

If we want to know what the eighteenth century most profoundly valued or despised in all aspects of culture, then we must examine its fearful disdain of mixtures.

(Barbara Maria Stafford 1991: 211)

This I think that having often recourse to ones memory and tying downe the minde strictly to the recollecting things past precisely as they were may be a meanes to check those extravagant or turning flights of the imagination.

(John Locke's journal, 22 January 1678, in Dewhurst 1963: 101)

We have to do with men for the most part whose soul is the great object of their regard; but let them not forget they have a body.

(John Hill 1766/1969: 33, in Deutsch 1994: 26)

### 9.1 Introduction: the hurry of the spirits

Joseph Glanvill (chapter 5 above) feared that overdependence on hurried spirits in normal cognition would condemn memory to be more confused 'than our Mid-night Compositions'. The imposition of ill-sorted ideas on the mind internalises the uncanny, but by physiological means. The supernaturalising of the mind in which Romantics would revel (Castle 1988: 52) already occurred in disruptions of 'natural' order among ideas to which ill-disciplined neural fluids were prone. Historians of early eighteenth-century literature describe the peculiar amalgam of disgust and desire with which satirists treated their innards: transgressive internal processes were indulgently deployed while poets preached probity and rejected disorder, only to rediscover in themselves the shock of grotesque and motley spirits (Stallybrass and White 1986: 103–8, 113).

During a long illness in 1712 and 1713, Isaac Watts composed a sequence on sickness and recovery, including a poem on 'the Hurry of the Spirits, in a Fever and Nervous Disorders'.<sup>1</sup> Suffering 'the disorderly Ferments of natural Spirits' (1734: 172), he finds that 'this Flesh, this circling Blood' and all his bodily

1 After a prose introduction, which was apparently written when preparing 'Sickness and Recovery' for publication some twenty years later, the sequence comprises the following poems: 'The Hurry of the Spirits, in a Fever and Nervous Disorders' (Watts 1734: 172–4); 'Peace of Conscience and Prayer for Health' (1734: 174–7); 'Encourag'd to Hope for Health in May' (1734: 177–9); 'The Wearisome Weeks of Sickness. 1712, or 1713' (1734: 180–1); and 'A Hymn of Praise for Recovery' (1734: 181–3). For a general discussion of Watts' writings and philosophy see Hoyles 1971: 141–250.

powers easily 'turn Rebels to the Mind' (1734: 173). 'Strange Images' rise upon him physiologically induced:

The Engine rules the Man.  
 Unhappy Change! When Nature's meaner Springs  
 Fir'd to impetuous Ferments break all Order;  
 When little restless Atomes rise and reign  
 Tyrants in Sovereign Uproar, and impose  
 Ideas on the Mind; confus'd Ideas  
 Of Non-existents and Impossibles,  
 Who can describe them? Fragments of old Dreams,  
 Borrow'd from Midnight, torn from Fairy Fields  
 And Fairy Skies, and Regions of the Dead,  
 Abrupt, ill-sorted. O 'tis all Confusion!

(1734: 173)

Watts officially deplores the 'strange wild convulsive Force' which overtakes him while 'all the poor Machine / lies fluttering' (1734: 177-8). Like Cartesian cyborgs, this fluttering pulsing engine is an unusual machine. The noted hymnographer thanks God that 'amidst all the Violence of my Distemper . . . I never lost Sight of Reason or Religion' (1734: 172), and takes the opportunity of illness to seek out sins in 'the Plies, the Folds, / And hollow winding Caverns of the Heart' (1734: 182). Meanders of a moralised heart are safer than the folds of the brain: its scene is distantly eschatological, whereas spirits and nerves play with abrupt ideas in the present. He reassured himself, a 'creeping Worm' under the sway of 'each noxious Juice' in his 'vital Humours' (1734: 175), with the (odd) knowledge that God's

Eyelids mark'd my painful Toil,  
 The wild Confusions of my shatter'd Powers,  
 And broken fluttering Thoughts.

(1734: 176)

Watts elsewhere defends the substantial immaterial soul against Locke's 'shifting and changeable principle' of memory (Fox 1988: 57-66). For him, in the end, the 'tottering Body' is subject only to the 'Divine Physician' (Watts 1734: 182); meanwhile he is

bound to bear the Agonies and Wōes  
 That sickly Flesh and shatter'd Nerves impose.

(1734: 181)

But in this chapter I show that problems about the interdependence of self, memory, and spirits were common to Lockean and anti-Lockean substantialists alike. In any bodily context, with health, passions, diet, or brain at issue, even the essentialists' thinking substance required unlikely docility from its fluid vehicles.

The wistful dreamy violence in Watts' descriptions of fevered altered states acknowledges certain seductions of the wild confusions caused by disordered spirits. The written memory of his broken thoughts, distanced in publication twenty years later among other 'miscellaneous thoughts . . . written chiefly in Younger Years' (1734: title page), is in part nostalgia for brief psychophysiological chaos. The unexceptional poem catches a historical crux in attitudes to physiology. It falters between moralistic exhortation 'to calm the Tumult and command my Thoughts' and fascination with the 'strange Commotion' in his 'inmost Centre', the 'endless Medley' of images which

rush upon the Stage,  
And dance and riot wild in Reason's Court  
Above control.

(1734: 173)

The eighteenth-century neurophilosophical writer will be caught between the desire to be violated by the excesses of his own body, to be 'caught up into the Storm, and ride the Wind', and the fear of being left 'helpless' and 'beyond the Ken of Shore' as restless atoms break all order and 'the throne of reason shakes' (1734: 173-4).

It is pleasurable, in a world where rationality and morality are hard to maintain, to surrender to images 'above control' (1734: 173). Associated ideas will 'follow one another . . . without any care or attention' (Locke, *Essay* II. 33. 6): in despair at the failures of reason, Hume would find, wonderfully inverting Locke's nervous point, that 'carelessness and in-attention alone can afford us any remedy. For this reason I rely entirely on them' (Hume, *Treatise* I. iv. 2: 218).

But the orthodox philosopher and poet Watts, in contrast, keeps an eye on reason and religion even in fever. The claim to be doing so licenses ongoing flirtation with loss of control over his own brain and memories. In this chapter I examine various unwholesome but enticing associations of the animal spirits, which helped to keep them in theoretical circulation. The topic is a series of internal tensions in models of psychophysiological self-control. Eighteenth-century men, in England at least, increasingly sought to escape their own minds, to flee from memory and animal spirits. G.S. Rousseau argues (1969/1991: 10) that it was neurophysiology that unseated eighteenth-century ideology from traditions of order: I flesh out this claim by widening the philosophical and cultural domains of reference of the petulant spirits. They work incessantly to level optimistically rigid distinctions between rational mental discipline and sex, madness, or unreason, suggesting that, if there is to be fragile order in cognition, it must arise as much from body, belly, and brain as from mind and will.

'The Hurry of the Spirits', significantly, ends with rhythmic and moralistic weightiness. The final two lines destroy the ambiguity, denying the incitements

of confusion in a wishful imposition of discipline. There is to be no doubt that, in the normal, sound state, God is on the side of the ruling mind.

Ah, when will these tumultuous Scenes be gone?  
 When shall this weary Spirit, tossed with Tempests,  
 Harrassed and broken, reach the Port of Rest,  
 And hold it firm? When shall this wayward Flesh  
 With all th'irregular Springs of vital Movement  
 Ungovernable, return to sacred Order,  
 And pay their Duties to the ruling Mind?

(1734: 174)

In subsequent chapters, I trace the course of various attempts, historical and modern, theoretically to return the wayward flesh to order and impose the rule of mind on the hurry of distributed memory traces. But first I sketch failures in both Cartesian and Lockean attempts to mould memory and brain to the safe maintenance of moral identity.<sup>2</sup> The recurrent problem is uncertainty over the control and causation of motions of animal spirits, and of the ideas which accompany them. How is 'moral Man' to know if his ideas proceed from appropriate causes, if his true Self is the unique originating cause of thought and action, or if his cognition is riddled with physiological and cultural influences beyond his ken? Theory is moulded, in part, by social and personal desires not to be certain sorts of persons, to keep a safe distance from those (women, enthusiasts, fanatics, sectarians, dreamers) who give in to roaming animal spirits, to charismatic religion, to libidinal excess, who fail to impose the rule of mind on rioting spirits and to trample bodily commotions.

