

cycle have been considered, but there seems to be no satisfactory resolution of the difficulties. At best, the picture is very confusing.

From a theological perspective, the cyclical universe is very difficult. If the spiritual world needs a natural world populated with humans (humans in the sense of having liberty and rationality) then the periodic disappearances of this natural base would be unacceptable. Furthermore, each man retains a "limbus" formed of the "purest things of nature" in which the corporeal memory is imprinted.²⁷ While this concept is not clearly explained, it does seem certain that some kind of record in the natural world is required to support the spiritual world. Certainly this record would lose its individuality in the kind of black hole collapse and white hole re-expansion suggested in the cyclical models. (Only charge, mass, and angular momentum are conserved in total gravitational collapse.) For these reasons, if no other, the ever-expanding universe seems most attractive.

It may never be possible to adequately describe the beginning of time; but there is the satisfaction in this subject of seeing the convergence of scientific truth and the truths of the Writings. ■

²⁷ H. Lj. Odhner, *Cosmos* (Bryn Athyn, Pa.: Academy Publication Committee, 1964), p. 103.

THINKING FROM CORRESPONDENCES

N. J. Berridge

VII. Some Questions About the Eye

Thinking from correspondences does not involve the drawing out or invention of new doctrine from a knowledge of correspondences and science. Sometimes it helps to confirm revealed doctrine. Sometimes it emphasizes relationships and helps to clarify doctrine; but whether it does these or not, it enables the thinker to grasp the doctrine more firmly, to think about it more confidently, and to see new perspectives. It is the only sound way to think of spiritual things (AC 9300: 3). However, as emphasized in part I, it is essential that the natural things in which we see spiritual things should be correct. When the correspondences of the eye were being studied some

questions arose. The questions and answers ... are presented below, in the hope that the latter will be satisfactory enough to augment the reader's delight in the subject and to stimulate further thinking from correspondences.

1. *Heavenly scenes corresponding to the eye*

Some of the most delightful and joyous passages of the Writings are devoted to descriptions of the correspondences of the eye. In order to appreciate their quality one needs to read them in full, but for our present purposes a few brief abstracts must suffice. The province of the eye includes the heaven of little children where there are delightful gardens (HH 332, 333, 337). Those who relate to the coats of the eye communicate with the heavens where truths and goods are represented by a paradise and a city.

The more interior things of the eye have more beautiful and delightful correspondences. [AC 4411, 4412]

The eye, or rather its sight, corresponds primarily to those societies in the other life that are in the paradisiacal regions...where gardens are clearly presented to view. [AC 4528]

The regions are representatives of the beauty and pleasantness of angelic discourse in a higher heaven. The lower heaven where the representatives are is distinguished into many heavens corresponding to various things in the chambers of the eye (AC 4528). The splendid colours seen in the other life that derive their origin from the truth of intelligence and the good of wisdom belong to the province of the eyes (AC 4530).

It is instructive to place these statements in perspective by comparing them with what is said about some other senses.

2. *Correspondences of smell, hearing and taste*

But with regard to the correspondence with the Grand Man of the sense of smell and, consequently, of the nostrils, those persons belong to this province who are in general perception.... To these correspond the sense of smell and its organ. [AC 4624]

The scene depicted in relation to those who correspond to the exteriors of the nostrils is not particularly attractive, and the societies there need protection by angelic choirs from dull and stupid spirits who are represented by mucus (AC 4627). Nevertheless a

comparison of AC 4624 and AC 4627 shows that the persons in this province are in the Grand Man and that although they are said to correspond to the exteriors of the nostrils (by which one might have understood only the visible part of the nose) they also correspond to the sense of smell.

Pleasanter things are related of those who correspond to the interiors and internals of the nostrils, such as bright and variegated lights and a warm atmosphere like that of early summer, but they are mentioned only very briefly and one is left with a feeling that the state here is less glorious than that in the province of the eyes. However, the brief description and the resulting feeling may well be due to the state in the province of the nostrils being relatively remote from our present style of thought, as we now use the understanding more and perception less than did the Most Ancient Church. We may therefore be unwilling to think of the state of those in the province of the interiors of the nostrils as being inferior and merely note that it is different.

