

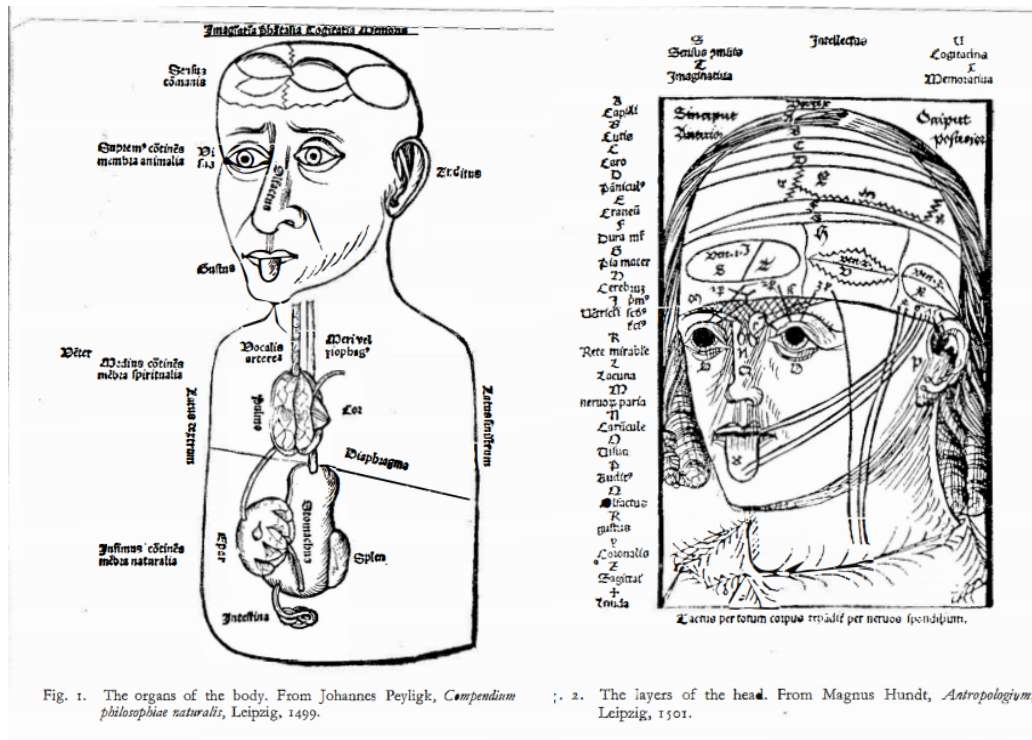
## THE INWARD WITS: PSYCHOLOGICAL THEORY IN THE MIDDLE AGES AND THE RENAISSANCE

E. Ruth Harvey

University of Toronto

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[Selection by Peter Berkman]



University of Toronto medievalist E. Ruth Harvey's 1975 study "The Inward Wits: Psychological Theory in the Middle Ages and the Renaissance" is noteworthy due to its tracing of the doctrine of the inner senses (or "inward wits") within the context of medieval medicine. In the 10<sup>th</sup> century treatise *The Royal Book* written by the Persian court physician Haly Abbas and translated into Latin in the 12<sup>th</sup> century as *Regalis dispositio*, Harvey finds an exemplary instance of the medieval medical concern to foster a working harmony between body and soul in the "hybrid" human disposition. Correlating bodily functions and organs to the hierarchical formation of three levels of "spirit" – the natural spirit (liver and veins), vital spirit (heart, arteries, respiration, and passions), and animal spirit (brain and nervous system) – Haly holds that it is mens, the highest power of the animal spirit, which comprises phantasia, cogitatio, and memoria, each of whose impairment is

*implicated in distinct bodily and mental conditions. Haly's account, Harvey notes, represents the model of human physiology accepted by medieval learning; descriptions of the inner senses of phantasia, cogitatio, and memoria (along with the Aristotelian sensus communis), would be taken up, refined, and debated upon, by the Arabian philosopher Avicenna and, later, Thomas Aquinas, the latter of whom would accept much of Avicenna's commentary, but reject his dissociation of the intellectus agens from material perception.*

### THE INWARD WITS

In the second book of the *Faerie Queene* (1590), Edmund Spenser describes Sir Guyon's entertainment at the castle of Alma, a stately building of earth inhabited by a noble lady dressed all in white. The lady shows Guyon her home, taking him to the kitchen, the parlour, and lastly to the turret where her three counsellors live, each in his own room. The first is *Phantastes*, who looks into the future; he is never idle, and never rests. His room is extraordinary:

*His chamber was dispaigned all within,  
With sundry colours, in the which were writ  
Infinite shapes of things dispersed thin;  
Some such as in the world were never yet,  
Nor can devised be of mortall wit;  
Some daily seen, and known by their names,  
Such as in idle fantasies do flit:  
Infernal hags, Centaurs, Fiends, Hippodames,  
Apes, Lions, Aegles, Owles, fooles, loners, children, Dames.<sup>1</sup>*

This room appears to be filled with buzzing flies, swarming like bees:

*All those were idle thoughts and fantasies,  
Devices, dreams, opinions unsound,  
Shows, visions, sooth-sayes, and prophesies;  
And all that feigned is, as leasings, tales, and lies.<sup>2</sup>*

In contrast to the staring, melancholy *Phantastes*, who looks as if he is mad, the next counsellor appears to be full of sound knowledge and ripe wisdom [*Cogitatio*, or "thought"]. His walls are painted with pictures of judgement and philosophy, arts and sciences, 'and all that in the world was aye thought wittily'. The third counsellor is a very old man, whose room is crumbling with age, and hung with ancient scrolls and records. The old man is called *Eumnestes*, and he remembers everything:

*This man of infinite remembrance was,  
 And things foregone through many ages held,  
 Which he recorded still, as they did pass,  
 Nor suffered them to perish through long held,  
 As all things else, the which this world doth weld,  
 But laid them up in his immortal shrine,  
 Where they forever incorrupted dwelled.<sup>3</sup>*

A little boy helps Eumnestes by searching for things, and fetching them for him.

These three counsellors who advise Alma on the government of her earthen castle could also be called *phantasia*, *cogitatio*, and *memoria*; they are 'inward wits', the human powers which occupy the area between the body and the soul [or, intellect]. Spenser is describing a traditional psychological theory, resting on the medieval commonplace that man belongs to two worlds: the external material world into which he is born, and the higher world of intellect and truth, inhabited by immaterial beings, to which he may attain. The inward wits stand at the point of communication between these two worlds in man, between the body and the soul, the realm of sense, and the realm of intellect. They fill a gap in the medieval scheme of things. It is the history of the theory of the inward wits which is the subject of this survey.

A convenient summary of the medieval scheme of things is provided by Nemesius, bishop of Emesa in Syria at the end of the fourth century. His short book in Greek, *On the nature of man* (frequently ascribed to Gregory of Nyssa), was translated into Latin twice during the Middle Ages, and both Thomas Aquinas and Albertus Magnus made use of it.<sup>4</sup> Nemesius begins his account with a description of man the microcosm. Man is made of an intellectual soul joined to a body made of the four elements, the basic units of matter. In common with the plants, he has the powers of growth and generation; and, like the animals, he has in addition voluntary motion, passions, and the powers of breathing and sensation. Man's reason links him with incorporeal and intellectual beings like the angels, and like them too he has the ability to pursue virtue, and the desire for beatitude. Just as the magnet links the realms of element and plant, and the mussel and sponge bridge the division between plant and animal, man joins the visible to the invisible, the sensitive to the intellectual; but he also contains within himself some qualities of them all. Man's own particular distinction is that he is the only one of God's rational creatures to obtain pardon for the sins he commits, for God in his mercy takes into account the burden imposed on the rational soul by a body which is made of elements, and possessed by the irrational desires of the beasts. Each individual man should by his reason rule justly over his bodily faculties; and, in the same way,

the human race should rule over the whole of the lower creation, which was made for its benefit. No truly good man can be harmed by a lower nature: thus the lions spared Daniel, and Paul was not harmed by the serpent's venom. If the microcosm is rightly ordered, the macrocosm serves it. Nemesius brings his chapter to conclusion, marvelling at the perfection of the scheme of the universe, and man's unique position within it:

These things considered, who is able to commend sufficiently the nobility of this living creature? Behold, he bindeth together in himself things mortal and immortal; and knitteth up in One, things reasonable and unreasonable. In his own nature, he beareth the image of all creatures, and from thence is rightly called a 'little world'.<sup>5</sup>

These commonplaces are repeated endlessly throughout the Middle Ages. On the comprehension of man's middle state and hybrid nature depended moral doctrine and philosophy; all learning properly took its starting point from man.<sup>6</sup> Man is a rational animal; his reason sets him on a higher level than the beasts, yet he is an animal, and has some need for an animal body and animal powers. His body is mortal because it is a compound which tends to decay into its elements. His rational soul is immortal, and was created for a nobler end: it has needs which must be satisfied if it is to achieve happiness, yet these needs sometimes conflict with those of the body to which it is mysteriously bound.