## 9.2 Contagions of the imagination

Cognition meets culture in late seventeenth- and early eighteenth-century attitudes to animal spirits theories of memory and mental life. Some, like the 'French prophets' studied by Hillel Schwartz (1978: 73–4), found that, in their ecstatic transports and creative remembering, they could 'glory in confusion'. Their critics, on the other hand, 'viewed memory as conservative; memory maintained the proper distance between events, and their proper sequence' (1978: 75). This rhetorical distinction between chaos and order was often invoked in debates on the fringes of physiological philosophy: norms of social and individual behaviour and thought came to be seen as threatened by invidious neurophilosophy. The fear is that irregular motions of ruffled animal

<sup>2</sup> Lockeans who made memory central to personal identity were not so distinct in practice from Cartesians and other substantialists (compare Coleridge 1801/1990: 261, 266–7): both camps saw defects of memory and physiology as cause for moral concern. Even anti-Lockeans who denied the relevance of memory for deciding personal identity at the Resurrection needed secular links between present and past.

spirits will cut off the transparent past, renewing only 'many confus'd Ideas of things past' in the 'Emporium of the Brain' (Purcell, *A Treatise on Vapours* (1702), in DePorte 1974: 8).

The stakes were high. By the late eighteenth century, Scots 'common-sense' philosophers would need to assert heavily the stability and dependability of memory, and the unity and continuity of personal identity. They make the social and moral importance of psychological questions manifest. James Beattie in 1770 writes that: 'to a man who doubts the individuality or identity of his own mind, virtue, truth, religion, good and evil, hope and fear, are absolutely nothing' (in Cox 1980: 21). Thomas Reid in turn denies that any 'sound' man can confuse memory and imagination, since belief accompanies only the former. Truth just goes along with, and only with, the phenomenological experience of remembering:

Perhaps in infancy, or in a disorder of mind, things remembered may be confounded with those which are merely imagined, but in mature years, and in a sound state of mind, every man feels that he must believe what he distinctly remembers, though he can give no other reason of his belief, but that he remembers the thing distinctly; whereas, when he merely imagines a thing ever so distinctly, he has no belief of it upon that account. (Reid, *Essays* III.1: 340)

I look at Reid's attacks on neurophilosophy in chapter 14: but it is already clear why these philosophers would want to distance memory from physiology, and to distance personal identity from memory. Stability in memory or in identity was an achievement, gained at the cost of abandoning the fleeting animal spirits over the course of the eighteenth century. Patricia Meyer Spacks (1976: 4) takes this passage from Reid at face value as representative of a 'general faith in memory' in eighteenth-century philosophy.<sup>3</sup> But attention to discussions of memory, imagination, and association reveals that, while others might have liked to share Reid's confidence, their empirical views made it desperately difficult to do so.

### *Memory and imagination*

Beyond the absurdity with which animal spirits threatened to taint Locke's account of the person, there is a further tension in any attempt to found on memory a forensic concept of personal identity. If the rational agent is to rely in

3 Spacks rightly notes a dichotomy in philosophic texts between 'the undependability of imagination' and 'the solidity of memory' (1976: 4), but does not see that confidence in the latter was undermined in philosophy as well as literature. Her judgement that 'eighteenth century philosophers . . . strikingly concur in their reluctance to wonder seriously about the reliability of memory' (1976: 3) is hasty, forcing her to ask 'did they ignore their own experience of fallibility? or was it different from ours?' In fact it was not only in autobiographical and fictional texts that memory's reliability was challenged: the physiological theories which underpinned philosophical psychology did the job too.

action on his consciousness as it extends backwards into the past (Essay II.27.9), he needs some principled way to distinguish genuine, veridical memory (of what really happened) from mere confabulation or spurious reconstruction.

This is one source of obsessive philosophical attempts to find some internal, phenomenological criterion to demarcate memory from imagination. Hume tried to do it by attaching special feelings of vivacity and liveliness to the uniquely ordered ideas of the memory (*Treatise* I.i.3: 8–10; I.iii.5: 84–6; appendix, pp. 627–8).<sup>4</sup> Memory is ‘ty’d down’ to preserving the original ‘order and position’ of ideas: any failure to do so is a ‘defect or imperfection in that faculty’, whereas imagination has a liberty ‘to transpose and change its ideas’ (*Treatise* I.i.3: 9–10; I.iii.5: 85). In imagination, as evidenced by fables, poems, and romances, ‘nature . . . is totally confounded, and nothing mentioned but winged horses, fiery dragons, and monstrous giants’ (I.i.3: 10). The fluttering contents of Hume’s baroque imagination, torn, like Watts’, ‘from Fairy Fields’, echo Descartes’ *L’Homme*. Descartes’ unified account of memory and imagination explains (i) the reconstruction of traces which have previously been formed, (ii) the return of past things to thought ‘as if by chance’, and (iii) the formation of ‘chimeras and hypogryphs’ in the imaginations of those ‘who let their fancy wander listlessly’ (AT xi. 178, 184, H 87–8, 96).

Hume recognises that the preservation of order in ideas cannot distinguish memory from imagination, for we have no independent, non-circular, recall of past impressions to check whether the arrangement and sorting of the present impressions ‘be exactly similar’. So he retreats to a second criterion, based on the ‘superior force and vivacity’ of memory ideas (*Treatise* I.iii.5: 85). Ideas in memory are lively, strong, and forcible, where ideas in imagination are faint, languid, ‘and cannot without difficulty be preserv’d long by the mind stiddy and uniform for any considerable time’ (I.i.3: 9). But although this distinction is reiterated with some confidence in the appendix (p. 628), Hume undermines its plausibility himself. He acknowledges that ‘we are frequently in doubt concerning the ideas of the memory, as they become very weak and feeble; and are at a loss to determine whether any image proceeds from the fancy or the memory’ (I.iii.5: 85). I may be imagining when I think I am remembering, and remembering when I think I am imagining, since force and vivacity are not uniquely attached to memory ideas. The fact that vivid ideas bring with them belief or assent cannot guarantee their veridicality (I.iii.5: 85–6).

This is not surprising in the perspective of distributed models of memory. Hinton, McClelland, and Rumelhart note

4 For criticism and analysis see Flage 1985a, 1985b; Traiger 1985; Johnson 1987. Traiger alone thinks that Hume may not have needed a sharp distinction. None of these writers mentions the physiological bases of memory.

there is no sharp distinction between genuine memory and plausible reconstruction. A genuine memory is a pattern that is stable because the inference rules were modified when it occurred before. A 'confabulation' is a pattern that is stable because of the way the inference rules have been modified to store several different previous patterns. So far as the subject is concerned, this may be indistinguishable from the real thing. (1986: 81)

We all know that 'a subjective experience of remembering can be simultaneously compelling and dead wrong' (Schacter 1996: 129). Yet Russell, in turn, would try to engineer a clear distinction by attaching to memory ideas implausible feelings of familiarity and pastness (1921: 157–87). Subsequent concern in analytic philosophy about justifying knowledge of the past against sceptical challenges is a further consequence of the perceived need for such a distinction. But there may not be subjective criteria to tell veridical remembering from confabulation.

Imagination, then, can confound and deceive, upsetting the order of past events, and sometimes presenting 'ill-sorted' ideas as forcibly as does memory. The vigorous spirits, unfortunately for the moral philosopher, threaten to pull physiology and self apart by inciting plausible but improper and irrational imaginings. Without a way to keep memory distinct from imagination, the peculiar sanctity of memory's access to a real past seems reduced to mere confabulation. Descartes had already raised the alarm about morally damaging effects of physiological preservation of those traces which correspond to thoughts 'on which it is not good to dwell' (*Passions* II.74, AT xi.383, CSM I. 354). Fears about the perversions of reason which can arise from various corporeal sources come to occur in both Cartesian and empiricist traditions.<sup>5</sup> The concerns are intimately at once about the lure of factual errors, and the seductions of morally impure ideas and memories.

