

to be the locus of perceptual awareness, without the images needing to be cognised by some higher faculty. Nevertheless, surely between Plato's painter and eye of the soul and Aristotle's representation-forming *phantasia* (not to mention Democritus's wax impression and Diogenes's receptive internal air) it became almost inevitable that later ages should arrive at the conception of a 'mind's eye' looking at pictures inside the head. When this conception first came together in the popular mind I cannot say. The frontispiece to the 1619 mnemonic system of Robert Fludd illustrating the eye of imagination regarding some mnemonic images, Fig. II.A.2_1, shows that it was fully current during the English Renaissance (27*). No doubt it dates back much earlier.

§II.A.3. The Moderns.

Perhaps no-one trying to produce a serious account of imagery or imagination has ever taken the 'mind's eye' quite literally, but one very important thinker came extremely close to it, and can quite fairly be regarded as the direct forerunner of modern quasi-pictorialists such as Kosslyn or Hampson & Morris. That thinker is René Descartes, the man who can, indeed, be well regarded not only as the first modern philosopher, but also as the founding father of scientific psychology. It is really quite a remarkable irony that the pineal gland, which, as

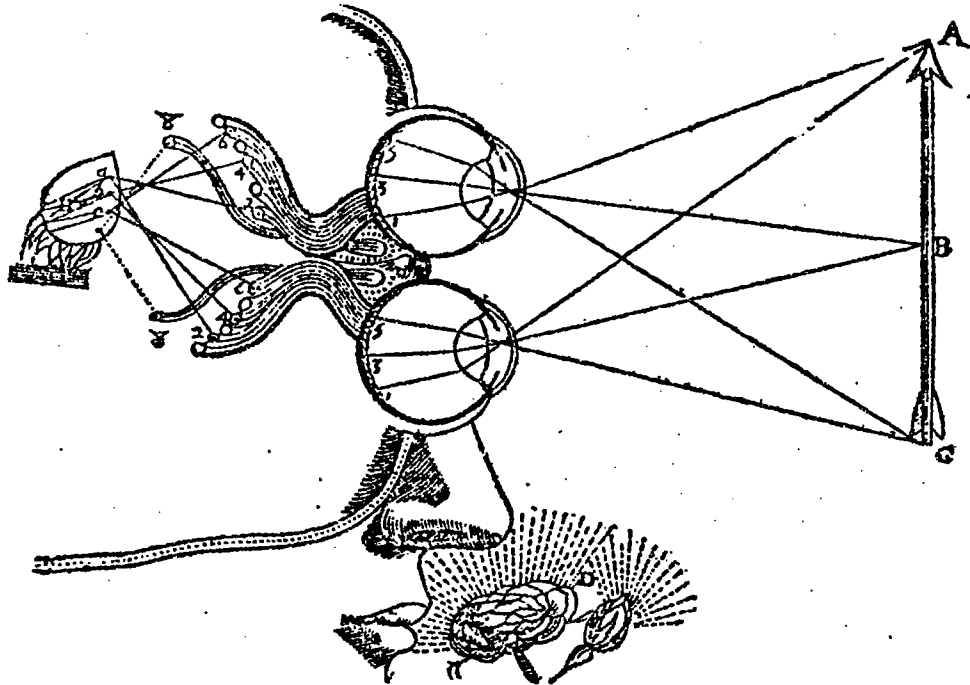
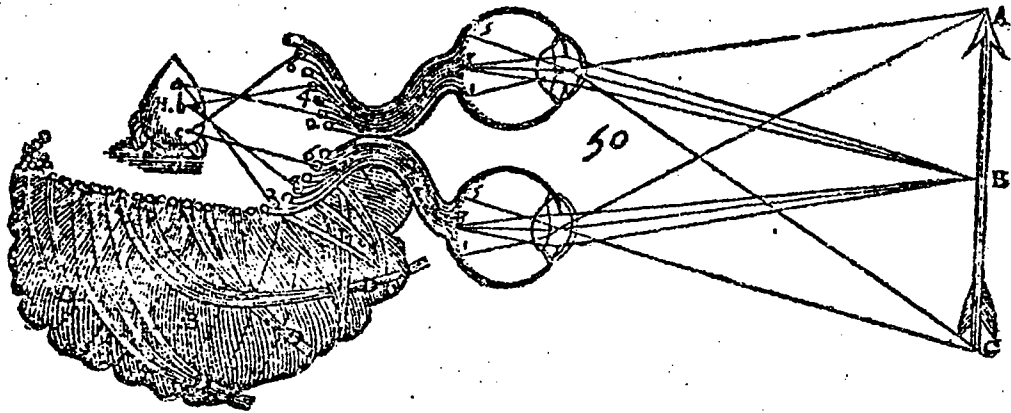