The 'chain of being' in which Nemesius places man extends upwards from the lowest of creation to the Creator.<sup>7</sup> It may be regarded in two ways: as a progress from the material to the immaterial, and from the insentient to the intelligent. Lowest of all is matter, without form, and insentient. Then there are the elements, which have the four properties: heat, cold, moisture and dryness. The elements are organised into plants, and these are complex enough to have simple life; then, with increasing complexity of organisation, come the higher kinds of life, until in man the boundary between the material and the incorporeal is reached. Man's animal spirit is the subtlest kind of matter, and his soul is the lowest kind of purely immaterial substance. In the same way, man's powers of sensation and perception are shared with the higher animals, but his reason, while being the lowest kind of intelligence, is held in common with the angels. Nemesius has indicated with his examples of magnet and mussel that the macrocosm contains infinite gradations of being; and in this, as in all things, the microcosm resembles it. The transition from material to immaterial, from non-rational to rational within man takes us into the chambers of the inward wits,

where the finest kind of all matter, the animal spirit, performs its subtle operations. It was at this point that the soul and body met, although the borderline of the unbodily and the bodily was difficult to define. The attempt to define it, and the traffic across it, was made chiefly by two classes of writers: the philosophers, in their enquiries into the nature of reason and knowledge, approach it from the side of the soul; they ask how the soul is affected by the information supplied by the body, and by the demands it makes. The other group, the doctors, are led to it by their search for the causes of the afflictions of the body, and by their examination of the effects of injuries. Both medicine and philosophy contributed to the final formulation of the idea of the inward wits; but the idea developed differently in the two disciplines. Since medieval philosophers accepted the information provided by the doctors as proven fact, it will be more convenient for our purposes to begin with the medical aspect of the sensitive powers. The doctors dealt primarily with man's body, treating it as an unstable compound to be preserved as long as possible by means of their art; their writings indicate the limit they set to the material constitution of man, and show how far they were prepared to encroach upon the soul in their treatment of mental disorders.

#### HALY ABBAS (d. 944/5)<sup>8</sup>

Haly Abbas is the usual Latin rendering of the name of 'Ali ibn al-Abbas al-Majusi, the court physician at Shiraz. His last name, 'the Magian', indicates that he, or his father, was a Zoroastrian. His master, the Buwayhid ruler Adud al-Dawla, an amir who held the real power in Persia during the rule of a puppet caliph, showed great interest in medical affairs, and completed in 982 a great new hospital in Baghdad. Haly Abbas wrote for him his work *Kitab al-Maliki* (*The Royal Book*), described by the ancient Arabian historian al-Qifu as 'a splendid work and noble thesaurus comprehending the science and practice of medicine, admirably arranged'.<sup>9</sup> Constantine the African (d.1087) translated part of it into Latin; entitled *Pantegni*, it often passed under his own name. A complete version was made by Stephen the Philosopher; he finished it in 1127 and called it *Regalis dispositio*; this is the text published at Venice in 1492.

The 'admirable arrangement' of *Regalis dispositio* is its most striking feature. Haly was very proud of it: he intended his book to be the last word in medicine, and he wrote several prefatory chapters to make this clear. First of all he criticises all his predecessors in the art: they are without exception found wanting. Hippocrates is obscure from excessive brevity. Galen wrote much, but

he was led into prolix sophistries by the enemies of truth. Oribasius omits too much, and Paulus is deficient; so too are Messius and Johannes son of Serapion. Razes is too concise in his shorter work, and although in his *Liber continens* he omits only the elements, complexions, humours, and the explanation of the powers of limbs and spirits, the work has no method, and it is much too big to copy. Haly's own work will contain everything necessary, and it is therefore going to be the most useful. The arrangement is the author's own, who in chapter three names himself, lest any misunderstanding arise: *hali filius Abbas magi, medicine discipulus habimeher mousi filii sciar, misereatur ei Deus!*

The criticism of Razes makes it evident that Haly is much more interested in causes than effects, for what he objects to is Razes's restraint with regard to the undemonstrable. Haly takes a wider view of the extent of the physician's province and responsibilities: in the chapter 'On the excellence of the Art of Medicine', he claims that the doctor is the noblest of men because he makes intellect possible.

But indeed, no wise man, nor even one of small intellect, can doubt the excellence of the art (most excellent of all the arts), the greatness of its value, and the need all men have of it. For since man is higher and nobler than all other living beings by virtue of his own God-given reason, that is, his mind (animus), by which he has discretion and cognition of things, he must turn to it in all the necessities of human self-government, and in the actions and other works necessary for life, that men may obtain benefits in this world and glory at last. But there can be no mind without the health of the rational soul, and the health of this is obtained only when the vital soul and the natural soul are healthy, nor can either of these be healthy without a healthy body, and this comes about from the balance of the humours. The balance of the humours comes only from a balanced complexion, which cannot exist perfectly without the rules of the art of medicine, by means of which health is preserved in the healthy, and is restored when it has been lost. Since these things are so, the art of medicine is necessarily held to be more excellent and greater than the other arts, because of the value of health and soundness, without which it is quite impossible to perfect the state of man.<sup>10</sup>

This statement is an explicit declaration of the medical scheme of things: the abiding and fundamental importance of this most noble of arts is to enable the mind to work perfectly in conjunction with the body, to perfect the state of man

the hybrid. The book *Regalis dispositio* works out this scheme in detail: according to Haly's admirable order, it works up from the elements to the threshold of the ruling mind.

The work is divided into two parts, the theoretical and the practical, and each of these contains ten books. The ten theoretical books are divided into 'things natural' (I-IV), 'things not natural' (V), and 'things outside nature' (VI-X). 'Things natural' comprise everything that makes up the human body: elements, humours, members, and spirits, to follow the order from lowest to highest. In this section Haly includes complexion, and lists the temperaments of each part of the body; the heart, for example, is naturally hot; the brain is cold and moist. The treatment of the humours, the 'sons of the elements', is convention: blood is the basis of the four, the others separate out from it. The simple members follow; here Haly explains that veins need only one covering, but arteries (*pulsantes vene*), need two, because they carry subtler blood which is partly spirit. In the course of book III Haly arrives at the brain, first of the compound members because it is the noblest, being the principle of the rational soul:

Now I say that the brain is more noble and more honourable than the other members of the body, for it is the seat, as it were the furnace of the rational soul, through which come about mind, and discretion, and the origin of the senses.<sup>11</sup>

It is placed at the top of the body for the sake of the eyes, so that man can see further, like an observer on a hilltop. The brain is a white body, without any blood, and soft like the soft nerves, only more moist than they; it has to be like this because it must change swiftly into the likeness of the objects of perception. It is divided into a larger after part called the *prora*, which gives rise to the sensory nerves, and a smaller, harder part, the *puppis*, from which springs the spinal cord, which needs to be stronger and tougher in order to cause motion. In the *prora* are two ventricles, which breathe in air (the cerebral *flatus*), and in them the vital spirit becomes animal spirit. Two projections in them, like nipples, are the end points of the sensory nerves, which lead to the organs of the five senses. In the *puppis* there is another ventricle, to which the animal spirit is conveyed through a special passage. A deep space at the top of this passage, just below the two front ventricles, is often called the *ventriculus medius* or *congregatio ventriculorum*; it is rounded in shape in order to be more capacious of the spirit which it collects from the front ventricles to pass on to the rearmost one. The connecting passageway can be closed by means of the *vermis*, a worm-shaped body. There are two kinds of superfluity produced by

the brain: the smoky, vaporous kind rises up and seeps out through the suture joints between the skull bones; the heavier kind sinks downwards through the two passages leading to the nostrils and the palate. Air is drawn up into the brain through the passage from the nostrils, which is provided with a filter to prevent the cold air from reaching the brain before it has been delayed and warmed a little.