#### *Techniques for controlling the brain: purity and danger*

I have already discussed the extension of Descartes' distributed model of memory by Malebranche, who was Locke and Hume's source (chapter 3, appendix 2). Before treating memory directly, Malebranche tried to explain the distinction between veridical perception and imagination. Agitation by the spirits of the fibres leading to the brain is sufficient for the soul to have perceptions. Imagining occurs when the flow of animal spirits disturbs the fibres *without* the presence of the object. But this was the definition of *memory*, not imagination, given by Descartes in *L'Homme* (AT xi.178, H 87–8, CSM I.107). The shock of neurophilosophical models of memory is that they make memory the *work* or production of imagination.<sup>6</sup> Remembering too is both creation and loss.

5 For a general discussion of the relation between error and physiology in early modern philosophy see Ayers 1994: sect. 2.

6 'No imagination without memory; no memory without imagination' (Diderot, in Huet 1993: 103).

Fortunately, Malebranche retorts, it usually happens that the fibres 'are agitated much more by the impressions of objects than by the flow of spirits' (LO 88, II.1.1.i), and we can thereby distinguish perception from imagination. As Hume would, Malebranche hopes that the agitation of fibres is stronger in genuine cases of remembering. But the prospects are not good. Malebranche continues:

However it sometimes happens that persons whose animal spirits are highly agitated by fasting, vigils, a high fever, or some violent passion have the internal fibers of their brain set in motion as forcefully as by external objects. Because of this such people *sense* what they should only *imagine*, and they think they see objects before their eyes, which are only in their imaginations. (LO 88, II.1.1.i.)

The list of contextual factors which can disrupt the spirits and confuse the mind is growing. As well as disease and fever (for Malebranche in theory as for Watts in practice), oddities of diet, of religious behaviour and feeling, and of emotional extremity can all cause unnatural internal turbulence and consequent error. We can add diseased or contagious imagination, and also fright or shock, after which, wrote Richard Blackmore (1725: 31), animal spirits are 'impelled into confused Motions, and their Ranks and Connexion broken or ruffled'. Animal spirits flow, after so many years, in bodies still as embedded in material and social worlds, still as open and vulnerable to environment and culture, as the bodies described by earlier medical theories in the language of the non-naturals (chapter 2 above). What contexts, we may wonder, are safe? Whence cognitive purity, among so many forms of danger?

Malebranche warns against the seduction of youth by the wonders of poetry and science. The young man (*sic*) 'must always guard the purity of his imagination, i.e., he must prevent those dangerous traces that corrupt the heart and mind from being formed in the brain' (LO 388, v.8). The animal spirits, which receive 'many secret directives from the passions' and 'are easily diverted from the new and difficult channels into which the will would lead them' (LO 386, v.8), must be controlled. How? The will, which we often find 'exhausting itself in controlling the unruly spirits' (LO 386, v.8), is not sufficient itself; it must trick the imagination 'in order to stir the spirits' by using 'cleverness' and 'strategems to deceive an enemy that attacks only by surprise'. Suggested techniques include thinking of things opposed to the objects of the dominating desire in order to produce revulsion, and, as a very last resort, adding 'the thought of eternity, or some other solid thought' (LO 388–9, v.8). This is a remarkable line of attack on one's own innards: fixity is to be imposed on the fleeting spirits.<sup>7</sup> Yet not even 'this sort of defense' can render us 'impregnable':

<sup>7</sup> The stasis which the will must encourage, however, is a distant dream, given Malebranche's acceptance of transience in body and nature. 'Briefly, man's life consists only in the circulation of the blood, and in another circulation of his thoughts and desires' (LO 90, II.1.iii). I discuss Malebranche on passion, wonder, and fixity in male cognition further in Sutton 1998.

sometimes the 'motion of the spirits can be so violent that they occupy the soul's entire capacity' (LO 389, v.8).

Malebranche's concentration on relations between men's thoughts and bodies exemplifies the continuing concern for control which went along with porous memories. With women figured in such discourse as naturally grotesque, susceptible because of their delicate brain fibres to distraction by 'only the surface of things' (LO 130-3, II.II.I.i-ii), men's supposed access to depth is a curse. When 'man is naturally whole, close, opaque, self-contained', in contrast to 'open, permeable, effluent, leaky' woman (Paster 1993: 92), the fact that men's bodies and memories, too, fail to keep their proper boundaries becomes shameful, horrifying.

The poor oppressed male soul, its power dependent on unlikely 'obedience rendered to it by the animal spirits' (LO 88, II.I.I.ii), buffeted by their every new distribution and their every heavy flood, is blindly ignorant of the body's activities (LO 350-2, v.3).<sup>8</sup> Sources of evil and danger are internal. Body fluids are not self, not good, not true, not pure. Despite the necessary rhetoric of control, the mind ends up merely sitting in the brain,<sup>9</sup> watching 'while Spirits thro' the wandring Channels wind' (Henry Brooke, *Universal Beauty, a Poem* (1735), in Rousseau 1969/1991: 21).

#### Misassociation

The corporeal associative mechanisms of imagination and memory, then, introduce troublesome disorder, turning the mind away from contemplation of truth and reality (whether of religious and moral truths or simply of the external world and the real past) into dangerous realms of images unfettered by goodness. Crudely, three trends in eighteenth-century natural and social philosophy reveal reactions to the encroaching of physiology on morality and rationality. Firstly, the animal spirits, which would not stay put, were too dangerous to be left untamed, and had to be eliminated (chapter 10 below). Secondly, new (cultural, medical, and philosophical) attitudes to imagination emerged. The failure of attempts like Malebranche's and Hume's to distinguish memory from imagination were rendered less threatening, as Enlightenment aestheticians and moralists tamed the imagination, making it

8 This passage also discusses body mechanism, drawing on Descartes' accounts of our natural error in thinking that the soul is the cause of what are really mechanical effects (e.g. *Description of the Human Body*, part 1, AT xi.223-7, CSM 1.314-16). Malebranche notes that we wrongly but 'naturally humanize all causes' (LO 352, v.3): only acquired theoretical knowledge of such physiological processes as the formation of brain traces and the motions of animal spirits will help us practically in learning to avoid error.

9 Compare Croone 1664: 161: 'we shall consider the living body to be nothing else but a kind of machine or automaton and the Mind, which is in us, we may move meanwhile by its own thought, or at least we may arrange to sit in the brain merely as a spectator of this play which is acted out in the scene of the body'.

an indispensable tool in the poetic armoury of the man of feeling. I make some brief remarks about this complex topic below.

The third means of warding off unwelcome bodily intrusions into the moral self was to rethink the nature and scope of association. Theories of associative mechanisms were extended to cover *all* mental sequences, not just disordered and dangerous ones. Hume's three relations of association and Hartley's comprehensive applications of association in the 1740s are a far cry from Locke's warnings about the dangers of misassociation. There are no inevitable cultural implications of associationism: but then, as now, it focused urgent debates about the sources, justification, order, and integrity of cognitive processes. Sceptical readings of Hume, then and now, see his application of association to 'normal' thought as an exposé, in an inversion of Locke, of 'the sordid background of reason itself' (Wright 1987: 116). Although, as John Wright argues (1987: 120), Hume was not quite in the business of 'reducing all reasoning to association', the possibility of exhaustive accounts of cognition in terms of association is alive again in the late twentieth century, and worries about its implications for rationality and self are again alive. Here I sketch why association seemed a threat by detailing its effects and physiological bases in Locke, whose eloquent account of misassociation was one of the most influential aspects of his thought (Aarsleff 1994: 268–71), and haunted even those who sought to sentimentalise or tame its effects.

