to studying the Self and the Soul
Second four presentations (01.30 - 02.10)
Floor discussion (02.10 - 02.50)

14.50 Coffee break

15.15 Session 3: Disciplinary Boundries and Complimentarities
Third four presentations (03.15 - 03.55)
Floor discussion (03.55 - 04.35)

16.35 Coffee break

17.00 Closing session (Michael Hill)

17.30 Conference ends.

During the day we'll organize a group of people interested in going for informal drinks and dinner

* and ° indicates who's paired with whom in the respective sessions

Name	Position	Function
Adamus Edmund	Director, Department for Pastoral Affairs, Diocese of Westminster	Discussant
Alun Anderson	Senior Consultant, former Editor-in-Chief and Publishing Director of the *New Scientist*	Discussant
Alvarez Maria	Doctor of Philosophy, Director, MA Studies, University of Southampton	Session 1 Panel*
Berlin Heather	Postdoctoral fellow, Department of Psychiatry, Mount Sinai School of Medicine, NY	Session 2 Moderator
Brown Peter	Director, Netherhall House, London	Organizer
Cleeremans Axel	Senior Research Associate, Cognitive Science Research Unit, Université Libre de Bruxelles	Session 2 Panel*
Cornwell John	Journalist and historian	Discussant
Cottingham John	Professor of Philosophy, University of Reading	Session 2 Panel*
Dee Julian	Researcher and personal assistant to Lord Williamson of Horton	Discussant
Farias Miguel	Research Associate, Ian Ramsey Centre, Theology, Oxford	Discussant
Greenfield Susan	Professor of Pharmacology, Oxford, Director of the Royal Institution of Great Britain	Keynote
Hacker Peter	Professor Emeritus of Philosophy, St. John's College Oxford	Session 3 Panel*
Haldane John	Professor of Philosophy, Director of the Centre for Ethics, Philosophy and Public Affairs, University of St Andrews.	Keynote

Hegarty Andrew	Director, Thomas More Institute London	Discussant
Henry John	Emeritus Professor, A & E Medicine, Imperial College, London	Session 3 Panel*
Hill John	Analytical Psychologist, former lecturer, C. G. Jung Institute, senior lecturer, ISAP, Zürich, Switzerland	Discussant
Hill Michael	Dphil student, Department of Pharmacology, Oxford, President of the Oxford Society for the Science of Consciousness and the Philosophy of Mind	Organizer
Howse Christopher	Associate Editor, The Daily Telegraph	Discussant
Hyman John	Doctor of Philosophy, Fellow of the Queen's College, Oxford and the Wissenschaftskolleg zu Berlin, Germany	Session 3 Panel°
Kahane Guy	Research Associate, Uehiro Centre for Practical Ethics, Oxford	Discussant
Knox Jean	Psychiatrist, editor, The Journal of Analytical Psychology, Oxford	Session 1 Panel°
Lakhani Jay	Executive Committee Member Director of Education, Hindu Council UK	Discussant
Laureys Steven	Doctor of medical science, FNRS, Cyclotron Research Centre, Liege, Belgium	Session 2 Panel°
Marsh Henry	Senior consultant neurosurgeon, Atkinson Morley Department of Neurosurgery, St. George's Hospital, London	Session 1 Panel*
Martin Christopher	Professor of Philosophy, University of St. Thomas, Houston, USA	Session 1 Panel°
Mistry Zubin	Research Fellow, Thomas More Institute London	Discussant

O'Regan Kevin	Director of Research, Centre National de Recherche Scientifique, Boulogne, France	Discussant
Posen Felix	Honorary fellow, Oxford Centre for Hebrew and Jewish Studies and the Hebrew University in Jerusalem	Session 3 Moderator
Quintavalle Josephine	Director, Comment on Reproductive Ethics	Discussant
Rees Geraint	Professor of Neuroscience, ICN/FIL Awareness Group, University College London	Discussant
Shackel Nick	Doctor of philosophy, Oxford Centre for the Science of the Mind	Session 1 Moderator
Stourton Edward	BBC journalist, Presenter of *the Today programme* and *Sunday* on BBC Radio 4	Discussant
Stuart Susan	Senior Lecturer in Philosophy, the Faculty of Arts, Humanities Advanced Technology and Information Institute, University of Glasgow	Session 2 Panel°
Taylor Kathleen	Doctor of Neuroscience, Department of Physiology, Anatomy and Genetics, Oxford	Session 3 Panel°
Valero Jack	Director regional commission, Opus Dei, UK	Discussant
Westwell Martin	Deputy director, Future of the Mind, Oxford	Discussant
Wilcox Russell	Principal Consultant, Thomas More Institute London	Discussant

Session 1

(11.15 – 12.35)

Concepts of the Self and the Soul

Moderated by:

Dr Nicholas Shackel

Panel members:

Prof Maria Alvarez

Dr Jean Knox

Prof Christopher Martin

Mr Henry Marsh

Maria Alvarez

Concepts of the Self and the Soul: Aristotle and Descartes

1. It is a philosophical commonplace that the 17th C French philosopher René Descartes introduced a new way of thinking about the human mind and the human body. In the words of Anthony Kenny, 'we owe it to Descartes that we think of mind and matter as the two great, mutually exclusive and mutually exhaustive, divisions of the universe we inhabit' (*The Metaphysics of Mind*, OUP, 1989, p.1).

2. Descartes said many striking things about mind and matter respectively. But I should like to focus on some things he said about the mind in particular. One is the idea that the mind (or soul; Descartes, likes his predecessors, used these two terms as synonyms) is an entity – an immaterial entity, but an entity nonetheless. Moreover, for Descartes, the mind is an entity that, for each of us, is identical with ourselves. For instance, in the 2nd Meditation, Descartes says:

I am, then, in the strict sense only *a thing* that thinks; *that is* I am a mind. (p.18. My italics). [1]

And later in the same Mediation, Descartes says: 'But what am I to say about this mind, or about myself?' (p.22).

3. Given this identification of self and mind, Descartes ascribes to the mind what we think of as the distinctive human capacities. So, he says that it is the mind that 'doubts, understands, affirms, denies, is willing, is unwilling and also imagines and has sensory perceptions' (p.19).

4. Descartes' predecessors, for example Aristotle and his followers,2 did not think of the mind or the soul as an entity; rather, they thought of

[1] All page references to *The Philosophical Writings of Descartes*, ed. Cottingham *et al*, CUP, 1985.

[2] Where we should include Aquinas, who accepted the Aristotelian view of the soul 'as the actuality of a body' but nonetheless tried to prove that the human soul was uniquely capable of subsistence after the destruction of the human being. That fact notwithstanding, Aquinas denied that the subsistent soul was the human person: the human person was an *animated body*.

the mind or soul 'a principle of life' that confers on us a set of capacities – capacities that, like their exercises, are properly ascribed only to the whole human being. In Aristotle's words:

To say that it is the soul which is angry is as if we were to say that it is the soul that weaves or builds houses. It is doubtless better [i.e. less misleading] to avoid saying that the soul pities, or learns or thinks, and rather to say that it is the man who does this with soul (*De Anima*, 408b, 12-15).[3]

So for Aristotle it is the man, the human person, that doubts, understands, imagines, has sensory perceptions, etc., and therefore, for him, the distinctive mental capacities belong to *the whole* human being, and not to some part of him, whether material or immaterial.