Beneath the brain and above the palate extends the *rete mirabile*. It is made from the pair arteries which come to the brain from the heart; they divide and interweave to form a structure like one net laid on top of another, impossible to disentangle. This structure serves to prepare the animal spirit, which, being more subtle than anything else in the body, must be slowly and carefully made. The vital spirit in the arteries is delayed and 'cooked' in this netlike web until it becomes animal spirit, or almost animal spirit; and it is then carried up by the pair arteries emerging from the top of the net to the anterior ventricles, where the process of decoction is completed.

After describing the organs of the senses which belongs to the brain complex, Haly moves down the organs of the vital spirit. His description of the heart's workings is much like that of Razes, but more elaborate. He tells how the blood from the liver enters the right ventricle, and then goes to the lungs (via the *vena arterialis*) in order to nourish them. The *arteria venalis* takes air from the lungs directly into the left ventricle of the heart.<sup>12</sup> In the left ventricle vital spirit is prepared from the air from blood coming in through the *septum* from the right ventricle. This vital spirit carried by the blood is then driven out of the heart through the great artery and its branches, to vivify the whole body. Whereas Razes merely mentions the *formaina* in the *septum* between the ventricles of the heart (which of course do not exist), Haly gives a detailed description of the imaginary passageway.

Now the passage which leads from the right concavity to the left is larger on the right-hand side, and thence gradually narrows until it reaches the left side. This is because it is necessary to transmit the blood (which has come from the liver through the *vena cava*) from the right to the left side [of the heart]. The passage by which it goes to the left side is made tight, so that the subtlest of the blood should be sent to this side of the heart.<sup>13</sup>

From the point of view of medieval physiology this passage was very useful, for the vital spirit was held to be generated in the left ventricle of the heart from the blood which passed in from the right ventricle, 'fed' with the air brought in from the lungs; the narrow passage served to filter off the purest and subtlest of



the blood in the right ventricle to make the spirit. Filtering and decoction were regarded as essential processes of refinement.

Haly reaches physiology proper in book IV, when he describes the workings of the body in terms of three different kinds of spirit effecting their different operations, working his time from lowest to highest. The powers of generation, nutrition and growth are effected by the natural spirit, whose seat is the liver and the veins. The natural spirit includes various subsidiary powers, like the *virtus attrahens*, which causes each member of the body to attract the nourishment it needs from the blood in the veins; this power is best seen in wheat planted in brackish fields: wheat has a salty nature, and attracts the salt from the ground, leaving the soil sweet. The second spirit, the vital spirit, is made in the heart out of the natural spirit in the blood, and it is then distributed through the arteries. Breathing is necessary for the sake of the vital spirit, for respiration cools the heart, and increases and tempers the newly-formed vital spirit within it. Any noxious vapours arising out of this process pass back from the heart along the *arteria venalis* to the lungs, and are breathed out. Hence man dies much quicker when his breath is withheld than his foot is withheld. Death, or the extinction of the vital spirit, can be likened to the extinction of a candle flame: as the oil in the lamp can run out, and the flame 'dies', so when too much blood is lost the vital spirit 'goes out'. Excessive joy causes the spirit to rush from the heart to the extremities; if it is too violent the spirit is dissipated, and the vital spark is blown out like a candle in the wind. Extreme fear has the opposite effect but the same result: the flame is choked and extinguished.

The behaviour of the vital spirit is responsible for the passions. An external cause, such as a wild beast or a serpent, or even a terrible nightmare, makes the vital spirit withdraw to the heart: this constitutes the sensation called fear or dread. Another kind of external event may cause the spirit to become heated and to rush out from the heart, producing a desire for vengeance: this is known as wrath. These passions affect man as well as animal, but in man they are subject to the discretion of the rational power in the brain:

In man, wrath and rashness are under the rule and discretion of the rational power whose seat is the brain. For man has the power to lay aside his wrath, and he knows the time when struggle is necessary, how he may be freed from it, and effect a refuge when attacked, and he also judges such things with their own circumstances; but the irrational animal does this by nature, without any discretion of mind to overrule them.<sup>14</sup>

The 'rational power whose seat is the brain' operates by means of the third kind of spirit, animal spirit.

The animal spirit comprises three parts: the ruling power, which resides in the brain itself; the power of the sensation, which operates by using the sense organs and nerves coming to the front of the brain; and the power of motion, using the spinal cord and the nerves branching from it (IV *theor.* i). The animal spirit carrying these powers is made out of vital spirit and air, which is breathed in directly to the brain from the nostrils. The air also serves to keep the brain cool. The ruling power, *mens*, this threefold: it includes *phantasia*, *cogitatio*, and *memoria*, situated respectively in the two front ventricles, the middle ventricle, and the rear ventricle. The action of *phantasia* is 'to form things and to represent them, and to pass them on to *cogitatio*'.<sup>15</sup> *Cogitatio* is the greatest of the three, and it is appropriate to man above all creatures. Animals have by nature certain capabilities: the horse is good at running, the bull at ploughing, and the dog at guarding, but unlike man, they have no discretion. The action of *cogitatio* is to examine the matters imagined by *phantasia*.

it looks into things imagined by *phantasia*, actions, that is, arts, sciences and other matters, and their rule and disposition.<sup>16</sup>

If *cogitatio* calls for physical action, this is effected by the powers of movement. *Memoria* is the guardian which preserves the matters of *cogitatio*:

*Memoria* is the guardian, who preserves those things which the cogitation of the intellect has ordered and formed, and impressed in its places. Therefore they remain firm and stable until the time when there is a need for them to be brought from potential to act.<sup>17</sup>

*Cogitatio* is the chief of these three powers, it rules the other two.

The actions of the power of sensation are effected by means of animal spirit which varies slightly with each sense; thus visual spirit is the subtlest, and has a rather fiery nature, whereas auditory spirit is more airy, taste is watery, touch is earthy, and olfactory spirit is both watery and earthy.<sup>18</sup> The visual spirit runs down the hollow nerve to the eye, where it receives the impressions of colour and shape at the crystalline lens. The other senses work similarly.

The animal spirit brings Haly to the margin of his subject. Before he moves on to the next section, 'things not natural', he feels bound to ask whether this animal spirit is the same thing as the soul or not. He repeats Galen's account of the experiment of cutting into the brain of a living animal.<sup>19</sup> This operation

deprives the animal of sense and motion, but only temporarily; if the brain's coverings are replaced, the animal powers are restored. Now if the animal spirit, which is a body, were the whole soul, these powers could under no circumstances be restored, because all spirit would escape when the brain was opened. The experiment suggests that there is some principle behind the animal spirit which merely uses it as an instrument, and is not affected by its temporary loss. Haly concludes that the question of the soul is in any case a matter for philosophers, not doctors.

Having completed 'things natural': the human body, what it is made of, and how it works, Haly continues with 'things not natural': the externa legend which affect the body from the outside. Chief among these is the air, for this is directly concerned with the constitution fo the bodily spirit and the humours: if the air is pure and clear, the spirit will follow suit, but if it is murky and turbid, the humours and spirits will have the same qualities. The air is altered by the seasons and stars, the winds and regions and vapours. The doctor must consider all these effects, and study the situation of the patient's home, the prevailing winds, and the time of the year. For example, the north wind has a very cold and dry complexion, and so it has good effects on the brain: it clarifies the spirits and humours, and purifies the senses and makes them subtle; unfortunately, its dryness causes coughs and pains in the chest, and damages the eyes. The sound wind has the opposite effect. Similarly, the northern regions, being cold and dry, are inhabited by strong fierce people with long thing legs (the cold drive sthe bodily heat inwards), but the dwellers in the East have a happier temperament.