In chapter 7, I mentioned Locke's early concerns about the way memories can offer themselves up unbidden, of their own accord, out of the dark cells of the mind/brain. After reading Malebranche, Locke added a discussion of association to the fourth edition of the *Essay* in 1700, explaining why there is 'something unreasonable in most Men'.<sup>10</sup> But he did not subsume rational thinking under the mechanisms of association (II.33.1).<sup>11</sup> Our 'degree of Madness' comes from 'a Wrong Connexion of Ideas' (II.33.4–5). To explain particular combinations of ideas which are not in themselves 'at all of kin' (II.33.5), we must understand the social setting of such ideas, different men's 'different Inclinations, Educations, Interests, etc.': but the habits of thinking,

10 Locke told Molyneux that he would add material on association and on enthusiasm (see section 9.3 below) in April 1695, as he was reading Malebranche (Locke 1979: 350–3; Wright 1987: 111–14). Wright stresses the importance of the chapter on association for Locke's campaign against error, and discusses the tension between its deterministic tone and Locke's official view that error is, at times, voluntary. McCracken's discussion of Locke's responses to Malebranche (1983: 119–55) does not cover association or physiology.

11 Reason's 'Office and Excellency' is to 'trace' those ideas which have 'a natural Correspondence and Connexion one with another', whereas associative connections are 'wholly owing to Chance or Custom' (*Essay* II.33.5). In terms of the Cartesian distinction between natural and acquired connections between ideas, Locke thinks that only acquired connections require associationist explanation. Wright (1987) separates the two meanings of 'natural' as 'innate' and as 'objective' or 'rational'.

willing, and moving which are instituted by custom all have proximate physiological causes. Society and culture act on and through the individual by way of the brain. Every such result of custom, says Locke, 'seems to be but Trains of Motions in the Animal Spirits, which once set a going continue on in the same steps they have been used to, which by often treading are worn into a smooth path, and the Motion in it becomes easy and as it were Natural' (II.33.6).<sup>12</sup>

The misassociating spillage of the spirits is blamed for a range of socially undesirable effects. Ideas which ought to be 'loose and independent one of another' connect wrongly, and 'set us Awry in our Actions, as well Moral as Natural'. Misassociation can cause psychogenic antipathies to particular foods; nightmares and irrational fears of darkness; lasting personal hatreds resulting only from 'slight and almost innocent Occasions'; unhappiness at school and aversion to books; conditioned responses;<sup>13</sup> and a whole range of 'intellectual habits and defects' (II.33.9, 7, 10–11, 15, 16, 17). Locke was apparently thinking along the same lines, linking association explicitly with spirits, when discussing childhood fears in *Some Thoughts Concerning Education*. Fearful apprehension or terrible objects 'often so shatter and discompose the spirits that they never recover . . . Whether this be from an habitual motion of the animal spirits, introduced by the first strong impression, or from the alteration of the constitution by some more unaccountable way, this is certain, that so it is' (Romanell 1984: 124–5; compare Myer 1984: 101).

Locke's picture of the cognitive and social phenomena on which a psychological theory should bear is broad, realistic, and sad, and worth contrasting with Hooke's reluctance to accept blending and interference in memory as central explananda (chapters 5 and 6 above). Hooke's awareness of the weaknesses of memory led him to theorise, wishfully, that items in the coils of memory must be, by nature, distinct and independent. Locke, driven by the spirits physiology of memory as motion, and acknowledging the social importance of cognitive mixture, implicitly confirms the difficulty of the task faced by 'moral Man' in dominating his own mind and brain.

It is far from clear whether eighteenth-century extensions of association were, in motivation or effect, a taming of this confusion. The application of associative principles to aesthetics and to literary composition and criticism (Kallich 1970; Christensen 1981) did not conceal problems about the uncertain control of association by the creative or moral agent. Officially the rummaging

12 This passage is used by Sterne in the first chapter of *The Life and Opinions of Tristram Shandy* (section 9.4 below). Locke goes on both to disclaim interest in physiological causes and to admit that the instances he gives make it 'probable' that 'the natural cause' of a man's associated ideas is 'the Motion of his Animal Spirits' (Essay II.33.6).

13 In an echo of Descartes' case of association in which hearing a galliard is always paired with 'some affliction', Locke reports that a man who learnt to dance in a room with an old trunk in it could only ever dance well with the trunk present.

motions of nervous fluids were meant to be at the service of the (male) artist. But it was and is uncertain whether this required a rigid distinction between agent or artist and the cognitive and neural processes he uses, or instead invited a more dangerous surrender to, or identification with, those psychophysical processes. The latter is hinted at, for instance, by some readings of later eighteenth-century aestheticised landscapes, in which 'the human figure functions like the animal spirits, moving up and down the tracks and defiles and generating new images and sensations at every turn' (Lamb 1989: 62). Similar historiographic difficulties arise in relation to imagination, to which I briefly return, sketching possible directions on problems which are parallel to those I am concerned with here.

#### *Imagination, sensibility, and autobiographical memory*

The difficulty of distinguishing veridical memory from vivid confabulation within the psychophysiology of animal spirits could only fuel concern over the moral dangers and contagions of the distempered imagination. The 'integration of ethics and physiology' characteristic of eighteenth-century thought was never easy, for physiology could all too readily unbalance the precarious harmony of the moral man of feeling (Mackenzie 1771/1987; Rousseau 1976). Conceptual transfer and feedback between physiological and moral uses of 'sensibility' and 'sympathy' allowed aestheticised physiological concepts to be incorporated into, rather than seen as threats to, the 'sensitive' social life (Figlio 1975; Lawrence 1979; Cox 1980: chs. 1–2).

Many historians agree that eighteenth-century cultures of sensibility involved the dematerialising and moralising of imagination.<sup>14</sup> No longer the deforming corporeal enemy of reason and religion vulnerable to incursions into an open body, imagination was moulded by the time of the early Romantics into a creative and constructive spirit of unity contained in a newly sealed and internally differentiated body (Schulte-Sasse 1995).<sup>15</sup> Was this conceptual

14 Beverly Southgate (1992) argues that this was already the case in seventeenth-century philosophy. Southgate takes any mention of the 'wild imagination' as 'shorthand' for causal factors 'outside the pale of real science' (1992: 281, 287). But this ignores the project, in psychological medicine and physiological philosophy, of incorporating the imagination as a corporeal cause. Evidence for belief in the psychological causation of behaviour, which Southgate cites, is less surprising when one realises the ubiquity of seventeenth-century belief in the physiological dependence of psychological states. Southgate is motivated by a view that non-physical psychological factors, displaced in the mechanistic revolution, are again coming to be accepted in the late twentieth century (1992: 291–2). But acknowledgement of 'wildness' or unruliness in cognition does not, and did not in the seventeenth century, require the abandonment of explanation or science.

15 Recent writers on the maternal imagination (the view that a mother's thoughts can be imprinted, by resemblance and through spirits and fluids, on the skin of the foetus) have carefully contextualised the theory from the Greeks to Malebranche and Turner, showing the gaps in progressive histories which take its displacement in the eighteenth century as

transformation the secularising production of a new organicist view of subjectivity, an escape from 'imagination's despotism' (Porter 1987: 60),<sup>16</sup> or a more rigid imposition of moralised dualisms whereby access (for some) to a creative imagination requires transcendence of the merely natural capacities to which others are restricted? The delicate sensibility (of nervous tissue and moral sense) of the new imaginative agent was available only to those sympathetic souls in the right social bracket (Porter 1987: 81–7; Rousseau 1989: 40–4, 1991: 225–45). The class-specificity of nervous disease was accompanied by a difficult and incomplete imitation and absorption, by men of feeling, of trembling femininity: as Helen Deutsch puts it (1994: 35, 9), 'an imagined female sympathy that must remain silent' was incorporated in the production of 'a disembodied creative masculinity' (compare Jordanova 1989: 27ff.; van Sant 1993: 104–7). Even when, in the earlier stages of the sensibility cult, excessive or depressed feeling was still located in the body (van Sant 1993: 98–115), the point was that, in its creative manifestations, imagination could and should be an instrument of cognitive control, a voluntary imposition of artistic or moral discipline on, and over, recalcitrant matter (Porter 1987: 100–3).