And on the Aristotelian conception, the self – the kind of thing that each one of us is – is an animated human body; that is, a living human body with characteristic capacities for rational thought.

5. Most contemporary philosophers, and many non-philosophers, reject Descartes' idea that the mind is an immaterial entity. However, many still hold the Cartesian view that the mind is an entity – though in contemporary thinking the mind tends to be conceived of as a *material* entity, namely, the brain.

So it is common nowadays to hear claims to the effect that the brain thinks, makes inferences, decides, etc.; and it is common for mental activity and processes to be identified with brain activity and processes.[4]

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[3] See also Aquinas, *Summa Theologiae*, 1a, 75, 2 *ad*2.

[4] For an example of the kind of effect this view has, consider a 'Science Matters' article that appeared recently in the *FT* Sunday magazine under the title 'Thought that counts'. The author is discussing 'the placebo effect' which, he says, suggests that our 'psychological reaction to illness affects our bodies' responses to it'. He says that, to him, this 'doesn't sound like a crazy idea'. However, when he explains this idea further, he does it as follows:

> [Recent] studies suggest that conscious and unconscious *processes in the brain* can trigger the release of the body's own chemicals that can mimic the expected effects of drugs. (My italics).

But this is a very odd gloss of the idea that *thought* processes (whether conscious or not) might affect the way our bodies' respond to illness – unless one assumes that a thought process just *is* a brain process.

What's striking about the placebo effect is that our *thoughts, hopes, etc.* seem to affect how a disease develops. The idea that certain brain processes might do so is neither striking, nor an explanation of the placebo effect. Given how the author glosses it, it's no wonder that the author doesn't find the idea that

On this modern Cartesian view, then, since the distinctive human capacities and activities are attributed to the brain, the self tends to be thought of as a brain that thinks, feels, etc., and that then moves and affects the rest of the body.

6. Those who endorse this modern Cartesian conception of the mind sometimes confess to being mystified by how this 'self', this brain, which is, after all, nothing but matter, can be conscious, have feelings and sensations, etc.

But if the Aristotelian conception of the self is closer to the truth than the Cartesian one, their mystification is, at least partly, the result of their having attributed consciousness, sensations, and in general mental capacities and activities to the wrong thing, namely to the brain – rather than to the whole human being.

'our psychological reactions to illness affect our bodies' a crazy idea.

Jean Knox

Concepts of the Self and the Soul: The Self – an emergent Soul?

Jung conceived of the Self as both the source and goal of psychic development and as an innate organising structure in the human psyche. However, the idea of a self or soul, existing a priori, is largely incompatible with the models of the human mind emerging in contemporary developmental research. Attachment theorists propose that the sense of self is acquired through early attachment relationships. Allan Schore writes 'The core of the self lies in patterns of affect regulation that integrate a sense of self across state transitions, thereby allowing for a continuity of inner experience'. There is no suggestion of a pre-experiential self that guides this development. Peter Fonagy and others extend the developmental view that the sense of self is not innately given but 'arises out of the infant's perception of his presumed intentionality in the mind of the caregiver'.

So, if contemporary developmental research suggests that the self emerges out of relationships with others, how can we define the self and what are the implications this carries for the concept of the soul? Is there some 'innate' striving towards 'the good' and what part does actual experience play in this? Contemporary developmental research emphasises the self-organising nature of the human psyche, with no role for any organising principle other than that of immediate experience of relationships with others, which are internalised to form a sense of oneself in one's own history, and the construction of the internal psychic structure of the autobio-graphical self.

There is a paradox inherent in this developmental and emergent view of the self; it is that we become fully human, aware of ourselves and others as psychological and emotional beings and capable of empathy and identification with each other, only when others consistently relate to us as fully human from the earliest moments of infancy. In other words the parent's perception of their baby as a human being with a self, long before the infant has any such sense of self, is precisely what allows the self to develop. The parent attributes a mind and emotion, even a soul, to the infant long before the infant has any capacity for complex thought or feeling or for any degree of self-

reflection or moral awareness. It is this 'reflective function' of the parent which provides the secure foundations for a solid sense of identity- a self, and an accompanying capacity for a moral attitude to self and other- at least one of the attributes of a soul.

The absence of this parental attitude is devastating, leading to life-long states of mind in which people feel that they do not really exist, that they have a kind of psychic 'black hole' at their very core and to endless painful attempts to achieve a sense of reality and emotional depth by imitating others who seem to have such experiences. In this state, a person does not experience themselves as having a self nor a soul so, without that subjective sense, how do we know whether such things exist?

Henry Marsh

Concepts of the Self and the Soul

I am a neurosurgeon. I am not a philosopher, nor am I a neuroscientist. In fact I originally studied PPE at Oxford many years ago but found it largely beyond me and decided to take up something simpler and so became a Brain Surgeon instead. You may laugh but Brain Surgery, alas, is much cruder and technically less difficult than commonly supposed and what I do is closer to simple craftwork than philosophy or science.

But what is special about Brain Surgery is the fact that it is very dangerous. A few millimetres of damage to the brain can cause catastrophic disability whereas the other organs of the body can sustain much greater damage and still work well enough. And the damage that can result is not only a question of paralysis or blindness – so-called 'physical' disability. Our ability to think and to feel, and to make judgements and to plan for the future can also be damaged because our real identities, our true selves, are our brains. And the sound of my voice in your ears, and whatever you may be thinking about what I am saying, and the feeling of your body on the seat on which you sit, your sense of self and your consciousness – all this is the activity of one and half kilograms of fatty protein hidden away inside your skull. A photograph taken down an operating microscope at low power of the brain – *this* is the real You.

The fact that thought itself, which feels as free as air, is a physical process has only become apparent in the last hundred and fifty years. All the other great realizations that mankind has experienced, that contradict the obvious, common-sense evidence of our eyes and immediate perceptions – that the earth is round, that air is a substance, that the Earth goes around the Sun, had some basis in everyday experience and where not profoundly at odds with it. Ancient mariners could see the Earth's curvature, one could feel the wind on one's face, the movements of the Sun and stars could be closely observed. But the fact that our thoughts and feelings, our decisions and choices, that our very consciousness are the electro-chemical chatter of the neurones in our brain is really very hard to comprehend. And yet it is a fact beyond all reasonable doubt and it is a fact which, as a Brain Surgeon on the Clapham Omnibus, I see every working day of my life.

It is a point that has been made many times before that different ages and cultures have used different analogies with which to understand the brain. We are condemned, after all, to understand a new phenomenon in terms of things we already understand. Aristotle, for instance, saw the function of the brain as some kind of refrigerator, for cooling the blood. In the seventeenth century, when hydraulic engineering represented the height of modern technology, and wealthy monarchs spent small fortunes on fountains and water-effects in their palace gardens, Descartes saw the nervous system as functioning like a series of hydraulic pipes and channels. In the nineteenth century the brain was compared to a telephone exchange and in the modern era, of course, to a computer, with Mind as the software written on the hardware of the Brain. But the problem is this – we have never met a brain before and it is by no means certain that our existing intellectual categories and world-view can comprehend the brain. Indeed, some have argued that the human brain will never be able to understand itself, rather as Richard Feynman said that nobody can understand quantum mechanics, and that one just has to accept the weird and paradoxical results of experimental physics.