For the people of these parts do not suffer from the extremes of pride, or wrath, or undue elation; they are a people of tranquility, mildness, and humility. For wrath, and the extreme of elation, are qualities of those who exceed temperance in heat.<sup>20</sup>

'Things not natural' also include exercise, baths, sleep, and food and drink. With regard to the latter, a man should take care to eat and drink the right things for his temperament. For example, the cold-complexioned should avoid grain, which is too cold, but honey, being hot and dry, will be good for them. Wine is good in moderation, as it increases natural heat and gladdens the soul, but persistent drunkenness is very dangerous:

For ebriety, if it is frequent, brings many evils to tbe body, among them the destruction of the ruling power, weakening of the mind, enervation of the animal powers; and by filling the

arteries and cerebral ventricles, it submerges and chills the natural warmth, causing apoplexy, paralysis, enfeeblement, coma, epilepsy, trembling and convulsions.<sup>21</sup>

Perfumes (V.xxxii) rise up directly to the brain, and thus affect it more than any other organ. The scent of roses is cool and dry, jasmine is warm and dry, and very good for dissolving phlegmatic humours in the brain. Violets are cool and moist, and they help sleep when placed fresh on the head. Sleep is caused by moist vapours rising up to the brain - hence drowsiness after meals - and insomnia results from dryness. Sleep is necessary to rest the senses and to digest food.

At the end of this section, Haly includes an interesting chapter on the passions, because passions affect the body as external causes (V.xxxviii). A man who is easily angry for slight causes is anxious, sad, and excessively scared; he holds false opinions, dotes, and often falls into the worst diseases, and may even die. However, the man who controls his wrath is strengthened in mind (*animus*) and *cognitio*; it is unlikely that he will never feel such passions again, but they will not exceed *temperantia*, and will be easily curable. Hence doctors should know how to remedy such passions by their opposites. A stimulus causing wrath makes the blood and natural heat rush out from the heart to heat and dry the body.<sup>22</sup> This may be proved by the fact that the eyes and face of an angry man are red and swollen. But wrath may be good for the timid, because they are cold, and their vital spirit has retreated to the heart. Steps must be taken to cure extreme morbid conditions before they go too far, for they tend to be self-perpetuating: the timid man is cold, and his coldness increases his feeling of timidity. A feeling of wrath or joy should be induced: joy is very beneficial to the worried, the sad, and the thoughtful. On the other hand, a little care is very salutary to one who is always joyful.

### THE ROYAL BOOK: ON THINGS OUTSIDE NATURE

The last section, 'on things outside nature', deals with diseases of all kinds. Book VI chapter x covers the different types of damage that can befall *mens* [the mind]: total failure or partial impairment, alteration or localised damage. Total failure is almost always the result of a bad cold complexion dominating the brain, causing senselessness and sleep, and if there are damp humours too, apoplexy or epilepsy. Partial damage can be caused by any bad complexion: cold causes immoderate sleep; hot, foolishness; wet, coma; and dry, insomnia.

Even more pernicious complaints result from the combination of bad qualities with an excess of humour. A combination of bad qualities can alter the nature of mind: too much cold and dry can cause timidity and dread, as well as melancholy hypochondria. On the subject of localised damage Haly is much clearer than Razes, though their common source in Galen is obviously the same. The man with the failed *phantasia* who 'thought he heard flute players in his room quite reasonably ordered them to leave, and he knew the people who visited him, because his *cogitatio* and *memoria* were working properly. A damaged *phantasia* can make things seem otherwise than they are. The man threw all the household vessels downstairs was suffering from the failure *cogitatio*: he thought it did not matter, and did not realise that they would break, "but he could identify everything and remember what he had thrown because his other two powers were in order." Impaired *cogitatio* is seen in the absent-minded. Failure of memory can be total, as in those Ethiopians cured of the plague, who forgot their own names and repudiated their friends; or it can be partial, this is ordinary bad memory. These pathological conditions result from the same causes as the defects of the whole brain above. The proof of this is that the same bad effects can be brought about by opium and mandragora, which are both excessively cold.

The particular diseases of the brain listed in book IX include melancholia, with many of its varieties. Some patients smile too much, some weep, some deny their existence. Others think they are animals, and some believe themselves to be prophets, and maintain that they can foretell the future. Melancholia is caused by vapours disturbing the brain processes, but without fever. An incurable variety called *canina* causes the patient to look yellow-eyed and to sit howling on graves all night. Here too Haly includes the disease of love, brought about by a mental fixation of *cogitatio* on the loved object.

Remedies for these diseased conditions are to be found in the second part of *Regalis dispositio*. Book I of practice can offer no medicament for passions apart from the advice to avoid care and envy at all costs, and to make a habit of Joy and gladness. In book III Haly recommends camphor, rose-water, and cool drinks for fevers caused by wrath, and wine, music, and bathing for those caused by sorrow. Those suffering from love must be moistened and diverted by oil of violets and pleasant company.

Haly's account of the working of the human body has been described in detail, because it is the clearest account of the system which was accepted throughout the entire Middle Ages. Razes must have assumed some such model, and Avicenna employs the same system; in its broad outlines it represents fundamental medical assumptions which went necessarily

unquestioned until the dissection of human corpses led to a new system being developed. Even then, the changes came very slowly.

Although Haly is far more interested in medical theory than Razes, and in consequence includes matters which are less subject to empirical enquiry, his attitude to philosophy and morality shows him to be an exclusively medical thinker. His account of the relationship between mind and body does not at any point mention the soul or mind apart from the body; mind is mentioned only in so far as it is subject to physical disorder and treatment. Indeed, in the opening chapter cited above.<sup>23</sup> Haly speaks as if the soul were completely dependent on the body and the bodily spirits, and it is in only one place that he suggests that this material organ, subject to the influences of food, climate, and the patient's physical situation, is not itself the human reason. This is when he asks himself, following Galen, whether the spirit is the soul, or only the instrument of the soul:

Now some of the wise hold that this spirit which is in the brain is the soul, and that the soul is a body. Others maintain that it is an instrument [or organ] of the soul, which it makes use of in all the senses; this seems nearer to our belief.<sup>24</sup>

Then follows the account of the experiment with the brain of a living animal; but this is not really conclusive in Christian or Moslem thought, for according to both man differs from animal in precisely this point: man has a soul which is of a different order from that of an animal. Haly, speaking as a physician, says that this is no concern of the medical man. His position seems to be that, whether the soul is the spirit, or merely uses the spirit, damage to the spirit causes the mens to fail, and this is where the doctor's art is supplied. Although Haly must have known from Galen that man does not differ from animals in the possession of cerebral ventricles and animal spirit, yet, since the human mind can work only by means of the animal spirit, it is possible to talk as if mind and spirit are identical. From a medical point of view, if the instrument of the mind were broken, the function would be just as impaired as if the instrument were the mind itself. Hence throughout his work, Haly refers to the *mens* as if it is damaged by ill-health and restored by the skill of the physician; only in the introductory chapter does he explain that *animus* cannot operate without a healthy bodily organ, and it is this body's health that is subject to physic.

In the same way, moral questions outside medical practice are not mentioned. The physician is not concerned with the moral excellence or turpitude of the passion of wrath, or a state of moderate drunkenness; he must busy himself only with understanding of the physical effects of wrath and

drunkenness, so that he knows when to prescribe them, and when to forbid them. Medicine is independent of the concerns of philosophy and morals; the physician's care is to provide a healthy body, which will lead to a healthy mind, but Haly has no concern with the mind as such.

[...]