The difficulty for such idealised images of agency and control in acknowledging disorder or internal strangeness leaves marks through eighteenth-century literature. When Edward Young in 1759 advised the aspiring writer to 'contract full intimacy with the Stranger within thee' and to think well on the 'naked self' (Cox 1980: 3), many were already suspicious that the quest was doomed, for explicit models and theories of self and agency were increasingly stressing unity and autonomy over complexity. Here there is a need for work between history of science and the abundant scholarship on the literature of sensibility (on the historiography, see Rousseau 1980). Uncertainty about rhetoric of autonomous subjectivity can be teased out in analyses of literary strategies of evasion, in autobiography and the novel (Flynn 1990), and in changing ways of writing philosophy.

Self-creation in and through words, and the ways words do things to and with us, are processes much discussed by modern theorists of personal identity who see the self, with Daniel Dennett, as 'a centre of narrative gravity' (Dennett 1991a: 410; see also 1991a: 227–52, 412–30; compare Glover 1988; and Rorty

the victory of newly scientific approaches (King 1978: 153–81; Stafford 1991: ch. 2; Wilson 1992; Huet 1993: chs. 1–3; Schulte-Sasse 1995). But it remains true that the context in which the attribution of such powers to maternal imagination made sense (that of an embedded body and mind traversed by physical and cultural forces) did evaporate: not with dualism and mechanistic physiology (Descartes and Malebranche accept the old stories: see footnote 24 below), but with new stress on the independence of closed bodies from their environments and on the autonomy of cognitive powers. I address the survival of parallel theories, equally strange to us, about relations between cognitive and reproductive systems and energies in men in section 9.4 below.

<sup>16</sup> My thanks to Jochen Schulte-Sasse, whose view this is, for discussion on these topics. Compare Schulte-Sasse 1987.

1989). This philosophical work, as well as the experimental psychology of autobiographical memory, needs additional historical dimensions, for different kinds of writing mediate, reflect, and help to produce different kinds of selves and different norms of remembering. The functions of spinning a self in language are context-dependent and socially mediated: Hume's own autobiography (Hume 1776/1993b) creates one fictitious past self for specific audiences (Bell 1975; compare Lloyd 1993b: 61–77). 'Putting a life into words', as Spacks notes (1976: 21), 'rescues it from confusion, even where the words declare the omnipresence of confusion, since the act of declaring implies dominance.' Story-telling, in fiction or in autobiography, permits many differing forms of coherence: but eighteenth-century life narratives which employed 'autobiography as prosthesis' (Mascuch 1997) imposed increasingly dichotomous ideals of control over messy pasts and unreliable bodies. Herder would celebrate the new order:

One can witness in the history of humanity what narrative fiction . . . has achieved in helping tame and order the phantasy, in giving all forces and inclinations of human nature direction . . . It has forced the unleashed and infinitely roaming phantasy of ignorant beings into a framework of laws and limits. (In Schulte-Sasse 1995: 23)

This is one perspective on the result of eighteenth-century philosophical debates around the edges of issues of personal identity. Through new defences of free will, strong new visions of agency and autonomy, through moral-sense theories, new ways of thinking of gender difference, new social and political ideas about the ontological independence of individual political and economic agents one from another, it had become possible for the male theorist to believe, in certain moods at least, that the inarticulate, 'infinitely roaming' forces of dangerous cognitive and corporeal confusion had been or could yet be definitively disciplined, producing only pure thoughts and memories unmixed with baser matter, under the sway of a unified subjectivity.

Yet the memory of physiology would stalk and trouble this tenuous dominance. If eighteenth-century optimism relied on 'the reassurances of stability' (Spacks 1976: 9), then the awful gap between the inner self and those internal processes of which it was not aware, and over which its control was evanescent, had to be narrowed. The internalisation of a quest for authorisation, the location in the self of what Camus (1942/1975: 38) called 'nostalgia for the absolute', required, as Rousseau (1976: 157) argues, 'a specific neurological legacy'.

### 9.3 The Devil, the rational will, and the animal spirits

Animal spirits physiology, in which patterned motions lack obvious boundaries left a series of puzzles about the causation of thought and of action. From the inside at least, it was impossible under these theories to know whether

current cognitions and actions were caused by reason or madness, by genuine religious inspiration or enthusiastic fanaticism, by the Holy Spirit or by evil spirits, by the Devil or the will.

These worries spring from perceived distance between self and memories, or self and body, which requires efforts at closure through odd procedures for the mastery of (the less acceptable aspects of) the self by the (true, intimate) self. John Smith, the Cambridge Platonist, describing the animal spirits physiology of 'a late sagacious Philosopher', looks for the physical causes of 'all the imperfect motions of our Wills'. It might not, he warns, only be the soul (which 'sits enthroned, in some mysterious way' in the brain) that is 'apt to stir those quick and nimble animal spirits'. Smith announces that the mark of a rational soul is 'by the exercise of true Vertue [to get] dominion over them' and control the spirits' potentially 'disorderly and confus'd' motions (Smith 1660/1979: 116–17). 'Moral man' is under heaviest pressure if the body is itself active rather than passive, if the forces of 'not-self' are already on the march, besieging the inner citadel where self sits obscurely enthroned.<sup>17</sup> This partly explains the way early modern moral exhortation on the disciplining of self by self often took the form of wishful surveillance of the animal spirits.

#### *Memory, madness, and enthusiasm*

Malebranche finds, throughout books II and III of *The Search after Truth*, 'the moral causes of error' in the delicacy of brain fibres (LO 130–1, II.11.1.i). Such delicacy is 'usually found in women', who 'consider only the surface of things'. Men, before fashions of delicate nervous sensibility, are ascribed internal solidity and access to depth: yet Malebranche still thinks that his *statagem*s need to be addressed primarily to men. A neurophilosophical definition of mental soundness follows: 'strength of mind consists in a certain constitution of the volume and agitation of the animal spirits with the brain fibers' (LO 130, II.11.1.i). Without defence against violent passions, error will inevitably follow through the confusions of brain traces (LO 131, II.11.1.i–ii; 141, II.11.4). Fixations and obsessions result. If one passion dominates, then as some animal spirits 'violently descend' in unnatural motions to the periphery of the body, others, 'swirling irregularly in the brain, stir up so many traces' that the soul, which is 'continually constrained to have the thoughts tied to these traces', 'becomes, as it were, enslaved to them'. Vigilance must, therefore, be unceasing (LO 349, v.3; 203, III.1.2.i; 151, II.11.6). Malebranche is worried here, not about fixity in itself (as we've seen, stasis is to be willed), but about loss of control.

Malebranche's concern about the dangers of fixation and obsession is one sign of fears about the way brain traces could suck one towards insanity. When

17 Compare Haraway 1989/1991 and Waldby 1992 on modern immunological discourses about the repulsion of alien intruders from carefully patrolled internal boundaries.

one criterion for sanity was the ability to separate impulses of internal from those of external origin (DePorte 1974: 25–30), the memory/imagination blur was ominous. A century after Malebranche, Cullen would analyse delirium as dependent on inequalities in the brain which disrupt the ‘orderly and exact recollection or memory of associated ideas’ (Porter 1987: 179). Memory was a talisman against madness. Locke, in a journal note, hoped that having recourse to memory, to rendering present ‘things past precisely as they were’, will ward off extravagant flights of imagination. He diagnosed madness as a failure to use memory sufficiently:

I guesse that those who are about madmen will finde that they make very little use of their memory which is to recollect particulars past with their circumstances but haveing any partiall Idea suggested by their memorys phansy dresses it up after its own fashion without regard to the original.<sup>18</sup>

Early modern physiologies of madness have neurological roots in spirits theory (for general accounts in which unruly physiological entities loom large see DePorte 1974: 3–53; Porter 1987: 169–84). Newton had noted that ‘commotions of ye spirits’, in physiological excess or deficiency, disrupted the proper operations of imagination (McGuire and Tamny 1983: 394–6). The exercise of memory was a discipline of fixity, meant to re-present a transparent past, evading, by repetition of original order, the wild associative jumbling of the mad. Worries over excessive individual difference also confronted physiology: needs for social regulation and consensus in representation seemed incompatible with the transformations inevitably imposed upon perceptual input by animal spirits which were rarely likely to mirror or resemble their causes. Trust in the freedom from error of other perceiving and remembering subjects required a neurophysiological counterpart to sound social status: everyone, Shaftesbury advised in his *Letter Concerning Enthusiasm* (1708), must ‘prove the Validity of his Testimony by the Solidity of their Brain’ (DePorte 1974: 43–4). The hopelessness of this demand was clear: everyone knew that brains are just loose pulp. Association and memory, when tied to fleeting spirits, make the variety of effects of history and context on individuals glaring: every brain-machine is different.