But whether it is the case or not that the human brain can or cannot understand itself (and personally I don't know!), the indisputable fact that our thoughts and feelings are the product, or perhaps one should say actually *are*, the electro-chemical activity of brain cells might mean that some of our most cherished beliefs – belief in the human soul, in the afterlife, that criminals *deserve* to be punished – become rather difficult to maintain. Now this is starting to stray into philosophy so I shall turn away from difficult abstractions and tell you about what neurosurgeons call bi-frontal contusions.

In a post-mortem slice from the brain of somebody who has died from frontal contusions you can see that the brain tissue is pock-marked with many small areas of bleeding. Such head injury is called closed head injury as opposed to penetrating injury from a bullet or sharp object which in fact can often cause less damage than a closed injury. With closed injury the brain will be violently accelerated and decelerated within the bony confines of the skull – imagine shaking a jelly in a Tupperware container. Various patterns of damage to the brain result from this process, depending on the forces involved. One particular pattern is that of bifrontal contusions – where the under-surfaces of both frontal lobes are bruised by being flung against the bony floor of the skull. 'Bruising' means bleeding but whereas bleeding into the skin and muscles does not cause irreparable damage bleeding into the brain can, and will, cause damage. Damage to the front of

the human brain causes personality change. It does not cause paralysis or blindness but instead the way people behave – in other words their social and moral behaviour – can be profoundly altered, almost invariably for the worse. The first such case described in the medical literature was the famous one of the American railroad worker Phineas Gage. He had suffered a singularly unusual and very obvious penetrating injury. He had been tamping gunpowder down for blasting rock with a long metal rod when the gunpowder exploded and drove the iron rod straight through the front of his head and brain. Even more unusually, he survived and it became clear that whereas he had once been a hard-working, God-fearing man after the injury he became coarse and disinhibited, intemperate and unable to hold down a job. The French neurologist Broca had shown that human speech was organized in the left side of the brain. It now became apparent that social and moral behaviour was linked in some way to the frontal lobes of the brain. Indeed, comparative anatomy shows that it is the size of the frontal lobes of the human brain that distinguish us from our primate relatives such as chimpanzees.

People who have suffered bi-frontal contusions will usually leave hospital after a few weeks looking – superficially – reasonably normal but if one sees these patients many months or even years later it is obvious that many of them have suffered severe personality change. Many of them will have become bad-tempered, coarse and inappropriate, selfish and inconsiderate. There is a certain dullness to their faces – the light has gone out of their eyes. Once the initial hope for a good recovery has passed their marriages and relationships will usually fail and few will get back to regular employment again. The degree of these changes is very variable and depends on the extent of the brain damage but what is utterly obvious is that whatever it was that made them the people they were before the injury has been changed by physical changes in the front part of their brains. If somebody is left paralysed or blinded or crippled by brain damage it is easy enough to feel that their real or essential, human self is still intact and that it is, in some way, separate from their physical existence. But it is difficult, I would say impossible, to go on believing this when you see people who have suffered significant personality change after frontal brain damage, especially if you had known them before the damage occurred, as can happen sometimes, alas, after operations on the brain. In other words, when we die our brain decomposes along with the rest of our body into atoms and molecules and all that is left of us as conscious, social creatures are the ephemeral memories of those who knew us and the consequences of our actions.

My conclusion, therefore, which I find quite sad, is that I cannot believe in any kind of human soul that can exist separately from our brains. I cannot, therefore, believe in any kind of afterlife and I think most religions become disabled if one takes away the afterlife. Unlike some of my more aggressive scientific colleagues I do not believe that religion is for the feeble-minded or that belief in God is a delusion but I do believe that the deepest of all human feelings is hope - the hope that flew out of: Pandora's box, the hope that makes today bearable because we always hope that tomorrow will be better. Religion, for all its faults, is all about hope, the hope of resurrection and of eternal life, of overcoming illness, of the righting of wrongs, of reward for suffering – and life is a little sadder without it.

Christopher Martin

Concepts of the Self and the Soul: Thoughts and brain-processes

Philosophers have been moving away from a concept of the self or person as an independent subject of private thoughts, and towards a more ancient conception of the self or person as the subject of all actions: thus, towards the concept of the person as the complete human being.

Nevertheless there remain some problems about the human being as the subject of thoughts. As we come to know more and more about the brain and the central nervous system, is natural to say that thoughts are embodied in or rest on processes in (typically) the brain. After all, we can associate processes in the brain with physical activity, as well as with thoughts. In those cases where there is no physical activity, we feel inclined to say that there exist brain processes nonetheless, and the thought rests on these.

This might perhaps be unexceptionable. But there is a further step which can be taken, which is more doubtful: to identify thoughts with brain processes.

There are objections to this step, based on the well-known logical principle that if a is identical with b, then anything which is true of a must also be true of b. Applying this principle to the case at issue seems to give some very odd results.

First, a thought or judgement seems to be something that I do, while a process in my brain seems to be rather something that happens to me.

Secondly, brain processes seem to have a place and to take time to occur, while it does not seem to be true that I make my thought or judgment in any place. It can also be argued that judgements do not take time, or at least that they have no seriality: a thought that tigers are dangerous is not the same as a thought of tigers followed by a thought of danger. The thought of tigers and the thought of danger need to be present together for the judgement to be made.

Thirdly, thoughts are identified not only by the thinking subject, but by their logical content. Two persons can have the very same thought,

but clearly processes going on in two brains are two sets of processes, not one.

Fourthly, thoughts can enter into logical relations. A thought that tigers are dangerous logically implies a thought that some animals are dangerous (even though this inference might not be drawn), while the closest relations between brain processes are causal.

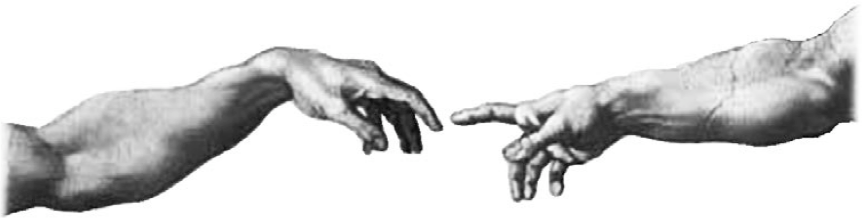
Thus we can argue that thoughts have a number of properties which brain processes do not, and vice-versa. By the logical principle about identity we gave above, it would be impossible for thoughts to be identical with brain processes. Still worse, some of the properties we have mentioned _ such as the logical content and logical relations of thoughts, and the spatio-temporal properties of brain processes _ do not belong to their subjects merely accidentally, but actually individuate them: they make the thought to be the thought that it is, or the brain process to be the brain process that it is. If this is so, we cannot identify thoughts with brain processes, and need to seek for a more complex relationship between them.