### THOMAS AQUINAS (1224-74)

Thomas Aquinas worked at the University of Paris during the period when the works of Aristotle and the Arabian philosophers were for the first time becoming widely known and accepted in the West. Thomas built much of this controversial new knowledge into the structure of Christian doctrine, and attempted to harmonise Aristotle's views with those of the church fathers, making use of the work of the Arabian commentators, but not following them in all points.<sup>25</sup> The crucial point of difference between Aquinas and Avicenna is the role of man's body. Whereas to Avicenna the body was the soul's garment, and the soul was the man himself, to Aquinas man is a being made up of body and soul: *homo non est anima tantum, sed est aliquid compositum ex anima et corpore*.<sup>26</sup> Aquinas's insistence on man's composite nature, rather than on his intellect in isolation, leads to a momentous change in emphasis: a re-assertion of the debt intellect owes to sensation. The whole world of sensory experience - the external world, and the impressions (*phantasmata*) it leaves upon the soul of man - is regarded not only as necessary for man's development, but essential to his very nature; man was divinely created in just this way, and he achieves blessedness through it. Aquinas's view of man is set within a vast historical context between creation and beatitude: it is fundamental to his thought that a living man was made to be as he is in the first place, a hybrid creature with soul and body; his body is not a prison or a punishment, but a proper constituent part of his nature. The separation between man's two parts can never be complete or permanent. He rejects Plato's definition of man as *anima utens corpore* by asserting that sensation is a physical process: the pupil of the eye is altered by colour.<sup>27</sup> Only if sensation belonged to the soul alone could it be claimed that man is 'really' soul. Since sensation belongs to soul and body conjoined, and sensation is a human operation, man consists of both soul and body. It is no accident that the process of sensation plays so large a part in this argument, for, as we have seen, it is man's dependence on the physical organs of sense in spite of his presumed possession of a higher power which has constituted the problem of the extremes of soul and body. Man needs a variety

of powers, because he is a hybrid: *quia est in confinio spirtualium et corporalium creaturarum, et ideo concurrunt in ipsa [anima humana] virtutes utrarumque creaturarum.*<sup>28</sup> In sensation, the organs belong to the body and the power to the soul; the whole process introduces the external world in all its detail to the incorporeal intellect, which deals in abstractions.

### THE INNER SENSES

Aquinas has no particular quarrel with Avicenna over the nature of the inward wits, but only over the kind of service they render to reason. Defending Avicenna's choice of five wits, he reproduces a very simplified form the same arguments: stating that in the life of one of the higher animals there are various needs, and hence it must have powers corresponding to those needs.<sup>29</sup> An animal must be able to perceive its food by sight, smell or taste, and if it has voluntary motion, it must also be able to preserve some impression of it even when it is not present, so that it may be motivated by a desire to look for it. Hence it needs both *sensus communis* and *imagination*. Also, the sheep must know that the wolf is dangerous, and the bird must recognize the fitness of straws for nest-building; therefore they need a power which will perceive such properties; and this is *vis aestimativa*. *Vis memorativa* preserves the *intentiones* of *aestimativa*: we see that animals remember things if they are especially painful or pleasant. The fifth power, which Aquinas refers to as *fantasia*, is Avicenna's *imaginativa* or *cogitativa*:

Avicenna, however, assigns between the estimative and the imaginative, a fifth power, which combines and divides imaginary forms: as when from the imaginary form of gold, and the imaginary form of a mountain, we compose the one form of a golden mountain, which we have never seen.<sup>30</sup>

However, Aquinas prefers to follow Averroes in regarding this power as part of imagination, because it cannot be proved to exist in animals apart from man. Later on he cites this power's ability to form unnatural images in order to counter the argument that sensation is a purely passive process.<sup>31</sup>

Aquinas differs from Avicenna over *vis aestimativa* in man. The difference is more than a change in terminology; it demonstrates Aquinas's tendency to bring soul and body closer together. In his general discussion of the inward wits in the *Summa theologiae*, *aestimativa* is the only power whose organ is mentioned by



Aquinas: *cui medici assignant determinatum organum, scilicet mediam partem capitis*.<sup>32</sup> It will be remembered that in Avicenna, *extimativa* is the one chiefly affected by the addition of reason, and hence in man is called *cogitativa* or *ratio particularis*. Aquinas mentions this power particularly in connexion with the passions and free will, which receive very little attention from Avicenna. Aquinas insists that free will is as important a characteristic of man as is his intellect. When the sheep of the example sees the wolf, it has no choice but to run away; its irascible faculty depends entirely on *estimatio*. Man is bound by no such necessity: he has a choice of actions.

For the sheep, seeing the wolf, judges it is a thing to be shunned, from a natural, and not a free judgment, because it judges, not from reason, but from natural instinct. And the same thing is to be said of any judgment of brute animals. But man acts from judgment, because by his apprehensive power he judges that something should be avoided or sought. But because this judgment, in the case of some particular act, is not from a natural instinct, but from some act of comparison in the reason, therefore he acts from free judgement and retains the power of being inclined to various things.<sup>33</sup>

In man, the appetitive power (*appetitus sensitivus*) is controlled by *ratio particularis* instead of *aestimativa*; and this particular reason is able to deduce from the general conclusions of 'universal reason' or intellect the particular mode of behaviour to fit different circumstances of life:

In man the sensitive appetite is naturally moved by the particular reason. But this same particular reason is naturally guided and moved according to the universal reason: wherefore in syllogistic matters particular conclusions are drawn from universal propositions.<sup>34</sup>

In this way, the appetitive powers come under the control of will, which is governed by intellect. Experience proves to us that general conclusions (such as 'cowardice is shameful') can rule the passions when applied to particular cases:

Anyone can experience this in himself: for by applying certain universal considerations, anger or fear or the like may be modified or excited.<sup>35</sup>

Animals, when confronted with a dangerous situation, proceed instantly to judgment, and then to action; but man first stops and weighs up the circumstances, deduces a course of action from fixed general principles, and then, with the assent of his will, proceeds to action. At least, he could do this in theory. In practice a conflict may arise, because the appetitive powers may be moved to action by sense and animation, and not only by particular reason. The identification of *ratio particularis* with *aestimatio* reduces the number of the powers of the soul, for there seems to be no need for Avicenna's practical intellect (*intellectus efficiens*). Aquinas seems to be saying that intellect may act without an organ in thought, but it may also through an organ in *ratio particularis* to govern the behaviour of a man in the varied circumstances of life.<sup>36</sup> The centre of the brain is pinpointed as the place where intellect is brought to bear on actions.

## INTELLECT

It is over the question of intellect that Avicenna's tendency to remove knowledge and understanding away from the external world and sensation is most clearly marked. Aquinas, following Aristotle, attacked this. He maintained that the soul is the form of the body, and the source of all the powers possessed by a human being. Most of these powers manifest themselves in bodily actions, such as growth, sensation, and movement; but the power of the intellect has, for traditional reasons, no bodily organ. The intellect is a power proceeding from the human soul, which is the form of the body; therefore this human form differs from the forms of animals and all other material things by being partly separated, while yet existing in matter.<sup>37</sup> Now the intellect deals with *intelligibilia*: universals and abstractions. Avicenna had held that the intellect came to know *intelligibilia* through the data of the senses, illuminated by an external 'intelligible light', the *intellectus agens*, on the principle that nothing can proceed from potential to act without the intervention of something already in act. Hence the human soul is passive in a double sense: passive in its reception of *sensibilia*, and passive to the illumination which renders such *sensibilia* intelligible. Aquinas lays much more emphasis on the independent activity and responsibility of man. In effect, he divides Avicenna's *intellectus agens* into two. The 'intellect which is always in act' of Aristotle, which brings all others into act, according to Avicenna, he identifies with God, described by the Gospel verse: 'that was the true light, which lighteth every man that cometh into the world'.<sup>38</sup> Thomas holds that all other references in Aristotle to an active intellect refer to a power of the

human soul which can itself abstract universals and draw conclusions, without the intervention of any other power, apart from the constant and universal irradiation of the divine intelligence. He argues that even as among the wits there is a power that can make new forms, so in intellect there is a power to abstract and reason without recourse to outside help.