This was marked, for example, in debates over the propriety of unusual individual and social religious responses. The only chapter other than that on

18 Locke’s journal, Saturday 22 January 1678, in Dewhurst 1963: 101. But since *everyone* in trying ‘to retaine only the traces of the patterne [is] looseing by degrees a great part of them’, the proper ‘regard to the original’, to the full plenitude of the past, is impossible: ‘the Ideas of memory like painting after the life come always short, i.e. want something of the original’ (in Dewhurst 1963: 100–1). This early thought chimes with the *Essay*’s claim (11.11.13) that the ‘disorderly jumbling ideas together’, which characterises the mad and proceeds from ‘the violence of their Imaginations’ differs only in degree from ordinary (mis)association.

association which Locke added to the *Essay* in 1700 was on enthusiasm. Following Henry More (Wright 1987: 114–15), Locke defines what is ‘properly Enthusiasm’ by its difference from both reason and true divine revelation. Enthusiasm rises only ‘from the Conceits of a warmed or over-weening Brain’ (*Essay* IV.19.7).

The fight for control of the quick spirits was not only in individuals’ dualistic battles between reason and passion. Remember Malebranche’s exhortation to think of eternity as the last internal bastion against the corrupting effects of the unruly spirits (section 9.2 above). In popular conceptions of animal spirits theory at least, physiology had a directly theological dimension, old associations across the spirit realm remaining strong through the seventeenth century. Evil spirits lurk within, in extremity operating as animals, ghostly or monstrous inhabitants of possessed innards (Ginzburg 1966/1983: 19–20; Macdonald 1981: 203). The animal spirits of the victim are physically invaded, thought More (one theorist of the last great panic witch-scare in England in the 1660s), the imagination being directly interfered with through physiological channels (Crocker 1990: 139).<sup>19</sup> One could be assuredly free of such deviant causal sources of cognition and action when operating by socially sanctioned norms of religious expression: but as long as grand eschatological concerns lingered within religious orthodoxies, it could not be officially denied that the pores of the brain and their fluid contents might be the site of the ultimate struggle.

*The Devil and the will: rational and irrational choice*

In book IV of *Paradise Lost*, Gabriel’s ministering angels go to check on Satan’s doings in the Garden:

him there they found  
 Squat like a Toad, close at the ear of Eve;  
 Assaying by his Devilish art to reach  
 The Organs of her Fancie, and with them forge  
 Illusions as he list, Fantasms and Dreams,  
 Or if, inspiring venom, he might taint  
 Th’animal spirits that from pure blood arise  
 Like gentle breaths from Rivers pure, thence raise  
 At least distemperd, discontented thoughts,  
 Vain hopes, vain aims, inordinate desires  
 Blown up with high conceits ingendring pride.  
 (Milton 1667, book IV, ll. 799–809)

19 Crocker quotes a letter to Hartlib, possibly of 1652. I am indebted to Doris McIlwain’s unpublished work on enthusiasm. The best survey is Heyd 1981, especially pp. 271–80 on medicine and culture; see also Schwartz 1978: 50–2. On Restoration witch theory see Easley 1980: ch. 5; Jobe 1981. Walker (1981) examines case studies in possession.

One persuasive, toadying spirit infiltrates the female defences to pervert the 'natural' course of other spirits, producing all the worst sorts of thoughts. The failure of discipline in Eve's animal spirits is the Fall.

Cognitive distempers, vanity, and pride were also infused by the Devil into the animal spirits of the 'French prophets': or so said their critics. While orthodox Anglican divines and scholars laboured at exact biblical chronology, at putting the past in its proper order, the prophets themselves claimed inspirational causation: their bodily agitation, garbled pronouncements, and disorders of memory (which sometimes prevented later recall of what they said and did in prophetic trance) were caused by the action of the Holy Spirit on its metaphysical messengers and kin, the animal spirits (Schwartz 1978: 71–81). The prophets deny themselves status as the origin of their own action, surrendering autonomy to prior causal force.

Hume had these prophets in mind when, in a letter of 1734 to a doctor (Cheyne or Arbuthnot), he eloquently described his history of nervous disorders, wasted spirits, and courses of 'Anti-hysterical Pills'. He spied a 'pretty parallel' between his case and that of 'the French Mysticks, and . . . our Fanatics here'. Since their 'kind of Devotion depends entirely on the Force of Passion, & consequently of the Animal Spirits', Hume conjectures that 'their rapturous Admirations might discompose the Fabric of the Nerves & Brain, as much as profound Reflections, & that warmth or Enthusiasm which is inseparable from them' (Hume 1734/1993a: 349). Author of his own case history, promoting himself to 'the Disease of the Learned' within a community of sympathetic readers (compare Deutsch 1994: 10–17), Hume here also betrays an ambiguity between philosophy and possession which haunts the eighteenth-century scholar. Isolated reason in excess springs from rapture and desire just as does cult behaviour. 'Profound Reflections' tax nerves, brain, and animal spirits in a bodily economy with limited resources, in which the 'pretty parallel' with the action of disreputable religious forces brings no security to the sensitive suffering reasoner.

But the point is not just that the varieties of spirit remained metaphysically proximate into the eighteenth century. New ambition in physiological psychology now placed individual reason or will, depending on the metaphysical scheme, alongside all the other possible causes of spirit motions. No matter what the ontological status of soul and volition, rational choice had to operate through the animal spirits just as God and the Holy Spirit had always been meant to. Extra strain on the individual as the origin of action left it difficult safely to distinguish reason from its shadows. In illustration of this I take a minor medical writer carefully studied by Lester King.

Friedrich Hoffmann writes in his popular *Fundamenta medicinae* of finely articulate animal spirits which control all tissues and organs (Hoffmann 1695/1971). Even if Hoffmann's vaunted mechanism disguises belief in Neoplatonic hierarchies of souls, he tries to use animal spirits in a number of

naturalistic explanations (King 1970: 181–204, 1978: 36–9). But in a wonderfully titled later work, *De potentia diaboli in corpore*, Hoffmann lists the ways in which the Devil can act through his intermediaries, the animal spirits (which thus become evil spirits), to produce such undesirable effects as convulsive disorders (when the spirits are agitated), and, when Satan diminishes the spirits' force, melancholy, impotence, and 'slack tonus' (in King 1978: 203–7).

As King notes, the fact that the same disorders of animal spirits which cause disease could themselves spring either from supernatural demonic malevolence or from an 'involuntary internal cause' which is natural raised severe diagnostic difficulties.<sup>20</sup> The philosophico-moral difficulty is related, for diabolic action on animal spirits works in exactly the same way as the action of the rational soul on the spirits is meant to in ordinary decision-making (King 1978: 205). It had always been hard, in fraught contexts, to tell who is 'strangely deluded by some cogging divell' (Babb 1951: 47), to know which 'memories' are false.