Notes (Session 1)

Session 2

(01.30 – 02.50)

Approaches to studying the Self and the Soul



Moderated by:

Dr Heather Berlin

Panel members:

Prof Axel Cleeremans

Prof John Cottingham

Dr Steven Laureys

Prof Susan Stuart

Axel Cleeremans

Approaches to studying the Self and the Soul: Conscious experience as the brain's unconscious understanding of itself

If by "soul" one means an immaterial substance that is separate from the body and that may exist independently of it, then clearly the concept is incompatible with a materialistic approach to the mind. Yet, each of us has a soul of sorts — not merely a representation of the fact that we are intentional agents separate from the rest of the world, but an emotion-rich notion of who we are: Each of us has hopes, dislikes and desires, regrets. This is what needs to be explained. There is no reason to believe that such an explanation will not take the form of a scientific account — one that makes it possible to reductively understand how brain activity produces certain mental states. There are many pitfalls along the way, however.

The first is the temptation to ignore the environment with which each of us is constantly interacting. The brain's activity is shaped by such interactions, and indeed, we probably would not need a brain if it were not to learn about how to adaptively "move around" in the world.

The second is the temptation to ignore the importance of time: Not only is the brain's activity shaped by its interactions with the environment, but it is also very much shaped by the history of its interactions with the environment. Neuroscience, in this respect, has already "re-enchanted" hard-core reductionist accounts of the mind by showing that each experience leaves a trace in our neural pathways: Our brain learns all the time, whether we intend to or not. This should be of comfort to those who worry that contemporary neuroscience is robbing us of our individuality and of our ability to make choices: Yes, our mind is entirely determined by the activity of our neurons, but, crucially, the activity of our neurons is in turn (almost) entirely determined by the history of our interactions with the world, with others, and, crucially, with itself.

The third pitfall is the temptation to ignore the fact that there are many, many levels of description sandwiched between neural activity and our mental states. Just as it doesn't make much sense to explain

what's shown on television by examining circuit diagrams, so is explaining what makes you you based on an analysis of your brain's activity almost meaningless: It is the wrong level of description for what is an immensely complex, layered, heterarchical system that affords many kinds of description and that is determined both by proximal as well as by distal causes. Thus while I can certainly assert that my mild phobia for bees is a consequence of my amygdala lighting up whenever a bee is buzzing around me, the real deal is in explaining why my amygdala lights up whenever I see a bee (i.e., because I was bitten on the foot by one when I was three, and because this painful experience left a durable imprint in my brain).

From this perspective, I would like to defend the view that consciousness involves what one could "radical plasticity": It is in virtue of the fact that the brain learns not only about the environment and about others, but also about itself, that we enjoy conscious experience. In this light, experience is a consequence of the brain's understanding about its own workings; the self is the brain's understanding about what it takes to be someone like us, and the soul is shorthand for conveying what constitutes the essence of a person. Consciousness is thus rooted, fundamentally, in the brain's ability to learn continuously about the consequences of its own activity.

John Cottingham

Approaches to studying the Self and the Soul

If we take the soul to refer to the mental part of us, there are two traditional philosophical approaches which seem to me misguided. The first is reductionism— the attempt to explain consciousness in purely material or physiological terms. This approach will not work. Although the electrical and chemical processes in our brains may be the *basis* of consciousness, not even the most meticulous examination of those processes could fully explain our mental life. For the beliefs and desires that comprise our mental life have to be *interpreted* in order to be understood; they have to be fitted into a web of explanations that disclose their *meaning*— how they relate to a pattern of thoughts and feelings, inclinations and aversions, goals and aspirations. The language of physical science is by its very nature unsuited to this task.

At the opposite end of the spectrum from reductionism is dualism— the view that the mind is an entirely immaterial substance. This approach seems equally misguided, since it fails to account for the intimate interdependence between mind and body. We are not angels making use of bodies, ghosts mysteriously inhabiting physiological machines; human beings are, as Aristotle rightly told us, a kind of animal. It is sometimes thought that standard religious belief involves dualism, but this is wrong. Mainstream Christian thought regards humans as essentially embodied creatures (thus Aquinas calls a disembodied spirit an 'incomplete' substance, and the Christian Creed asserts the resurrection of the *body*, not the survival of an immaterial soul).

A third, and more promising approach, stemming from Aristotle, is known as hylemorphism; this regards mental properties as logical or organizational properties of a physical system. Reference to the body is essential, but we need to look not just at the physical *structures* of which we are composed, but at how they enable us to *function* systematically as living, sensing, thinking creatures, in our interactions with others, and in the plans and projects which compose our lives.

The self is simply the soul understood as persisting over time. Some philosophers have tried to reduce the self to certain relations of physical or psychological continuity; others (most famously David Hume) have questioned the very existence of a self. But again it is the dimension of *meaning* that seems to me crucial. Philosophers like Alistair MacIntyre and Charles Taylor have rightly stressed that the self is an essentially *narrative* concept. To understand myself I need to locate myself in a story, which connects my present position with an understanding of how I became what I am. This is not a neutral, impersonal, scientific project, but an essentially individual ethical enterprise; for my life to be worthwhile, I need to discern the lessons of the past and to strive for increased moral maturity and self-awareness. Physical science may of course help in this task (behavioural or pharmacological research may be useful when things go wrong). But the main weapons in the study of the self are not scientific but *hermeneutic*: reflection, self-analysis, interpersonal dialogue, meditation. This takes us beyond science, and indeed beyond most current analytic philosophy. Many moral philosophers today treat our minds as transparent goldfish bowls whose contents ('beliefs' and 'desires') are easy to discern. But as the discourses of psychoanalysis and of religion both (in different ways) recognize, there are much deeper and more complex sources of the self, in which symbolic and multi-layered modes of awareness play a crucial role. Any approach to the self, whether scientific or philosophical, which ignores this rich interior dimension is likely to be seriously impoverished.

Steven Laureys

Approaches to studying the Self and the Soul: Consciousness In The Vegetative State

We will here discuss brain function in altered states of consciousness such as: brain death, coma, vegetative state, minimally conscious state and locked-in syndrome. The interest of this is twofold. First, patients with altered states of consciousness continue to represent a major clinical problem in terms of clinical assessment of consciousness and daily management. Second, these patients offer the opportunity to explore human consciousness. The vegetative state represents a unique and complete dissociation between the two main components of consciousness: wakefulness -which is preserved- and awareness (of environment and self) -which is abolished.

