

## Interview

# Sean Spence

Edited by Duccio Manetti\*

We very much regret to inform that Professor Sean Spence died on Christmas day (2010) after a long illness. This interview is probably one of the last expressions of Professor Spence's thought. We are grateful to him for being so kind and helpful as to honor us with his exhaustive answers despite his illness.

SEAN SPENCE was Professor of General Adult Psychiatry at the University of Sheffield. Psychiatry and Philosophy has lost a great scholar. Our sincere and heartfelt condolences go out to his family and loved ones.

1. Your latest book is entitled *The Actor's Brain*. Can you tell us what is an *actor's brain*?

The purpose of using the term the 'actor's brain' was to identify what I hoped would be captured and characterized over the course of the text: namely, those conditions (anatomical, physiological, psychological, etc.) which must pertain within the nervous system of a human being in order for them to be seen to be performing, what appear to be, 'purposeful' acts in the world. In other words: What is it within the systems of the brain that 'supports' the emergence of apparently voluntary behaviour? Such an account could not be exhaustive (hence, the book's subtitle: '*Exploring* the Cognitive Neuroscience of Free Will'). However, I was very concerned that it should be grounded in neurobiology, unapologetically building upon what is known of neural function, while also eventually arriving at behavioural, phenomenological distinctions that would be recognizable to a philosophical readership, e.g., the difference between 'actions' and 'movements', between 'purposeful' behaviours and mechanical 'events', as these might be understood by an author such as MacMurray (1991). One of the most prominent themes to emerge across the book was that of *constraint*: the limitations set upon the extent of

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our freedom and manifest within many domains (e.g., in our neuroanatomy, neurochemistry, and indeed our subjective temporal awareness, as revealed by Libet and others).

I was also mindful that much of the second half of the book would deal with ‘real-life’ situations, encountered in the clinical arena, where voluntary behaviour is either mechanically aberrant or undesirable in terms of its valence; situations in which the constraints upon the human actor become even more obvious, forcing the clinician/observer to consider factors ranging from what one might call our ‘brute neurology’ to rather more diffuse interpersonal, social influences. This would lead on to the raising of some pivotal questions concerning the future of psychotherapeutics (Chapter 10), namely: Whether, once damaged, an actor’s brain may be restored to volitional function? Might freedom return?

2. The acts performed by the subjects in Libet’s experiments seem too simple and not enough representative of everyday life decisions. Do you think it is possible to include value choices in the experimental sets?

I think the experiments performed by Benjamin Libet and colleagues in the 1980s were necessarily simple in some aspects of their design, since they sought to strip a voluntary act to its minimal constituents: a single subject introspecting about their motor intentions, while they made self-paced movements of their right index finger or wrist. By acquiring objective electroencephalographic (EEG) and electromyographic (EMG) response data, together with the subject’s internal estimation of the time of onset of their own ‘intention to act’, Libet et al (1983) were able to elicit their central finding: namely, that the EEG antecedents of a voluntary act arise in the brain *before* the subject’s *conscious* intention to perform that act. The simplicity of this design is part of its beauty.

Now, there is a vast array of more complicated acts that one might wish to study (as opposed to the simple movements of a finger). However, I think this is essentially a question of empirical ingenuity: designing experiments that may sequentially access actions of increasing complexity, e.g., the learning of motor skills, the generation of novel behaviours, the formulation and expression of moral preferences, the telling of lies, etc. This is a theme that I return to throughout the book.

3. Do you think that a neuro-philosophy, as Henrik Walter pointed out, could be useful for a science of volition?

Yes, I think there are certain areas where the interests of neurology and philosophy overlap sufficiently for synergy to emerge. Such areas of convergence may also yield useful insights into disturbances of volition (Spence 1999).

One area that provides a clear example is the problem of hysteria (or conversion disorder), which I address in Chapter 7 of *The Actor's Brain*. As the reader may be aware, the sort of problem we encounter in hysteria may be such that a patient presents as being unable to move her arm, for no apparent reason. Medical examinations and investigations are 'negative' and it seems to the doctor that there is no biological, physical explanation for the symptom (i.e., paralysis). In addition, the impairment appears to come and go; it may be present in company but not when the patient believes herself to be alone, unobserved. The patient says she cannot move yet, medically, there is no apparent impediment to her movement. Eventually, the medical 'explanation' offered is that there is some unconscious process that prevents the patient from moving (a process which serves to resolve a latent conflict of some sort). To borrow one of Freud's examples, it may be that a young woman exhibits a paralysed right arm, which impedes and (thereby) conceals her unconscious desire to hit her father (Freud and Breuer 1991, pp. 93-94). Somewhat anachronistically, this form of hysteria has served to enshrine a Freudian understanding of the mind in the psychiatric diagnostic systems currently available to us (e.g., the DSM IV; APA, 1994). These systems each require the physician to diagnose hysteria/conversion on the basis of the patient exhibiting a functional deficit, which is neither attributable to a physical cause nor (explicitly) the product of feigning (i.e., malingering). However, this distinction between hysteria (unconscious, unknowing causation) and malingering (conscious, knowing causation) is impossible to justify on empirical grounds; unless, that is, one believes that the physician can tell what the patient is thinking (Spence 1999)!