Aquinas correctly attributes the role of Avicenna's *intellectus agens* to the Platonist's suspicion of matter. The forms of things within the *intellectus agens* have no contact with matter. The forms of things within the *intellectus agens* have no contact with matter; they are true, eternal, and unchanging. Aquinas says that Plato had supposed them to exist as such, but since Aristotle had argued against this, Avicenna placed them within the separated intellects of the spheres, whence, emanating downwards to the lowest of these, the intelligible forms are perceived by our souls, and, as sensible forms, are joined to matter to make up the sensible world:

And so Avicenna agrees with Plato in this, that the intelligible species of our intellect are derived from certain separate forms; but these Plato held to subsist of themselves, while Avicenna placed them in the *active intelligence*.<sup>39</sup>

Aquinas objects to this because it does not explain why the human soul should have a body at all. It would be against the order of things for the soul to be made for the sake of matter, for the higher to serve the lower, especially since, unlike other forms, the human soul was not made dependent on the body. Rather is the body made to serve the soul, to help it fulfil its highest function, that of understanding:

Especially does the body seem necessary to the intellectual soul, for the latter's proper operation, which is to understand; since as to tis being the soul does not depend on the body. But if the soul by its very nature had an inborn aptitude for receiving intelligible species through the influence of only certain separate principles, and were not to receive them from the senses, it would not need to the body in order to understand: wherefore to no purpose would it be united to the body.<sup>40</sup>

It is of no use for Avicenna to say that the body and its senses are preliminaries to understanding, that their function is only to rouse the soul to contemplate intelligible forms, received from the *intellectus agens*, for then the body would be only the cause of the soul's drugged state of oblivion, and it

would have to be explained why the soul was provided with a body in the first place. Nor is it even reasonable to argue that the soul can reach a state where it is able to contemplate forms in the *intellectus agens*, for then it would have to be allowed that a blind man could see colours, for the forms of colours would exist among the forms above, and he could see them without using his eyes.

Aquinas has argued that the first part of Avicenna's contribution is substantially true: he accepts his division and definition of the inward wits with only minor modifications. It is with intellect that he comes into conflict with him. He does not allow that there is an external source of illumination for the human intellect, which can convey to it a knowledge of separated forms, although he does grant that God himself is a cause of all human understanding. If knowledge of forms does not come into the soul from above, it must come through sense perception. This is the root and foundation of all Thomas's arguing. If man is made of soul and body, the body must be there to serve the soul, and to enable it to achieve blessedness. Man does not need outside help, except in the sense that all creation depends on God as *causa omnium*. Man was made fully equipped; his body is the means by which he comes to intelligible knowledge: *principium nostrae cognitionis est a sensu*.<sup>41</sup>

Thomas had explained that the human intellect itself constructs universals from the sensible forms obtained by sense perception; it needs no external *intellectus agens*. He goes further than this, however, in insisting that intellect remains dependent on sense impression, even while thinking. Aquinas bases this assertion on a statement of Aristotle which had been ignored by Avicenna: *non contingit intelligere sine phantasmate*.<sup>42</sup> *Phantasmata*, or sense impressions, are essential to human thought, it is not possible to think without them. The human intellect can come to a knowledge of universals by itself, through the *phantasmata* that it receives from sensation. It abstracts a universal from many particulars, but it does not then take leave of the sensible forms from which it has derived this knowledge, for in thinking of a universal, man always employs some phantasm, just as the geometer uses a diagram. Aquinas asserts that in contemplating the universal 'man' or 'horse' the intellect always has before it some mental image or phantasm of a single man or horse as it has been perceived through the senses. The phantasm necessarily has some of the limitations of a real individual horse, but the intellect considers it as an example of its species, and ignores as far as possible its individual features. This theory places the intellect in much closer collaboration with the body. Indeed, Aquinas says that when a man's cerebral organs are damaged so that he cannot form proper *phantasmata*, he cannot use his intellect. Imaginations are inseparable from thought; the mind cannot think without them.

Another and most important consequence of the close connexion between *intelligibilia* and *phantasmata* in Aquinas is the changed status of memory. Avicenna had held that the intellect 'saw' the intelligibles in transitory glimpses, when the light of the *intellectus agens* shone upon the *sensibilia* in the soul, revealing their universal forms. The *intelligibilia* thus seen did not remain as such in the soul, the soul simply acquired an aptitude for seeing them; it could repeat the experience of intellectual vision, but not retain the intelligible form.<sup>43</sup> Aquinas maintained that since the mind arrived at a knowledge of universals by its own efforts, by contemplating the data of its own sensory experience, the intelligible, once grasped, did not entirely vanish from the soul when the mind ceased to think on it. Intelligibles are somehow remembered, even though memory is a sensitive organ, possessed by animals which have no power to understand universals. Since memory is an organ, a cerebral ventricle, what is described in it must be something sensible, which has all the limitations of individuality and particular nature; yet, since according to Aquinas such phantasms always of necessity accompany thought, the relationship of a remembered intelligible to a remembered phantasm is not surprising. What happens is this: a person learns to distinguish and recognise different men through his sensory perception; his sight tells him that Plato differs in appearance from Socrates, and he will have two different sense impressions of these men printed in his organ of sensory memory, representing the differences in height and colouring and so on. When he understands that *humanitas* can be predicated of both Socrates and Plato, and of all individual men, he will understand the universal 'man'. Nevertheless, he will not be able to think of the universal 'man' without at the same time contemplating in imagination the image of a particular man, e.g. Plato, as an example of *humanitas*. Hence there are two ways of regarding the phantasm of Plato: it may be seen as representing Plato, or as an example of *humanitas*, and as such it may be preserved in the organ of memory. It is in this way that intelligibles are preserved in the mind, in the form of symbols or similitudes stored in the sensory memory.<sup>44</sup> The intelligible may be related to the similitude in various ways, just as a geometer uses differently shaped diagrams as examples to illustrate the same theorem. A similitude can never fully illustrate the universal, because as a similitude it has always some of the limitations of matter; certain aspects of it are used, and others ignored. Socrates does not represent *humanitas* in so far as he is pot-bellied and bald, but in so far as he is rational and able to laugh. A man can learn a system of association ideas and intelligibles with sensible images as similitudes: this is the art of memory.<sup>45</sup> The sensible image is actually situated in the organ of memory in the brain, and the mind uses it to prompt a recollection of an intelligible idea:

Aristotle said that it was manifest to what part of the soul memory belonged, because it is the same as that to which *phantasia* belongs, and that those things are *memorabilia* of which there is *phantasia*, namely, *sensibilia*. *Memorabilia* are *per accidens intelligibilia*, which are not apprehended by man without *phantasia*. And hence we are the less able to memorize those things which have subtle and non-material significance, but those things which are gross and sensible are *memorabilia*. If we wish to remember more easily some intelligible reasons, we must link them to some other *phantasmata*, as Cicero teaches in his *Rhetoric*.<sup>46</sup>

Aquinas is quite clear about the part of the soul to which memory belongs, for as it necessarily deals with phantasms, it must appertain to the sensitive part. However, not being a doctor, he is uninterested in the precise physical organ which operates it. Avicenna had argued that there were two storehouses, *imaginatio* for sensible forms, and *memoralis* for *intentions*. Aquinas takes this division of Avicenna to support his view that an image can be a representation of an object, or be a symbol of something else, carrying an *intentio* of the 'something else' it symbolises.<sup>47</sup> He does not assume that memory retains simply *intentions*, without *phantasmata*. Aquinas holds that the *intentio* is present in the phantasm either by nature (for the sheep, the phantasm of the wolf always carries the *intentio* of *inimicitas*), or has been put there by intellect. This happens when a person deliberately chooses a phantasm by which he is going to remember an idea, as prescribed by the art of memory. The *phantasmata* carrying these real or artificial *intentions* are stored in *memorativa* in the back of the head; the phantasms cannot be in a different organ from the ideas they signify.

All this makes an enormous difference to the way in which the western philosopher views the external world. Avicenna's hostility towards matter, with its suggestion of the eastern heresy of Manichaeism, is opposed by a systematic justification of man's body as a partner of the soul in the acquisition and retention of knowledge. For Aquinas the body is not simply a cumbrous and dispensable servant of the soul, for it is the body which provides, by means of its sense organs, the *phantasmata* which are the basis of knowledge. By means of *phantasmata* the soul comes to know universals and is enabled to think of them; by means of the *phantasmata* stored in the memory, man can retain such *intelligibilia* in symbols. Man has thus no source of knowledge other than the material world. He must learn to know the creation above him by means of the

nature below him, and he can express his knowledge of incorporeal things only in similitudes and likenesses drawn from material things. Aquinas's theory allows the possibility of expressing the highest knowledge man can grasp in the guise of material things; it admits a whole world of symbolism as a process of knowledge which is both natural and necessary to human beings.