Compared to the conscious resting state, global brain metabolism has been shown to be significantly reduced in the vegetative state (approximately 40 to 50% of normal values). Similar values have been observed in coma, slow wave sleep and general anesthesia. However, the recovery of consciousness from vegetative state is not always associated with substantial changes in global metabolism. This finding led us to hypothesize that some vegetative patients are unconscious not just because of a global loss of neuronal function, but rather due to an altered activity in some critical brain regions and to the abolished functional connections between them. In the vegetative state, the most dysfunctional brain regions are bilateral frontal and parieto-temporal associative cortices. Similarly to the vegetative state, albeit much more transient, dissociations between wakefulness and awareness resulting in 'automatic' unwilled action have shown decreased blood flow in this frontoparietal network when patients suffer from complex partial seizures, absence seizures and sleepwalking. Despite the metabolic impairment in vegetative patients, external stimulation still induces a significant neuronal activation as shown by both noxious and auditory stimuli. However, this activation is limited to primary cortices and dissociated from higher-order associative cortices, thought to be necessary for conscious perception. Finally, vegetative patients have impaired functional connections between distant cortical areas and between the thalami and the cortex and, more

importantly, recovery of consciousness is paralleled by a restoration of this cortico-thalamo-cortical interaction. Awareness hence seems to rely on the functional integrity of a critical frontal-parietal global neuronal workspace and its intra- and subcortical connections. Neuroscience does not need the hypothesis of a spirit or soul as a self-aware *ethereal substance* particular to a unique living human being.

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Susan Stuart

Approaches to studying the Self and the Soul

According to Kant [1781/87 & 1929] the most we can say about ourselves is that we are logical subjects of thoughts, necessary for the very possibility of coherent cognition. We look for the self, we reflect, and we find no thing, nothing that is the bearer of properties, and we try to conjure it up in the concept of a soul or mental thing [Descartes 1968], or a bundle of discrete perceptions [Hume 1739]. But we must reorientate ourselves; a view that begins and ends inside, as Hume's does, is doomed to go nowhere. In Kant's notion of the logical subject, the search for the self is also stymied but only because the self is there in the very act of seeking, and the seeking must be thought of, for Kant, in terms of active agency within an objective world.

Few of us would disagree that self-consciousness requires the existence of a perceiving and conceiving being that acts and interacts with other objects and organisms in, what must at least appear to be, an objective world. This perceiving and conceiving being requires embodiment and embeddedness within its world; it is 'fallen' [Heidegger 1962], necessarily adaptable, necessarily technological, extending itself through the use of tools, restoring lost functions and replacing lost organs and limbs. But also enhancing and reconfiguring itself, augmenting its capabilities and pushing itself further into its world and away from the first place Hume and Descartes are inclined to look. The self is not the body. The self is not the mind. The self is active agency within the world. But can this be sufficient for the formation of selfhood.

The notion of acting and interacting with things in the world, of enaction [Varela, Thompson & Rosch 1991], is necessary, although it is insufficient for bringing forth the self. The development of self-consciousness and selfhood requires intersubjective openness. Self-consciousness is formed in the interrelation of self and other, that is, selves are inherently intersubjective. [Zahavi 1997; Thompson 2001] As

active agents we are capable of distinguishing animate from inanimate objects, but as selves we must be capable of distinguishing the minded animate from the non-minded animate. Smith [1759] and Stern [1985] emphasise the force of recognising that others have mental states as a way of driving home to us the existence of our selves, for only in the eyes of the 'other' can we see our selves 'reflected'. [Buber 1923]

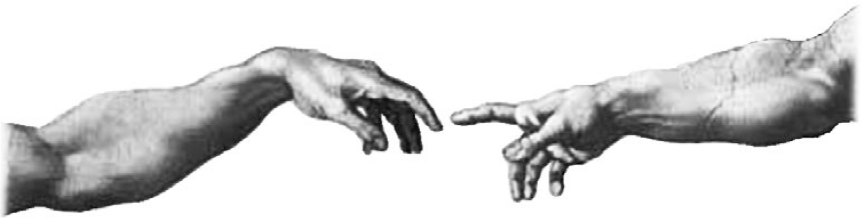
Acting, experiencing, and intersubjective openness might together be the necessary and sufficient conditions for the formation of the self but they cannot be for the persistence of the self – though we must distinguish between self-attribution and other-attribution of 'self' or personhood. The acting, experiencing and empathic elements might cease in the individual in a persistent vegetative state, and we may be led to conclude that there is no longer the capacity to lay down new memories, and even that the brain has lost its plasticity and, thus, capacity for learning, but we would be less inclined to say that the person has ceased to exist.

Notes (Session 2)

Session 3

(03.15 – 04.35)

Disciplinary Boundries and Complimentarities



Moderated by:

Mr Felix Posen

Panel members:

Prof Peter Hacker

Prof John Henry

Prof John Hyman

Dr Kathleen Taylor

Peter Hacker

Disciplinary Boundaries and Complementarities: Philosophy and Neuroscience

Philosophy is an a priori conceptual investigation. It investigates the conceptual scheme in terms of which we articulate truths (and falsehoods), and form explanatory theories about the world. Its primary tasks are to clarify the principles of inference constitutive of rationality and the canons of reasonableness constitutive of moral and political discourse, and to elucidate the web of our concepts and their conceptual connections.

Cognitive neuroscience is an a posteriori empirical investigation into the cerebral structures that endow animals in general with cognitive powers and mankind in particular with the distinctive powers of intellect and will. Its primary task is to discover the neural vehicles of cognitive faculties and the neural processes accompanying their exercise.

Discoveries in physics can neither confirm nor confute a mathematical conjecture – no empirical facts can prove a mathematical theorem. So too, no neuroscientific discovery can contribute to the solution of *any* philosophical, conceptual, problem. It can only provide grist for philosophical mills. For neither empirical facts nor theories can contribute to the clarification of what does or does not make sense. Investigations into the bounds of sense are the province of philosophy.

Conversely, no philosophical argument can determine the *empirical* truth or falsity of a neuroscientific theory. The crucial task philosophy can perform for neuroscience is to clarify whether a neuroscientific theory *makes sense* or whether it transgresses the bounds of sense (e.g. the incoherence of the standard Sperry-Gazzaniga explanation of the results of commissurotomy, or of Weiskrantz's description of 'blindsight', or of Libet's work on

voluntariness).[1] Since cognitive neuroscience operates across the boundary between the neural and the psychological, it is especially susceptible to conceptual entanglement, as is evident in the dualism of the great work of Sherrington, and his pupils Eccles and Penfield a generation or two ago, and in current work of Crick, Edelman and Damasio, which is enmeshed in the mereological fallacy.[2]

It is not the task of neuroscience to discover what the mind is. Its role is to discover the neural basis that enables creatures that have a mind to exercise their mental faculties. Still less could it be its task to discover what the soul is. Such questions lie within the province of philosophy. For they are questions calling out for clarification of sense. What needs to be clarified is: what is meant by 'soul' or 'mind'? What has to be true of a creature in order for it to be said to have (or lack) a soul or mind? Is it intelligible to identify the mind (or soul) with an entity of any kind? The empirical questions of whether humans have a mind or a soul have obvious answers that require no neuroscientific investigation. For to have a mind is to have the distinctive powers of intellect and will that characterize language-using animals such as us, who have the power to reason and to act for reasons. To have a soul, however, is to possess a distinctive range of value-laden capacities – the power to distinguish good and evil, to appreciate the beautiful, to renounce the hedonic and advantageous for the sake of the right and the good. Of course normal human beings have a mind and a soul – although they can, alas, lose their mind, and, sadly, sell their soul. Neuroscience aspires to cure the former loss. The latter, however, is up to each person alone – it is a responsibility that goes with being human.