However, there is another way of formulating the problem of hysterical conversion, which, informed by the language of action philosophy (and cognitive neuropsychology), actually points us towards the likely causal mechanisms at play. For, while the Freudian formulation of our patient's paralysis emphasizes her inability to move due to the influence of some

*unconscious* force (outside her awareness), closer examination of hysterical phenomenology in the light of action philosophy suggests something quite different (Spence 1999). The patient exhibiting a hysterical paralysis maintains her symptom while she is awake and alert; she ‘loses’ her symptom when sedated or distracted. Indeed, it is this symptomatic inconsistency that prompts the diagnosis (above; though notice, that the same phenomenology would arise in malingering). Hence, it is likely that the patient’s attention to action is, in some way, necessary for the maintenance of her paralysis; it is not an unconscious process. Therefore, while we may draw a philosophical distinction between an ‘action’, chosen by an agent, and a motor event, or movement (e.g., a reflex), arising automatically, what we appear to have in the hysterical symptom is an example of the former action, a voluntary action (no matter how aberrant): the patient’s attention to action is pivotally implicated in its maintenance (this is the opposite of what we might expect were the symptom to be maintained by a Freudian unconscious).

Furthermore, if we then go back to the empirical literature, we find that certain objective (e.g., EEG, EMG and ergonomic) measures acquired from hysteria patients *do* in fact support the contribution of so-called ‘higher centres’ to the ‘performance’ of hysterical symptoms (see Chapter 7 of *The Actor’s Brain*). Hence, combining an analysis of hysterical phenomenology, with the vocabulary of action philosophy, and the acquisition of more subtle biological measures leads us to a deeper (and contrasting) view of the nature of hysteria: it is not a product of unconscious desires but may be understood cognitively as the product of an executive system (where conscious awareness assists in its maintenance).

4. If we discover an abnormal situation in the volitional processes like one of the patients with anarchic hand syndrome, can we infer that a ‘normal’ agent exists and acts somewhere in the brain?

In the case of the anarchic hand syndrome, where a man may experience his right hand as reaching for and grasping objects inappropriately, ‘against his will’, I think what we are witnessing is evidence that agency may be frustrated. It is as if an automatic sequence of behaviours (a ‘schema’, in the vocabulary of Shallice 1988) had been liberated from the hierarchical control of the motor system as a whole. Hence, the limb appears to behave autonomously: the man’s agency does not encompass his affected limb. He retains awareness of the

discrepancy and this suggests that ‘somewhere’ within the nervous system there is a rational actor ‘looking on’; he cannot exert control over the limb but he knows enough of his plans as to know that they are not being ‘obeyed’. In Chapter 5 of the book I deal with the different forms of anarchic and alien limb that may arise, and what seems common to them is that the patient, the frustrated agent, retains an awareness of what they would like their limb to do or refrain from doing, yet they cannot control it. Hence, they continue to experience themselves as agents (with preferred goals), but they are faulty agents, agents who cannot realize those goals.

Indeed, we might contrast such patients with those who experience what seems to be an even more profound disturbance of agency: namely, utilization syndrome. For while the anarchic hand patient knows that their limb ‘will not do what I want it to do’, the patient exhibiting (severe) utilization appears not to notice that their limbs are interacting automatically with the environment. Hence, if a pen is left on the table they will start to write with it, if there is a cup they will drink from it. They may even perform quite complex behaviours, in response to environmental cues, apparently without any awareness that their behaviour is being manipulated.<sup>1</sup> So, in this case, we seem to witness both the disturbance of objective movement (control of motor events, for these are not chosen ‘acts’) and the absence of a subjective agent (since, in extreme cases, the patient/subject seems unaware of their lack of volitional control, their manipulation by their surroundings).

5. Some philosophers, like Dennett for example, consider Libet’s experiments too Cartesian. Libet’s original intention was to discover and legitimate the mind against or beyond the brain. Do we have to reformulate these experiments? Are they corrupted by a mild form of dualism?

I think it is inevitable that Libet’s experiments be conceptualised in dualist terms, merely because of the methodology used and the questions he asked. In essence, he was examining the correlation between certain subjective first-person phenomena (the perception of an urge to move) and externally detected (objective) third-person phenomena (EEG and EMG signals, the latter indicative of movement). So, his results would inevitably consist of a temporal comparison between the emergence of a highly subjective event occurring in

<sup>1</sup> See Lhermitte 1983.

‘inner space’ (the intention to move) and a verifiable, manifest event arising in the outer world (the movement itself). Hence, to adequately understand his findings would seem to require a solution to the ‘hard problem’ of consciousness, although further empirical refinement would still be necessary to distinguish correlation from causation.