## CONCLUSION

In their enquiry into the nature of the soul, the philosophers tended to move in one of two directions. The Stoics argued for a material principle of life, sensation, and intellect; in many respects the doctors were their heirs. Even though he did not commit himself to a precise location of the soul, Galen handed on a scheme which located the powers of imagination, thought, and memory in the three main cerebral ventricles. The influence of this theory continues to be felt until the Renaissance, although it frequently clashes with the 'philosophical' scheme of five powers (excluding intellect) within the same three ventricles. Costa ben Luca, who was regarded as a philosopher, reveals the same Stoic materialist outlook in his account of the mechanism of the *vermis* body, the little door which literally shuts off thought from memory. The same man quotes with approval the saying that the state of the soul depends directly on the dispositions of the body and animal spirit.<sup>48</sup>

Other philosophers moved in the opposite direction. Having pre-supposed an immaterial intellect, they tended to remove it as far as possible from the mutability of the individual body. Aristotle's intellect in act becomes an external separated intellect which acts in the individual human intellect according to the capabilities of the recipient. The process culminated in Averroism, where one intellect is shared by all men, and the individual man has no personal immortality; his intellect is, as it were, loaned to him, and has nothing to do with his personality, which is mortal like the beasts. Avicenna does not go as far as this: he insists on the immortality of individualised souls, but he also escapes Costa's dependence of soul on material dispositions by upholding the priority of form to matter.

Avicenna separated intellect from sensation by confining inner sensation to five powers precisely located in their proper organs in the brain, and he explained how intellect makes use of them. Where there had been three powers in three ventricles, there are, after Avicenna, five; in medieval Latin manuscripts they are represented diagrammatically as five little circles one behind the other, connected by passageways.<sup>49</sup> A non-medical writer like Reginald Pecock could

even speak as if the wits were really situated in this way, 'placed by row along in the head, and each in his proper cell'.<sup>50</sup>

Aquinas accepts Avicenna's division and disposition of the wits, but insists that the intellect is far more dependent on them than Avicenna allows. He argues that Avicenna cannot account for the soul's existence in the body by his system, and he goes on to explain that intellect cannot operate without *phantasmata* provided by the senses. By this, Aquinas runs into the opposite difficulty: he must then explain how the soul can have cognition without the body after death, and account for the nature of the knowledge 'face to face' in heaven,<sup>51</sup> but this does not concern us here. The great importance of Aquinas's viewpoint lies in his conviction that in this life at least, human knowledge depends on sensibilia. From our impressions of the external world, either directly apprehended, or combined and modified in our imaginations, we come to all our knowledge. This is a theory which not only permits, but necessitates symbolism; and it was to have extensive consequences in later disputes over the status and value of works of the imagination. Thus the importance of the inward wits derives precisely from their 'in-between' nature, their intermediate position between sensible and intelligible, material and incorporeal, which is characteristically human.

For general bibliography see especially H. Schuling, *Bibliographie der psychologischen Literatur des 16 Jts. (Studien und Materialien zur Geschichte der Philosophie, IV)*, Hildesheim 1967.

## Notes

1. *Faerie queene*, II.ix.50; see also *Works of Edmund Spenser*, ed. Edwin Greenlaw and others, ii, 1953, pp. 458-66, for Spenser's immediate sources and bibliography.

2. *Faerie queene*, II.ix.51.

3. *Faerie queene*, II.ix.56.

4. It was translated by Alfano (ca. 1050?) and by Burgundio of Pisa (d. 1193). Both medieval translations have been printed: *Nemesis Episcopi Premon Physicon sive περι ψυσεως ανθρωπου liber a N. Alfano Archiepiscopo Salerni in latinum translatus*, ed. C. Burkhard, 1917 (Teubner); and *Gregorii Nysseni (Nemesi Emeseni) περι ψυσεως ανθρωπου liber a Burgundione translatus*, ed. C. Burkhard, 1902. Giorgio Valla produced a new versio which was printed at Lyons in 1538; for other early editions see *Nemesius of Emesa*, trans. and ed. William Telfer (*Library of Christian Classics*, iv), 1955, pp. 203-23.



5. *Premnon Physicon*, I. 90: 'Quis igitur digne miretur nobilitatem huius animalis colligantis in se ipso mortalia immortalibus, et rationabilia coniungentis irrationabilibus, ferentis in sua natura omnis creaturae imaginem?'. Trans. by George Wither, London 1636.

6. *Premnon Physicon*, prologus, 16.

7. The idea is fundamental to Aristotle's thought; see for example *Historia Animalium*, VIII.i (588b 4f); A. O. Lovejoy, *The Great Chain of Being*, 1936.

[39-56]

8. For Haly Abbas see Browne, pp. 53-7; Elgood, pp. 155f.

9. *History of the Philosophers*, cited by Browne, p. 53.

10. *Regalis dispositio* I theor. iii: De artis excellentia. At vero de eius nullus dubitat excellentia sapientium et cui vel modicus est intellectus super omnium excellentia artium ut utilitatis magnitudine omniumque ad eam hominum necessitate. Cum sit homo enim ceteris celsior animantibus et excelsior propriaque ei a deo data est ratione scilicet animo per quem est discretio rerumque cognitio quo etiam rerum comprehendit varietatem et ad eum conversio fit in omnibus hominum necessariis in regimine eorum et actionibus et vite necessariis aliisque operibus hecque adipiscantur hoc in mundo utilitates et gloriam in ultimis. Animus autem non erit nisi per anime sanitatem rationalis: nec vero huius sanitas nisi per anime vitalis sanitatem et naturalis: harumque duarum non temperantiam. Humourumque temperantia non erit nisi complexionis temperantia que non erit omnino nisi per artis regimen medicine per quod est sanitatis causa et incolumitatis sine quibus hominum omnino res perfici nequeunt.

11. *Reg. disp.* III theor. xi: Dico quoniam cerebrum ceteris honorabilius est membrum corporis et excellentius. Est enim radix et quasi formax anime rationalis per quam est animus et discretio origoque sensibus.

12. The belief that air was drawn into the heart in respiration was held by Aristotle, see *Historia animalium* 493b 14; it remained standard medical theory until the sixteenth century. Leonardo da Vinci experimented with bellows, and found he could not force air through the lungs into the heart: see Singer, *A Short History of Medicine*, p. 89.

13. *Reg. disp.* III theor. xxi: Meatus porro qui a dextro est concavo ad sinistram: a dextro latere largior est. dehinc paulatim angustatur donec ad latus perveniat sinistram. hoc ideo quoniam necessarium erat transmitti sanguinem qui ab epate per concavam venit venam a dextro ad sinistram latus. Factus est ergo meatus eius qua parte sinistro iungitur lateri strictus ut quod subtilius in sanguine est ad hoc cordis mitteretur latus.

14. *Reg. disp.* IV theor. viii: In homine etenim ira et audacia cum regimine est et discretionem rationalis virtutis cuius sedes est cerebrum. Homo etenim potentiam habet deponendi iram: scitque horas quibus certamen est necessarium: quomodo eo liberetur: et refugium quum sub ingressu fuerit operaturque ea que diiudicat suis queque temporibus: irrationale autem animal per naturam hoc operatur sine aliqua animi discretionem que aliquid illis supervenerit.

15. *Reg. disp.* IV theor. ix: res formari et imaginari, et ad cogitationem transmittere.

16. *Reg. disp.* IV theor. ix: res speculatur: quarum fuit per phantasiam imaginatio actiones scilicet artes, scientias, aliasque et eorum regimen ac dispositionem.

17. *Reg. disp.* IV theor. ix: custodia est que res conservat quas cogitatio intellectus ordinavit et formavit: ac suis impressit locis. Durant ergo et stabiles usque tempus quo necessaria est earumeductio a potentia in actum.

18. This differs from Aristotle, who associated the sense of sight with the element of water, and the sense of smell with fire; see *De sensu et sensato*, 438b 17.