Figure II.A.3_1
 (Reproduced from Descartes [1664].)

is well known, Descartes regarded as the site of interaction between body and soul {1} was later (seemingly in the 1880s) discovered to be part of a vestigial eye-like structure, sometimes referred to as the "pineal eye" and truly functional as such in some lower vertebrates {2}. For Descartes regarded this organ as functioning very much as a 'mind's eye'. Images, as he makes quite explicit in *L'Homme* {3}, were formed on its surface, as a pressure pattern, by the flow of "animal spirits" (cerebro-spinal fluid) out from it through certain nerves, in a similar way to that in which retinal images, he supposed, were formed by the pressure of light inside the eye. In vision the opening of the relevant nerves to allow the formation of the appropriate image was directly caused by this patterned retinal stimulation {4} - as shown in fig. II.A.3_1. Although physical images were formed on the retina, and could also be imprinted (by pressure of animal spirits) in the matter of the brain, forming memory traces (or even, it seems, on the body of a foetus, forming birthmarks) {5}, it was only when they were drawn [Fr. tracer] on the surface of the pineal that we could become aware of them, the gland truly acting as the 'eye of the soul':

Now among these figures, it is not those imprinted on the organs of external sense, or on the internal surface of the brain, but only those traced in spirits on the surface of gland H [the pineal], where the seat of imagination [Fr. l'imagination] and common sense is, that should be taken to be ideas [Fr. idées], that is to say, to be the forms or images [Fr. images] that the rational soul will consider directly when, being united to this machine, it will imagine or will sense any object. {6}

Descartes is giving us his mechanistic account of the Aristotelian psychological faculties: the material sense organs; the rational soul (now unequivocally immaterial); and the *sensus communis* or imagination mediating between the two. This is now firmly conceived of in material terms and is located at the surface of the gland, the 'retina', as it were, of the 'mind's eye'. As in Aristotle this is the 'common sense' inasmuch as it was the way station and point of integration for the direct nervous messages from the sense organs (not just the eyes, in either version), and the imagination inasmuch as its job was also to form images of memories (or combinations thereof). In the *Regulae* Descartes employs the "wax impression" metaphor to explain this process, just as we have seen in Aristotle and his predecessors {7*}.

Memory for Descartes arose from alterations in the purely internal currents of the animal spirits due to the effects of earlier sensory flows on the disposition of the fibres of the brain {8}. Memory images or imagination images could be formed, apparently, either by an act of will (moving the gland so as to appropriately interact with the flow of spirits {9}) or involuntarily or by the mere mechanical agitations of the spirits {10}. We should note that in the above quoted passage Descartes equates the images on the gland with "ideas". Of course, for him not all ideas were of this type; purely "intellectual" ideas and the remembering of them were entirely a function of the immaterial, rational mind; the mechanistic account

is supposed only to apply to ideas of "material" things {11}. However, he does say, in the third meditation, that it is to

the images of things (...) alone that the name **idea** properly belongs; as when I represent to myself a man, a chimera, the sky, an angel or God himself. {12}

Certainly for many later philosophers these ideas will be the ones that count.