6. In *The Actor’s Brain* you say that neuroscience is searching for the ‘it’: do you think that this ‘it’ could be the intentions? Which role do intentions play in the volitional mechanism?

When I mention an ‘it’ I am really attempting to describe the *source* of intentions, whatever it is that precedes our conscious choice, both in terms of its temporal and neurophysiological characteristics.

7. One of the purposes of your book is to deconstruct Libet’s arguments. Can you explain how this is possible?

As I state at the beginning of the book, I regard Libet as having made a major contribution to this field and it is because of its importance that I seek to clarify what it means. One way of summarizing his contribution is to say that he demonstrated the *temporal* constraints impacting human volition: whether that is our awareness of our own agency (becoming aware of our intentions only after they appear to have been set in motion) or our awareness of ‘incoming’ sensory data (only becoming aware of sensorimotor phenomena (qualia) after a finite period of specific neurological activity, so-called ‘neuronal adequacy’, has taken place).<sup>2</sup> Hence, what several of his experimental designs serve to show us is the limited extent of our agency. If I only become aware of intentions to act after their related act has begun to emerge from the brain then to what extent am I in control (Spence, 1996)? It strikes me that Libet’s work emphasizes volitional constraint and there is an account that may be given of the many constraints that impact our apparent volitional freedom (and I deal with these in ensuing chapters of the book: temporal, neurochemical, socially hierarchical, etc.).

But it is also possible to critique some of the conclusions Libet derived from his own work. For instance, he argued that free will was still justifiable if it

<sup>2</sup> See Libet 2004 for an overview.

functioned as a form of ‘veto’, a kind of ‘free won’t’ active prior to actions. Hence, being aware that an emerging action was inappropriate the subject/agent could decide to stop it or change course. This would provide evidence of freedom. My response to this is that if Libet’s basic findings are correct, i.e., if a period of neuronal adequacy is necessary for us to be aware of subjective phenomena (including our own thoughts), then the veto thought, the idea of stopping an ongoing action is itself likely to be the product of foregoing neural activity (arising out of awareness). So the veto thought is just as ‘post hoc’ as the initial ‘urge to move’. They both appear to arise in subjectivity after neural control mechanisms have commenced. So, if Libet’s neuronal adequacy hypothesis is correct then, the veto does not preserve the libertarian’s notion of free will.

8. Do you think agency is an important topic in the investigations about free will?

Yes!

9. Is it correct to think that free will is an evolutionary instrument that biology gives to humans in order for them to direct their own behaviour?

Clearly, this would be a highly teleological way of understanding the outcome of evolution. What seems to be the case is that the existence and optimal functioning of the human nervous system supports the generation of what appear to be purposeful behaviours under certain circumstances. Nevertheless, as we examine each of the many domains of biological, psychological and social influence at play within and around us, we find that we can increasingly identify tangible contributors to human actions, or at least, apparent constraints upon its parameters. This has led me to focus on the idea of a ‘Human response space’ (the subject of Chapter 10 in the book). What I am trying to get at here is the idea that there might exist a finite, though probably highly variable capacity for freedom, varying both between and within individuals over time. Hence, we might be each capable of acting freely under optimal conditions but the opportunities for those conditions to arise and the specifications of ‘optimality’ might vary greatly between individuals. The man who sits in the refugee camp, close to the point of starvation may exhibit less purposeful behaviour than the choreographer in prime physical health who is at the height

of their powers. These are dramatic examples but the book abounds with more subtle examples: e.g., the extent to which prefrontal lobe dopamine metabolism may impact inappropriate repetitive behaviours, or serotonergic dysfunction relate to violent self-harm, or the presence of an apparent authority figure sanction the performance of cruel acts towards a stranger. There are many domains of influence that may distort or constrain Human response space.

10. Some philosophers think that the real problem of free will is to define exactly what this very concept means; for example if it corresponds to the intentions, or the power of acting or to long-term decisions and choices. Do you think philosophy could help neuroscience clarify the notions in this field?

Help in fine analysis of action and avoidance of sloppy thinking (remember Libet paradox, veto and my long-term comments...)

11. Can the movements that a player makes in sports like basketball or soccer be considered an example of the gap between automatic acts and conscious deliberative acts?

Yes, absolutely, Shallice – schema, increasing automation with practice.

12. Your recent work is about the neural correlates of deception: does it invoke the function of ‘higher’ brain systems?

Chapter 8, summarizes. Of interest to a neuroscientist not least because it is one of those areas where imaging may inform us of something we did not know already. As in the case of hysteria, where we wish to make a distinction that cannot be justified empirically in the clinic (i.e., between ‘hysteria’ and feigning), here we have the distinction between truth and lying, a distinction that most humans can judge at little above the level of chance (Bond and De Paulo 2006). Furthermore, it is another example of an executive control process, one that a subject must attempt to deploy in real-time, e.g., when calling to mind, suppressing or creating new scenarios.



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