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[1] For discussion of these, see M. R. Bennett and P. M. S. Hacker, *Philosophical Foundations of Neuroscience* (Blackwell, Oxford, 2003).

[2] The fallacy of attributing to parts properties that can intelligibly be ascribed only to the wholes of which they are parts. In the case of neuroscience, it is the fallacy of attributing cognitive functions that can be ascribed only to the human being as a whole to the brain, in order to explain cognitive deficiencies in human beings. (See Bennett and Hacker, ibid.)

Disciplinary Boundaries and Complementarities

In order to gain the fullest possible understanding of the human person it is essential for both the empirical sciences and the philosophical sciences to work hand in hand. For this to be fruitful, or even possible, in practice, it is necessary clearly to define the boundaries between the two disciplines. These boundaries are most clearly delimited according to the different objects of knowledge with which each of these sciences is concerned, and in this context it is useful to invoke a further distinction between them and the mathematical sciences. Moving from the empirical, through the mathematical, to the philosophical (or metaphysical) sciences, there is exhibited an increasing level of abstraction, such that the formal objects of knowledge of each science imply different levels of disengagement (or abstraction) from matter. Some objects are such that they depend on matter to be, because they can only exist in matter. These can be further subdivided into objects that depend on matter both to be and to be understood, owing to the fact sensible matter is included in their definition (eg. flesh, bones, chemicals, atoms), and objects that, whilst depending on matter to be, do not depend on it in order to be understood, since sensible matter is not part of their definition (eg. lines and number). The former are the objects of the physical sciences and the latter the objects of mathematics. Finally, there are those objects which do not depend on matter in order to be, since they can exist apart from it, either because they are never in matter, or because they sometimes are and sometimes are not in matter (eg. substance, being, potency, act, quality etc.) These are the proper objects of the philosophical sciences and they include within their scope, the type of disciplinary boundary-setting engaged in here.

It might be thought, given the foregoing, that the empirical, and in particular, the neurological sciences have nothing to contribute to the understanding of the person and the self, but this would be quite wrong. Whilst they cannot determine properly philosophical questions such as the definitions of, for example, the person per se, they can say a great deal about how an individual will react in particular material situations. More precisely, they have a great deal to say about the physical conditions necessary to facilitate the fullest possible exercise of

a human being's distinctively human and personal functions such as the acquisition of knowledge and the exercise of conscious decisions, which involve free will. In other words, it does not require a reductive, or fully materialist conception of the self and the soul to recognise that the precise conditions of an individual's embodiment, profoundly affects their personhood. This is, of course, most noticeable in the whole area of habit acquisition and the cultivation either of virtues or of vices. In my own area of expertise, it is seen starkly and disturbingly in the area of drug misuse and mental illness. Drug misuse and addiction have a profoundly physical base and can have major neurological consequences, but, as a direct result of these, they inevitably also have profoundly personal consequences too.

John Hyman

Disciplinary Boundaries and Complementarities

Philosophy has two complementary aims, one constructive and the other destructive. The constructive aim of philosophy is to provide a relatively systematic and explicit exposition of the principal concepts or ideas used in a domain of thought; and to modify or replace existing concepts, when they are confused or give rise to paradoxes. In some parts of philosophy—e.g. ethics—the domain of thought is one we all inhabit, simply in virtue of being mature, socialized human beings, whereas in other parts of philosophy— e.g. philosophy of physics—it is not. When it succeeds, this kind of philosophy makes us self-conscious thinkers, aware of the structure of our own systems of concepts and ideas. The destructive aim of philosophy is to expose and criticize the errors and myths that dominate our thinking when this systematic and self-conscious use of concepts fails. For example, in ethics, the claim that only pleasure and pain have intrinsic value; in metaphysics, the theory that space and time are created by the mind; and in psychology, the idea that thoughts, feelings and perceptions are electrical activities in the brain. It was because he was so preoccupied with philosophy in its destructive mode that Wittgenstein described the philosopher's treatment of a question as being like the treatment of an illness.

The analysis and criticism of concepts probably began, historically, with ethical and religious concepts. But wherever it begins, it is bound to ramify throughout our lives; and scientific concepts—together with ethical, logical and psychological concepts—have been at the heart of philosophy throughout the modern period. Today, some philosophers working in the philosophy of mind are interested in concepts that were invented for scientific purposes, such as Helmholtz's concept of unconscious inference or Weiskrantz's concept of blindsight. But everyone who works in the philosophy of mind is likely to have some interest in scientific psychology. There are several reasons for this, but two seem to me especially important.

First, the philosopher J.L. Austin remarked in the 1950s that 'over-simplification, schematization, and constant obsessive repetition of the

same small range of jejune "examples" are ... far too common to be dismissed as an occasional weakness of philosophers.' This remains true. Scientific psychology can provide philosophers with a wealth of examples to challenge over-simplified and crudely schematized philosophical ideas—examples which also have the signal advantage of being real.

Second, philosophical ideas—many of them myths—have had a profound influence on scientific psychology: for example, the idea that colours exist only in the mind, and not in the physical objects we perceive; or the idea that voluntary movements are caused by a special kind of conscious thought (an intention or volition or act of will). Philosophers are interested in tracing the influence of these kinds of ideas, and replacing them with a clearer picture of the fundamental concepts they involve.

The case of voluntary movements is especially striking, because it has had such a direct impact on research. I am thinking of Libet's research in the early 1980s, which appeared to show that when we make movements we regard as voluntary, the motor cortex initiates the movement before we are aware of any conscious intention or desire to move. This research was thought by some (e.g. Wegner) to prove that free will is an illusion, and by others (e.g. Libet himself) to prove that the scope of free will is smaller than we think. According to Libet, the experience of freely producing movement is an illusion; but we may be able to freely prevent movements which have been initiated unconsciously.

What will immediately strike anyone with some knowledge of philosophy about these interpretations of Libet's results, is that they both rely on an implicit assumption about the nature of free action, namely, that it must be preceded by a conscious experience of wanting or intending to perform the action. This assumption was accepted by many philosophers in the empiricist tradition (e.g. Hobbes, Locke, Mill and William James), but it was always contestable, a considerable number of philosophers have argued against it since the 1930s (e.g. Wittgenstein, Ryle, Anscombe and Kenny), and Libet's results can just as easily be interpreted as further evidence that it is not true.

This is just an example. It is meant to illustrate how ideas unconsciously inherited from the philosophical tradition can influence the interpretation of experimental data in psychology, and therefore how philosophical criticism can have an impact across the boundary between the two disciplines.

Kathleen Taylor

Disciplinary Boundaries and Complementarities: Brains, Selves and Souls

Traditions which distinguish souls and selves, like Christianity, typically view the self as imperfect, doomed to dissolution, and the soul as nonmaterial, immortal and purified of bodily corruption. Both concepts serve numerous purposes for their users. Two are particularly relevant to neuroscience:

1. souls and selves express the richness and value of personhood, the sense that human beings are more than just animate lumps of meat.

2. souls, unlike selves, offer the hope of life after death.