19. From *De Hippocratis et Platonis placitis*, VII; ed. Kuhn, v. p. 604f.

20. *Reg. disp.* V theor. ix: non est harum populatum acumen superbie: non ira: nec elatio. sunt enim tranquillitatis populus et mansuetudinis humilitatisque. Ira etenim et elationis acumen his qui a temperantia extra sunt in calore fit.

21. *Reg. disp.* V theor. xxx: Ebrietas namque el frequentetur plurimas affert corpori lesiones, quarum est mentis corruptio: animi attenuatio: virtutum animalium enervatio: repletionem scilicet venarum et cerebri ventriculorum: naturalem submergit calorem: eumque refrigerat: qua ex re apoplezia fit: paralysis. enervatio. obstupefactio. epilepsia. tremor et spasmus.

22. There was an Arabic story about Raze's utilization of this passion: it was said that he cured the rheumatic joints of the amir Mansur by provoking him to wrath after a hot bath. The bad humours, already loosened by the hot water, were quite driven away by the sudden anger of the nobleman. Razes fled, sending a message to the amir explaining the treatment after he had reached a safe place, and the amir forgave him, and rewarded him. See Browne, pp. 82f.

23. See above, p. 14.

24. *Reg. disp.* IV theor. xix: Tradiderunt autem nonnulli sapientum spiritum hunc qui in cerebro est animam esse: animam autem corpus esse. alii autem instrumentum anime esse quo in omnibus utitur sensibus: animamque corpus non esse: hoc autem visum persuasioni propinquus est.

25. Galen, *De usu partium corporis humani* VIII. xiii (Paris 1528, pp. 252-3).

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26. See *The Life of Saint Thomas Aquinas: Biographical Documents*, ed Kenelm Foster, 1959; and for the influence of the new learning on the West, Ernest Renan, *Averroes et l'Averroisme*, and edition 1861, pp. 225f.

27. *Summa theologiae*, I.75.4. For a general discussion of the novelty of Aquinas's views on the relationship between soul and body see Bruno Nardi, 'Anime e corpo nel pensiero di San Tommaso' (1942), reprinted in *Studi di Filosofia Medievale (Storia et Letteratura*, 78), 1960, pp. 163-91.

28. *Summa theologiae*, I.75.3 & 4.

29. *Summa theologiae*, I.75.2.

30. *Summa theologiae*, I.78.4.

31. *Summa theologiae*, I.78.4: Avicenna vero ponit quintam potentiam, media inter aestimativam et imaginativam quae componit et dividit formas imaginatas; ut patet cum ex forma imaginata auri et forma imaginata montis componimus unam formam montis auri. qie, nunquam vidimus. (Trans. by Fathers of the English Dominican Province, 1912).

32. *Summa theologiae*, I.84.6 ad 2.

33. *Summa theologiae*, I.78.4. The note in Caramello's edition (p. 582) refers to two quotations from other works of St. Thomas, giving the positions of imagination and memory: Virtutis autem imaginativae organum est in anteriori parte cerebri (II *Sent.* dist. 20, q.2, a. 2c); memoriae, in postrema parte capitis (I *Sent.* dist.3, q.4, a.1, ad 2).

34. *Summa theologiae*, I.83.1: Iudicat enim ovis videns lupum, eum esse fugiendum, naturali iudicio, et simile est quolibet iudicio brutorum animalium. Sed homo agit iudicio: quia per vim cognoscitivam iudicat aliquid esse fugiendum vel prosequendum. Sed quia iudicium istud non est ex naturali instinctu in particulari operabili, sed ex collatione quadam rationis: ideo agit libero iudicio, potens in diversa ferri.

35. *Summa theologiae*, I.81.3: Ipsa autem ratio particularis nata est moveri et ditigi secundum rationem universalem: unde in syllogisticis ex universalibus propositionibus concluduntur conclusiones singulares.

36. *Ibid.*: Hoc etiam quilibet experiri potest in seipso: aplicando enim aliquas universales considerationes, mitigatur ira aut timor aut aliquid huiusmodi, vel etiam instigatur.

37. Aquinas says that reason and intellect are the same. I.79.8: ratio et intellectus in homine non possunt esse diversae potentiae; and also that higher and lower reason are aspects of the same power, I.79.9: una et eadem potentia rationis est ratio superior et inferior. Sed sitinguuntur . . . per officia actuum, et secundum diversos habitus.

38. *Summa theologiae*, I.76.1. Aquinas bases his argument on Aristotle, *Physics*, II.ii; in his own commentary on this he says: 'The last things considered by natural science are forms which are, indeed, in some way separated, but which have existence in matter. And rational souls are forms of this sort. For such souls are, indeed, separated in so far as the intellective power is not the act of a corporeal organ, as the power of seeing is the act of an eye. But they are in matter in so far as they give natural existence to such a body'. See *Commentary on Aristotle's 'Physics' by St. Thomas Aquinas*, ed. R. J. Blackwell and others, 1963, p. 85.

39. *Summa theologiae*, I.84.4: Et sic in hoc Avicenna cum Platone concordat, quod species intelligibiles nostri intellectus effluunt a quibusdam formis separatis: quas tamen Plato dicit per se subsistere, Avicenna vero ponit eas in intelligentia agente.

40. *Ibid.*: Maxime autem videtur corpous esse necessarium animae intellectivae ad eius propriam operationem, quae est intelligere: quia secundum esse suum a corpore non dependet. Si autem anima species intelligibiles secundum suam naturam apta nata esset recipere per influentiam aliquorum separatorum principiorum tantum, et non acciperet eas ex sensibus, non indigeret corpore ad intelligendum: unde frustra corpori uniretur.

The whole question is discussed in more detail in Aquinas, *Quaestiones de anima*, q. 15, ed. James Robb, 1968, pp. 212f.

41. *Summa theologiae*, I.84.6.

42. *Summa theologiae*, I.84.7.

43. *Summa theologiae*, I.79.6.

44. This is discussed in detail in Aquinas's commentary on Aristotle's *De memoria et reminiscentia*, lectio III, ed. Spiazzi, pp. 95f.

45. See Frances A. Yates, *The Art of Memory*, 1966, esp. pp. 50-104.

46. Aquinas, *Comm. in lib. de memoria et reminiscentia*, 326: Et dicit manifestum esse . . . ad quam partem animae pertineat memoria, quia ad eam, ad quam pertinet phantasia; et quod illa sunt per se memorabilia, quorum est phantasia, scilicet sensibilia; per accidens autem memorabilia sunt intelligibilia, quae sine phantasia non apprehenduntur ab homine. Et inde est quod ea quae habent subtilem et spiritualem considerationem minus possumus memorari. Magis autem sunt memorabilia quae sunt grossa et sensibilia. Et oportet, si aliquas intelligibiles rationes volumus memorari facilius, quod eas alligemus quasi quibusdam aliis phantasmatis, ut docet Tullius in sua *Rhetorica*.

47. *Ibid.* 321: Posset aut alicui videri quod ex his quae hic dicuntur, quod phantasia et memoria non sunt potentiae distinctae a sensu communi, sed sint quaedam passiones ipsius. Sed Avicenna rationabiliter ostendit esse diversas potentias . . . ad aliud principium pertinet recipere formam, et conservare receptam per sensum et intentionem aliquam per sensum non apprehensam, quamvis aestimativa percipit etiam in aliis animalibus, vis autem memorativa retinet, cuius est memorati rem non absolute, sed prout est in praeterito apprehensa a sensu vel intellectu.

48. Costa ben Luca, *De animae et spiritus discrimine*, p. 316: Omnis spiritus qui fuerit . . . subtilior et clarior, erit ad recipiendum actus animae fortior . . . et propter hoc dixerunt philosophi, quod virtutes animae sequuntur complexionem corporis.

49. Sudhoff, 'Die Lehre von den Hirnventrikeln', illustrations 4 & 5.

50. Reginald Pecock, *The Folewer to the Donet*, ed. Elaie Vaughan Hitchcock, p. 30.

51. The problem is discussed in *Summa theologiae*, I.89.1; *Quaestiones de anima*, q. 25, ed. James Robb, pp. 213f.