Spirits theorists easily project on to the Devil what was feared about the violence and randomness of the spirits' passages in ordinary cognition. Rational choice is mechanically and phenomenologically indistinguishable from less acceptable procedures, with only social norms capable of arbitrating. The beneficent balance of the spirits is threatened and displaced by 'distemperd, discontented thoughts'. Hillel Schwartz draws these themes together in outlining a gradual early eighteenth-century shift towards naturalising explanations of mental disorder, in a slow movement 'from evil spirits to animal spirits' (Schwartz 1978: 43). A blur between natural and supernatural was convenient for many social groups, who could talk equally of brain agitations and demonic possession, 'as if medical terms were but euphemisms for the wiles of the devil' (1978: 47). Inability to maintain proper cognitive discipline could be both symptom and source of awful internal anarchies, as victims of physiological turmoil or frailty slipped from order into interior chaos.

The construction and fortification of the moral agent, then, required vigilance against the mischievous spirits' roles in misassociation and imagination: the ordered action of the soul on the spirits, rendering them its obedient messengers, constitutes the agent's rationality. Memory, rationality, and personal identity are interdependent, and all rest on fleeting animal spirits.

#### 9.4 The scholar's fragile virility

##### *Ruffled spirits*

Tristram Shandy, assuming that 'you have all, I dare say, heard of the animal spirits', begs us at the outset of his tale to take his word that 'nine parts in ten of a man's sense or his nonsense, his successes and miscarriages in this world

<sup>20</sup> King (1978: 206–7) discusses seven unconvincing criteria for cases of demonic influence suggested by Hoffmann.

depend upon their motions and activity, and the different tracks and trains you put them into' (Tristram Shandy I.1: 5). Sterne is even less sanguine than Locke about our chances of voluntarily putting the fleeting spirits anywhere. Tristram's manliness is always in question, for the animal spirits of his wriggling embryonic homunculus have been 'ruffled beyond description' (I.2: 6): Mrs Shandy's untimely question to Tristram's father Walter about the winding of the connubial clock resulted in involuntary emission and a horrible dis-ordering of the paternal animal spirits. It does not take much disruption in initial conditions for a whole life to be 'ruffled': small differences in Shandean causes (like Slawkenbergius' nose) have large effects (Berthoud 1984: 27–8).

Sterne's play here is one of his serious parodies of philosophical theories borrowed through Locke from Descartes.<sup>21</sup> He catches the feel of theories of associative memory in the Cartesian-empiricist philosophy of the brain: when, Tristram declares (still on the opening page), the spirits

are once set a-going, whether right or wrong, 'tis not a halfpenny matter, – away they go clattering like hey-go-mad; and by treading the same steps over and over again, they presently make a road of it, as plain and smooth as a garden-walk, which, when they are once used to, the Devil himself sometimes shall not be able to drive them off it. (I.1: 5)

A century after Milton, the manic spirits are even more powerful than Satan (though, as we shall see, the Devil gets them in the end). In what Sterne refers to as Locke's 'history-book', he finds among the causes of 'obscurity and confusion, in the mind of man' certain defects of memory, 'a memory like unto a sieve, not able to retain what is received' (II.2: 70–1).<sup>22</sup> I return below to the comic arguments which Sterne, revelling in the polysemy of medico-moral terms (Porter 1984: 87), uses to undermine cognitive discipline in memory theory. But first it is worth tracing back to the mainstream Cartesian tradition the Shandean suggestion that overuse of the animal spirits in the brain, in study or contemplation, may render the scholar 'less suitable for procreation'.

#### *The expense of spirits*

The 'Cartesian philosophy of the Brain' describes how, in the differing motions of blood away from the heart, its 'liveliest, strongest, and most subtle' parts

21 For background on Sterne's uses of Locke see Tuveson 1962; Day 1984; Hawley 1993. Lamb (1989: 56–82) looks at Sterne's use of Hartley and other associationists. On physiology in Sterne, see DePorte 1974: 107–35; Myer 1984. Sterne is working closely with the entwined Cartesian/Lockean animal spirits theory. Myer's paper is one of the few extended discussions of animal spirits theory of which I know, and it suggested the title of this section.

22 The narrator undertakes, in a little home experiment, to make this matter so plain to 'Dolly your chambermaid' that she 'should understand it as well as Malebranch' (p. 71). The Cartesian heritage of Lockean psychophysiology is clear, Sterne's uses proving that this network of ideas was at once mechanistic and psychosomatic (Porter 1984: 91).

pass out by the straightest line (according to Descartes' physics of motion), the 'direct route' via the carotid artery to the brain. There animal spirit particles are separated out further, to play the roles I have sketched in sensation, memory, and muscular motion. But those particles which are next in strength and liveliness, which cannot reach the brain because of the narrowness of the carotid artery, are drawn instead 'to the organs designed for generation' (Descartes, *L'Homme*, AT xi.128, H 18; Figure 5).<sup>23</sup>

In a note to this passage, on the verge of Descartes' full treatment of memory, his editor, the physician and physiologist, Louis de La Forge appended the following observations:

one can confirm this dependence and communication which obtains between the spirits of the brain and those of the testicles by experience, which shows that those who are dedicated to study and who exercise their imaginations and their brains a lot, are not ordinarily very suitable for procreative functions . . . since most of those parts of the blood which have greater strength and motion have gone to their brains, there are hardly any of them left for procreation. By contrast, those who are given to debauching women are not very suitable for serious application to study. (La Forge 1664: 210)<sup>24</sup>

The idea of a peculiarly intimate connection between psychological and generative functions is ancient (chapter 2 above). But in the late seventeenth century, as Desmond Clarke shows (1989: 154), the specific hypothesis of a link between study and decreased male fertility suddenly came to be treated as established empirical fact. Clarke quotes the Cartesian Claude Gadroys: 'there is an infinity of examples which prove this communication. Those who weary their imaginations by study are less suitable for procreation, while those who, on the contrary, dissipate their minds in debauching women are not as suitable for study.' The idea spawned research programmes: the Oxford physiologist Richard Lower (an acquaintance of Locke's) tested the theory that spirits are

23 Although here Descartes does 'not wish to enter further into this matter', he does refer to similar views in the *Description of the Human Body* and *First Thoughts on the Generation of Animals*.

24 Translated by Desmond Clarke (1989: 154), to whose account I am indebted. Whether or not there is a parallel story for women's animal spirits is unclear: Descartes only refers, cryptically declining to expand, to the way in which traces 'can sometimes even be caused, by certain actions of the mother, to be imprinted on the limbs of the child being formed in her entrails' (*L'Homme*, AT xi.177, H 87, CSM 1.106). Malebranche's discussion of 'the communication between the brain of a mother and that of her child' (LO 112–24, II.1.7) is an attempt to link the detailed psychophysiology of animal spirits and memory traces in the first chapters of book II with tentative developmental and educational theory and advice in II.1.8 (LO 125–30; contrast Huet 1993: 45–55). See footnote 15 above on maternal imagination. But it is important in this context, where historians have puzzled over the way women's bodies were constructed in the eighteenth century as too intimate with themselves (Foucault 1965/1988; Rousseau 1993), to stress that the problematic male economies of fluids which I discuss in the text rendered obvious the incompleteness of conceptual desires to seal the male body and guarantee its self-sufficiency.