Neuroscientists assume that whatever makes us derives from an embodied functioning nervous system (FNS) interacting with an environment. Remove any of the three components – FNS, body, or environment – and it becomes unclear how anything approaching a person could develop. Since brains and bodies cease to function at death, neuroscience struggles with the idea of an immortal soul, unless death precedes some form of re-embodiment.

Mortal selves, seen as graded and composite, are more palatable. Conceived of in narrowly cognitive terms as neurally-processed information (stored in the FNS by networks of nerve cells communicating via synapses), they were localised to prefrontal areas of the brain, areas associated with 'high-level' functions like rationality. As neuroscience shook off cognitivism, however, it recognised the importance of other regions: parietal cortex for integrating body-knowledge, the cingulate, linked to emotion processing, motor areas, etc. Embodiment, emotion and agency, as much as rationality, appear to underpin the development and maintenance of selves.

To simplify: three main concepts of self emerge from brain research. The (self)conscious 'I' is a gradually developing representation of an individual agent, differentiated by awareness of and partial control over sensory input, cognitions and emotions, and by the capacity to initiate action. The 'current self' is broader, locating selfhood not just in a specific 'I'-representation, but in all active neuronal networks. This in turn can be extended to the totality of synapses within an FNS (the 'synaptic self'). Recently social neuroscience has begun to acknowledge how deeply selves are embedded in belief systems – ideologies, religions, cultures – and within relational networks. (Here the theological concept of personhood is relevant.) Neuroscientists would maintain, however, that all such relationships are mediated via changes in how neurons communicate. This may seem reductive, but it actually enriches our understanding, in that nervous systems respond to many factors whose effects on our selves we may not normally notice: immune and hormonal changes, light levels, etc.

Perhaps neuroscience could accept the soul by conceptualising it as an ideal or potential self: the kind of person, given a particular allocation of DNA, who would result from an embodied FNS developing under optimal social and physical conditions. Whether such conditions exist, and if so what they are and whether it is useful to specify them, are fascinating questions for neuroscientists, and an example of how they can learn from other disciplines – such as theology, philosophy and anthropology – to strengthen core concepts.

Reciprocally, neuroscience's focus on embodiment, emotion, agency and development may have much to offer beyond its boundaries, enriching as well as constraining possibilities.

Notes (Session 3)

Curricula vitae of the keynote speakers, moderators and panel members

Susan Greenfield

Baroness Greenfield is Director of the Royal Institution of Great Britain (the first woman to hold that position) and Professor of Pharmacology at the University of Oxford, where she leads a multi-disciplinary team investigating neurodegenerative disorders. In addition she is Director of the Oxford Centre for the Science of the Mind, exploring the physical basis of consciousness.

Her books include "The Human Brain: A Guided Tour" (1997), "The Private Life of the Brain" (2000), and "Tomorrow's People: How 21st Century Technology Is Changing the Way We Think and Feel" (2003). She has spun off four companies from her research, made a diverse contribution to print and broadcast media, and led a Government report on "Women In Science". She has received 28 Honorary Degrees, Honorary Fellowship of the Royal College of Physicians (2000), a non-political Life Peerage (2001) as well as the Ordre National de la Legion d'Honneur (2003). In 2006 she was installed as Chancellor of Heriot-Watt University and voted `Honorary Australian of the Year'.

John Haldane

John Haldane is Professor of Philosophy at the University of St. Andrews, where he also directs the Centre for Ethics, Philosophy and Public Affairs. Since 2002, he has served as the Director of Teaching in Philosophy at St. Andrews. Haldane attended the Kent Institute of Art and Design in Rochester, the Wimbledon School of Art in London for a B.A. in Fine Art in 1975, University of London, Institute of Education for a P.G.C.E. degree in 1976, and the University of London, Birkbeck College for a B.A. in Philosophy in 1980; and a Ph.D in 1984. He has taught at universities across the U.K. and in the U.S. as well, including the Thomistic Institute at the University of Notre Dame in 1994, 1996, 1999 and the University of St Thomas in 2003.

His Atheism and Theism, co-authored with J. J. C. Smart (Blackwell, 1996), was listed by Blackwell in its "Tomorrow's Classics" list. His Intelligent Person's Guide to Religion was published by Duckworth in 2003, and Faithful Reason: Essays Catholic and Philosophical by

Routledge in 2004. He has published articles on a wide variety of topics, including aesthetics, art, philosophy of education, ethics, the history of philosophy, the philosophy of mind, political and social philosophy, and theology.

Nicholas Shackel (Moderator)

Dr Shackel's philosophical work is mainly on rationality. He has worked on problems concerning the kinds of obligations there are to be rational in belief and in action, on the relations between practical and theoretical reason, on paradoxes of rational decision, philosophy of probability, philosophy of action and intentionality, and deontic logic. He is also interested in defending robust notions of epistemological rationality from sceptical difficulties. His publications include papers in British Journal for the Philosophy of Science, Erkenntnis, Metaphilosophy and Mind. Prior to joining the Oxford Centre for the Science of Mind he lectured in philosophy at the University of Aberdeen. At OXCSOM Dr Shackel has been working on relations between belief and consciousness, including on the concept of a belief system and on the conceptual framework for understanding how such things are instantiated in the brain, and has considered related questions about well-being and rationality. Dr Shackel has also been involved in an interdisciplinary team on the neuroscience of religious belief and moral judgement.

Maria Alvarez

Maria Alvarez ((BA London, MPhil Glasgow, PhD London), is a Lecturer in philosophy at the University of Southampton. Before taking up her position at Southampton in 1998, Maria Alvarez taught at the Universities of Oxford and Reading. Her recent research has been mainly on the philosophy of action, and she is currently completing a book on the relation between reasons and human action.

Jean Knox

Dr Jean Knox is a psychiatrist and Jungian analyst in private practice in Oxford. She is a professional member of the Society of Analytical Psychology, a senior member of the British Association of Psychotherapists and Editor of the *Journal of Analytical Psychology.* Her PhD in the Psychoanalysis Unit at UCL explored the links between psychodynamic, cognitive science and attachment theory models of the mind and she has written extensively on the relevance of

attachment theory and developmental neuroscience to Jungian theory and practice. Her book *Archetype, Attachment, Analysis: Jungian Psychology and the Emergent Mind* was published by Brunner-Routledge in 2003.