In *L'Homme* {13*}, then, Descartes very clearly has a pictorial notion of imagery. The image on the surface of the pineal gland is regarded as very like the optical retinal images he had seemingly observed for himself in dissected eyes {14}. In this sense, the Cartesian idea or image seems more explicitly pictorial than that of either Aristotle or Plato - a point which might not be apparent from a reading of only his more philosophical writings. In fact, in the *Dioptrics* {15} he compares his images to prints of engravings, flat perspective projections of scenes. The sculptural qualities of the Lucretian 'idols' and the Democritian wax impressions are quite lost. But, significantly, this comparison occurs as an example of how images **need not** resemble their objects; mere flat projections will do. The actual partial resemblance is seen as contingent and inessential; what matters is that the conscious soul (via the pressure on the pineal) is appropriately affected. It is the functional rôle of the image, not its spatial structure, that is essential. For this reason, classing the Cartesian theory as **quasi-pictorial** seems fully justified:

And when it is thus transmitted to the inside of our head, the picture still retains some degree of its resemblance to the objects from which it originates. But we must not think that it is by means of this resemblance that the picture makes us aware of its objects - as though we had another pair of eyes to see it, inside our brain (...); rather we must hold that the movements by which the image is formed act directly on our soul ~~qua~~ united to the body, and are ordained by Nature to give it such sensations. {16}

There is clearly an equivocation in Descartes' position between almost literal internal pictures and eyes, and thoroughly metaphorical, functional ones. The tendency in contemporary versions of quasi-pictorialism seems to be away from the literal and towards the functional interpretation. But I fear the equivocation still exists, and I shall argue in chapter II.B that it eventually proves fatal.

As we have said, Descartes' theory of ideas as the images traced by the pressure of animal spirits on the surface of the pineal gland can be seen as, indeed is presented as, a mechanistic explanation of the Aristotelian *sensus communis*. However, Descartes's underlying philosophy of mind is, in its dualism, closer to Plato than to Aristotle; and thus the epistemology it engenders has more of a Platonic than an Aristotelian cast. Both the Aristotelian *phantasma* and the Cartesian image/idea seem to be quite physical, but unlike the former the latter has to be cognised by a non-physical mind in order to be experienced. Unfortunately, although Descartes' physiological speculations on imagery may not

have been universally accepted, since no much more adequate theory replaced them {17*} they continued, stripped of their more contingent details, to provide the underlying model for most subsequent discussion. (To a large extent, I suspect, they still so continue.) Indeed, so far as I have been able to discover, from the time of Descartes to that of the Gestalt psychologists the theory of imagery (i.e. of what elementary experienced images actually are, and how they are formed) seems to have lain almost entirely fallow, although the theory of imagination (i.e. of what the faculty is supposed to be able to accomplish for us) flourished apace throughout the 18th and early 19th centuries, reaching full ripeness, or perhaps over-ripeness, with the theorists of the Romantic movement {18}. If anything, in the period after Descartes the understanding of the nature and formation of imagery declined. Once Descartes's dream of a non-empirical natural philosophy was exploded an implicit sub-Cartesian physiology of perception and image formation soon led back to idealism (Berkeley) or scepticism (Hume). By the time Kant tried to revive the idea of imagination as the route to empirical knowledge he felt unable to provide any satisfactory account of how this vital faculty might operate. The "schematism" "through which, and in accordance to which, images themselves first become possible" could only be explicated as "an art concealed in the depths of the human soul, whose real modes of activity nature is hardly ever likely to discover, and to have open to our gaze" {19}.

The muddying of the waters perhaps begins with Hobbes. His ideas about the physiology of sense and imagination, briefly sketched in several works, would seem to be very similar to those of Descartes (which is unsurprising considering their involvement with each other through the circle of Mersenne {20*}). Hobbes explains sense thus:

The cause of Sense, is the externall Body, or Object, which presseth the organ proper to each Sense, either immediatly, as in the Tast and Touch; or mediately, as in Seeing, Hearing, and Smelling: which pressure, by the mediation of Nerves, and other strings and membranes of the body, continued inwards to the Brain, and Heart, causeth there a resistance or counter-pressure, or endeavour of the heart to deliver it self: which endeavour, because Outward, seemeth to be some matter without. [sic] {21}.