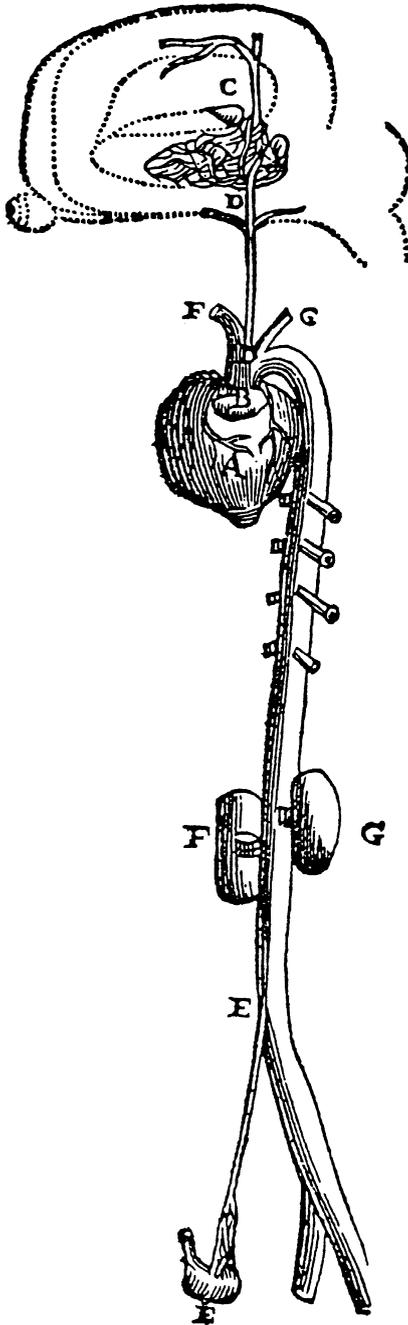


Figure 5 Channels of communication between spirits of the brain and of the testicles (Descartes 1664: 18).

the origin of sperm by looking (unsuccessfully) for channels through which spirits might flow in the testicles of a boar (Brazier 1984: 69). Mandeville describes the 'extraordinary commerce' between the soul and both genitals and stomach, and the concomitant dangers to the intellect of squandering away the spirits in venereal pleasures (Mandeville 1711/1976: 132–3, 144–5; Monro 1975: 62–5). So Sterne's readers would have known, as he expected them to, of how the animal spirits are 'transfused from father to son, &c. &c. – and a great deal to that purpose' (Tristram Shandy I.1: 5).

What can historians make of all this? T.S. Hall, referring only to Descartes' suggested links between the spirits of the brain and those of 'the organs designed for generation', laments that his 'whole picture is speculative and deductive and exhibits the sometimes disastrous consequences of his incautious dependence on reason divorced from adequate observation' (H 18–19, n. 39).<sup>25</sup> This is too quick a dismissal. It would make sense, even within a Whiggish history of science, only if we were entirely confident in dismissing the theory as an explanation of a wholly chimerical set of explananda. But it is at least controversial for us to deny that an important source of energy for psychological function is libidinal. Mandeville, one of many theorists explaining the peculiar female susceptibility to hysteria, has one character remark that 'one hour's intense thinking wastes the spirits more in a Woman, than six in a Man' (in Porter 1987: 105; compare Monro 1975: 66–7). So at the very least, social constructions of both intellectual and sexual gender characteristics which relied on such a connection have to be explained.<sup>26</sup> While philosophers of consciousness might always have liked to restrict the scope and effects of 'the naughty and nasty bits . . . the seamier side of one's mental life' (Churchland 1983: 81),<sup>27</sup> perhaps early modern neurophilosophers had more of a sneaky awareness than they have been credited with that the sexual instincts and their vicissitudes might permeate even the loftiest and most sublime realms of scholarly activity.

- 25 Clarke's concern (1989: 131–63) is to defend Cartesian hypothesis-formation, in line with Descartes' view that the natural philosopher is free to make any assumption provided 'that all the consequences . . . agree with our experience' (*Principles* III.46, AT viii(a), 101, CSM I.256–7): but in this specific context, while he thinks the research programme is not a 'complete methodological aberration', Clarke rejects Descartes' particular account as 'mere speculation, with none of the redeeming qualities required to save it from being "purely arbitrary"' (1989: 153–5). The very prevalence of the idea in traditions both before and after Descartes should suggest that, even if false, it is not purely arbitrary.
- 26 In *Unstable Ideas*, Jerome Kagan (1989: 116–17) looks briefly at one strand of the subsequent history of the idea. Gradually it became useful to those seeking reasons to debar women from higher education. Since women require more energy for reproductive functions, they have less energy to spare for thought, and so must be freed from troubling studies. Thanks to Doris McIlwain for this reference. I do not know how those male scholars in subsequent periods who still accepted the theory thought of their own suitability for procreation.
- 27 Churchland, of course, is arguing that, in fact, much more than the naughty bits escapes our introspective awareness.

Tristram Shandy's disordered narrative and life resulted from the disorder of animal spirits caused by his father Walter's lack of control. Both Walter's obsessively tangled rationality and Tristram's own impotence (Tristram Shandy VII.29: 415) derive from the tricks played on them by the quick and nimble animal spirits.<sup>28</sup> Binding the scholar to the limitations of his body, spilling into every enclosure of brain and nervous system, ficklely unable to keep to their proper traces, the miraculous, volatile animal spirits are no fit vessels to bear the weight of the self-conscious male moral agent. As the fluid medium of memory, they threaten at every turn to upset the Lockean person's confidence in the continuity of his identity over time. Memory is no bulwark against irrationality, atheism, and immorality because it renders 'moral Man', in a sense, hostage to the animal spirits: if they cannot be controlled, kept from undesirable associations in the dark caverns of the mind/brain, the whole fragile construction may collapse into absurdity.

Myer suggests (1984: 109–10) that Walter Shandy, with his rambling discourses 'held together only by random links of memory and leading nowhere', is a 'victim of the association of ideas, a severed head', whose distrust of the body and privileging of the intellect holds lessons for us all. She quotes Walter's 'lamentation' for the 'embryotic evils' of Tristram's conception, when, according to Walter, 'the few animal spirits I was worth in the world, and with which memory, fancy, and quick parts should have been convey'd, – were all dispersed, confused, confounded, scattered and sent to the devil' (IV.19: 236). Satan is victorious, the best-laid plans of the rational agent foiled again, unmanned by confusion of the animal spirits. The regularity which theorists who privilege cognitive discipline wish to find in human psychology is internally fragmented into fluttering thoughts, satirised while sought by Sterne's characters in their comical and tragic attempts to live like the Pythagoreans by 'getting out of the body, in order to think well' since 'no man thinks right whilst he is in it' (Flynn 1990). Shandeism is intended as tonic, full of digressions and fractured narratives to force the blood 'and other vital fluids of the body to run freely' (Porter 1984: 90). But the animal spirits which subserve and drive memory, imagination, and action do not inevitably provide extra therapeutic security when running their anxious paths.

In one of Toby's disputes with Walter, association just is confusion in a

<sup>28</sup> When Phutatorius ('the copulator') was struck by a hot chestnut through an unfortunate 'hiatus in [his] breeches', even his soul, together with his imagination, memory, and all other mental capacities, 'with ten battalions of animal spirits, all tumultuously crowded down, through different defiles and circuits, to the place in danger' (Tristram Shandy IV.27: 257; Myer 1984: 106). In a crisis of virility, the organs designed for generation dominate mind and soul, the animal spirits' passage 'leaving all his upper regions, as you may imagine, as empty as my purse' (IV.27: 257).

context-dependent machine. Cognitive processes and theories of cognitive processes change over time as history, technology, and culture change.

Now, whether we observe it or no, continued my father, in every sound man's head, there is a regular succession of ideas of one sort or another, which follow each other in train just like – A train of artillery? said my uncle Toby. – A train of a fiddle stick! – quoth my father, – which follow and succeed one another in our minds at certain distances, just like the images in the inside of a lanthorn turned round by the heat of a candle. – I declare, quoth my uncle Toby, mine are more like a smoak-jack.<sup>29</sup> – Then, brother Toby, I have nothing more to say to you upon the subject, said my father. (III.18: 151)

What, then, is the 'sound man' to do? Confusion has its seductions too, and Walter cannot get Toby's smoak-jack out of his head, for 'there was something in the comparison at the bottom, which hit his fancy'. His wishful Lockean point about the regularity of associative trains is left unmade: with Walter's 'spirits being wore out with the fatigues of investigating new tracts . . . the idea of the smoak-jack soon turned all his ideas upside down, – so that he fell asleep almost before he knew what he was about' (III.20: 152). But a more lasting and more secure response than sleep or exasperated silence was already being made, as moral physiologists tried to strike at the heart of the cause of the confusion, and eliminated the animal spirits.

29 A 'smoak-jack' is 'a machine for turning a roasting-spit by use of currents of hot air in a chimney'.