Christopher Martin

Christopher Martin studied at Oxford. He is a professor at the University of St Thomas, Houston, and has previously taught at the universities of Oxford, Navarre, and Glasgow. He has written on medieval philosophy, especially Aquinas, and on ethics and related themes (e.g moral psychology). His most recent book is *Thomas Aquinas: God and Explanations* (1997)

Henry Marsh

Henry Marsh is the senior consultant neurosurgeon at the Atkinson Morley Department of Neurosurgery in St.George's Hospital in London. He came to brain surgery relatively late in life having originally read PPE at Oxford. He specializes in 'awake' craniotomy – where brain tumours are removed from patients under local anaesthetic, using cortical mapping to permit safer and more extensive removal of the tumour than would be possible under general anaesthetic. He was recently featured doing this in the award-winning documentary Your Life in Their Hands on BBC1. Believing, as he does, that Mind and Matter are the same thing he has a particular interest in the impact of the hospital environment and its design on illness and has lectured widely on this subject

Heather Berlin (Moderator)

Heather Berlin received her D.Phil. in neuropsychology from the University of Oxford working with Professors Edmund Rolls and Susan Iversen. Dr Berlin earned her Master of Public Health from Harvard University and her M.A. in Psychology from the New School for Social Research where she worked with Prof. Marcel Kinsbourne. Dr Berlin has recently completed a Visiting Assistant Professorship at Vassar College and is currently an NIMH Postdoctoral Fellow in Psychiatry at Mount Sinai School of Medicine in Manhattan where she is conducting neuropsychological, psychopharmacological, and neuroimaging studies of brain lesioned and compulsive, impulsive, anxiety, and personality disorder patients. Dr Berlin has conducted clinical research in hospitals in both the US and UK and was awarded a Young Investigator Award from the American Neuropsychiatric Association and from the National Education Alliance for Borderline Personality Disorder (BPD) for her research implicating orbitofrontal cortex dysfunction in BPD patients.

Dr Berlin is keenly interested in the neural basis of consciousness and will be conducting neuroimaging studies to investigate the neural basis of repression and dissociation in patient populations. Heather has taught a seminar on the neural basis of consciousness at Vassar College and will be co-teaching a course this winter on the Neurobiology of Consciousness with Prof. Christof Koch at the Institute of Neuroinformatics, University of Zurich/ETH.

Axel Cleeremans

Axel Cleeremans, Ph.D. (1991), is a Professor of Psychology at the Université Libre de Bruxelles and a Research Director with the National Fund for Scientific Research (Belgium). Cleeremans heads the Cognitive Science Research Unit at the Université Libre de Bruxelles and coordinates an advanced degree in Cognitive Science. Trained in neural network modelling at Carnegie Mellon University under the supervision of J.L. McClelland, Cleeremans' main research interests are in understanding the difference between learning with and without consciousness, and, more generally, in the mechanisms that underpin consciousness itself. Cleeremans currently acts as president of the Belgian Association for Psychological Science, and is also a member of

the executive committee of the Association for the Scientific Study of Consciousness and of the board of the European Society for Cognitive Psychology.

John Cottingham

John Cottingham is a well known authority on the philosophy of Descartes and seventeenth-century rationalism, and has written numerous books and articles on the history of philosophy, with special reference to the early-modern period. He has also published extensively in the field of moral philosophy and philosophy of religion, with special reference to the theory of the good life and the relation between philosophy and spirituality.

Professor Cottingham was educated at Oxford University where he gained Double First Class honours in Classics and Philosophy, and later took his doctorate in Philosophy. He has held visiting appointments in the United States (Fulbright Scholar) and New Zealand (Erskine Fellowship), and is currently Professor of Philosophy at the University of Reading, where he holds an Established Chair of Philosophy. He is also an Honorary Fellow of St John's College, Oxford. He has held the Radcliffe Research Fellowship in Philosophy, and has served as Chairman of the British Society for the History of Philosophy, as President of the Mind Association, and as President of the Aristotelian Society. He is (since 1993) Editor of RATIO, the international journal of analytic philosophy. In 2002-4 he was Stanton Lecturer in the Philosophy of Religion at Cambridge University.

Steven Laureys

Steven Laureys is Research Associate (tenure position) at the Fonds National de la Recherche Scientifique de Belgique (FNRS) Head of Clinics, Department of Neurology, CHU Sart Tilman University Hospital, University of Liège. In 1993 he got his Medical Doctor at the Vrije Universiteit Brussel. Steven Laureys is a well-established researcher in the field of the science of consciousness. His main areas of research are the multimodal functional neuroimaging of the recovery of neurological disability and of neuronal plasticity in severely brain injured patients with altered states of consciousness. He is the editor of *The boundaries of consciousness: neurobiology and neuropathology.*

Susan Stuart

Susan Stuart is a Senior Lecturer in Philosophy at the University of Glasgow. Her primary research interests are in the philosophy of mind, Kant's epistemology and metaphysics, and developing a notion of kinaesthetic imagination. She has published on the application of Kant's transcendental psychology to contemporary issues in cognitive science, on deception, theories of mind and autism, on the conditions for conscious agency, and on the binding problem and the imagination.

Felix Posen (Moderator)

Felix Posen left a lifetime's work in the metals and minerals business to devote all his time to the Posen Foundation. The Foundation's main aim is to install courses in universities to teach the subject of the meaning and history of the rise of secularism in society and culture. The Foundation is also deeply involved in the area of antisemitism and Jewish secularism.

Mr Posen holds Honorary Degrees from Hebrew University, the Oxford Centre for Hebrew and Jewish Studies, and Tel Aviv University.

Peter Hacker

PH read PPE at the Queen's College, Oxford, and wrote his D.Phil. at St Anthony's College. After being a Junior Research Fellow at Balliol College, he became a Fellow of St John's College, where he is now an Emeritus Research Fellow. His main interests are in the philosophy of Wittgenstein, philosophy of mind, and philosophy and neuroscience, on which he has written two books with the Australian neuroscientist Max Bennett – 'Philosophical Foundations of Neuroscience' (2003) and 'History of Cognitive Neuroscience' (2007). His forthcoming book, 'Human Nature: the Categorical Framework' is the first volume of a projected trilogy on human nature.

John Henry

Professor John Henry was a Consultant Physician at Guy's Hospital and the National Poisons Information Service for 15 years. He was then Professor of Accident and Emergency Medicine at Imperial College, based at St Mary's Hospital from 1997 to 2004. He is now Honorary Consultant at St Mary's Hospital and visiting professor, Oxford University. He has written a large number of publications and books, and his main clinical and research interests are in acute human poisoning and the mechanisms of toxicity of illicit drugs.

John Hyman

John Hyman is a Fellow of The Queen's College, Oxford. He is a former Scholar at the Getty Research Institute, Los Angeles, and a former Fellow of the Wissenschaftskolleg zu Berlin. His most recent book, entitled *The Objective Eye*, was published by the University of Chicago Press in June of this year. It is a study of the fundamental concepts we use when we think about the visual arts: colour, form, representation, realism and reality. Another recent publication, which may interest people here, is an article called *Art and Neuroscience,* which can be found by googling 'hyman art neuroscience'.

Kathleen Taylor

Kathleen Taylor's research focus is the human brain, which she has studied at many levels, from neuroimmunology and neuroanatomy to systems and cognitive neuroscience to social psychology. Currently her main interest is the neuroscience of belief and its pathologies, particularly with respect to severe forms of ideologically-motivated human harm-doing such as terrorism, genocides and destructive cults. She is currently working on an fMRI project on the neuroscience of belief in collaboration with Dr Peter Hansen and Professor John Stein; she has gained ethical approval and an application for funding is in process.

Her first book, *Brainwashing: the science of thought control*, was published by Oxford University Press in November 2004.

Her doctorate, titled 'Computational modelling of the contribution of posterior parietal cortex to saccadic eye movements', was completed at Oxford in 1999.