This outward pressure, which forms a "phantasm" {22}, is surely very reminiscent of the outward flow of animal spirits through the pineal, also impelled by the heart and in reaction to inward pressure on the sense receptors, which forms the Cartesian image. (Note also the similarity to Aristotle, who similarly made the heart the central organ of perception {23}, and made imagination a movement produced by sensation {24}.) Hobbes' account of memories and imaginations, however, is somewhat different from that of Descartes. Instead of their being the result of structural changes in the brain produced by these pressures they are a persistence of the internal motions originally set going by them (presumably vibratory motions - certainly he thought so in the case of light {25}). It

is a characteristic (perhaps ~~the~~ characteristic) of sentient creatures to have organs in which these motions can long persist, instead of quickly dying away as they do in the inanimate {26):

IMAGINATION therefore is nothing else but **sense decaying**, or weakened by the absence of the object. {27*}.

The trouble with Hobbes, as I see it, is the way he combines his Cartesian style physiology with his materialist metaphysic. The images of Descartes were material enough, but our awareness of them consisted in their being cognised by a higher, immaterial agency. In the hands of Hobbes they seem to be known, as with Lucretius, simply by being inside our heads, the contents of the skull being identified with the mind. We have returned to the 'true' pictorial theory of imagery.

Successors as staunch in their materialism as Hobbes himself might not have long persisted uncritically with this rather implausible view. But Hobbes' successors did not have the courage of his convictions. For Locke {28}, the issue between materialism and dualism is undecidable; we may fairly say that he regards the question as 'metaphysical' in the pejorative sense of positivists. But failing to take a clear stand on the mind-body problem removes the basis of argument between the quasi-pictorialism of Descartes and the 'true' pictorialism of Hobbes or Lucretius, with the result that the two views tend henceforth to be confused together.

This has in practice helped to insulate pictorialist notions of imagery from really effective criticism. Furthermore, since the properties of mental substance are so mysterious it seems to me that neither theory can be effectively criticized except from a firmly materialist standpoint. If the other problems of dualism or idealism are regarded as soluble then who can say that spirit could not observe structured brain states, or else that pictures made of spirit could not be self intimating. One cannot really put forward a theory of imagery at all without committing oneself to a metaphysical position on the rôle of matter in mental experience {29*}.

Locke seems to have thought he could do without either such a metaphysical commitment or a theory of imagery. Although he probably believed in the atomism of his day {30}, the humble "under-labourer (...) clearing the ground" of the conceptual "rubbish" likely to impede the progress of the mechanical philosophers {31}, wished to present his work as independent of, since prior to, the science it was intended to abet and justify. He thus refuses to

meddle with the physical consideration of the mind, or trouble myself to examine wherein its essence consists, or by what motions of our spirits {32*}, or alterations of our bodies, we come to have any sensation by our organs, or any ideas in our understandings; {33}.

He works with a sharp distinction between natural science and philosophy {34*} which denies to him, and to his philosopher successors who accept this demarcation, the

possibility of developing a theory of the nature of imagery in the mould of either Hobbes or Descartes (or any alternative theory for that matter). Nevertheless, the unanalysed notion of mental image, under the name of "idea" was very much appropriated as part of the subject matter of philosophy {35*}. The result seems to have been to have effectively frozen the theory of imagery, for around 200 years, where Hobbes and Descartes left it. What is worse, the tendency of people's implicit theory of imagery was probably towards the vaguer version of Hobbes rather than the detailed and clear cut theory of Descartes. After all, for Descartes images are **outside** the mind, observed by it, whereas for Locke and his successors ideas are in (or even, as for Hume {36} **constitutive of**) the mind, just as Hobbes' motions of decaying sense were in the conscious brain. We may prefer Hobbes' metaphysical assumptions, but I have tried to suggest that this 'true' pictorial theory of imagery is not compatible with them. I know of no contemporary work which defends this type of theory specifically - although not all authors have clearly distinguished it from other views, whether defending (as Shepard) or attacking the reality or pictorial character of imagery. The unviability of **quasi-pictorial** theories, on the other hand, is far less obvious. It certainly seems compatible with dualism, and may be with materialism too. At any rate, it has several contemporary advocates.