We are told but little concerning those who correspond to the external ear, perhaps because they are simple and merely obedient — a state in which there is little life (AC 4656) and therefore little interest.

The paragraphs about the interior hearing are difficult to understand, partly because the "sight of the interior hearing" seems to be the most internal of the ear (AC 4653: 2) yet the spirits relating to it were miserable (AC 4658). Another difficulty is that the spirit who was believed to be Aristotle and whose views are cited with approval was only "among wise spirits" who were not said to be angels although they must have been angelic spirits (cf. AC 394). These paragraphs (AC 4653-4658) suggest that there is no internal province of the ear. Such a conclusion is obviously incorrect, for we read in AE 14 "the province of the ear is in the axis of heaven." Nevertheless the paragraphs from the *Arcana Coelestia* referred to above seem to show that as the spiritual relationships of the ear tend towards internal things they tend towards sight. By correspondence this would mean that if obedience is to have a genuine internal it must be from understanding. This is confirmed in AC 3869 and also where it is said "the things that enter by the sense of hearing enter into the understanding and at the same time into the will, therefore the hearing signifies perception and obedience" (AE 14). The understanding in this context must therefore be that special quality of enlightened understanding which is called perception, as we also read in several places (e.g. AR 87). Such enlightenment is a blessing

enjoyed by celestial angels whose wisdom is beyond our grasp. There is however plenty for us to learn at the lower level where the province of the ear is constituted by those who are called "obediences" (AC 4653). Even Aristotle was obedient to his spirit. The subject invites more detailed study, but meanwhile it is sufficient to note that in the accounts in the *Arcana* we find little or no representation of heavenly things although the wisdom itself is clearly of heaven.

Concerning taste we are shown very clearly the devastation that occurs when it is depraved; but comparatively little is said about its correspondence when it is in order but that it corresponds to the perception and to the affection of spiritual food.

3. *The special quality of the correspondence of sight*

The few abstracts and quotations just given are enough to show that the correspondences of sight and of the eye are remarkably different from those of several other organs of sense. The same will appear just as clearly if other organs are chosen for comparison except the heart and lungs. These however correspond to the whole of the celestial and spiritual kingdoms so that they include all the heavens and therefore the provinces that are ascribed to other particular organs. Thus the question that now arises is, why are the spiritual relationships of the eye so outstandingly beautiful and glorious? A possible answer to this question may be found in the doctrine relating to faith and understanding, i.e. to spiritual sight.

4. *The special quality of faith and understanding*

Faith is referred to in the story of Cain when a mark was set upon him to prevent anyone from killing him, the internal sense of which was that violence should not be done to faith because it was going to become the means of salvation. Now although faith at that time was (one presumes) by hearing and was probably merely obeyed and not understood by most of those who accepted it, yet in time understanding was to grow. (Just as hearing tends to sight as it gets more internal). Thus the understanding also was to be inviolable, as we read in many places where it is pointed out that even with the evil the understanding can be elevated into heavenly light (e.g. DLW 416 et seq.; AC 9399). Here we see the special quality of faith and hence of the understanding where faith lives; so that it seems fitting that the representations of these things, i.e. the correspondences of sight, should be specially beautiful and glorious. These considerations however are only general and introductory. They

require the infilling of many particulars to enable one to partake of the joy that an appreciation of the subject can give. Perhaps it will be possible by means of correspondences to provide some of those particulars. We begin by selecting a few points from the anatomy of the sense organs.

5. *The Special quality of the eye*

We read in AC 4407,

The eye is the noblest organ of the face, and communicates more directly with the understanding than the rest of the organs of sense...the sight penetrates to the internal sensory, which is in the brain, by a shorter and more interior way than the speech perceived by the ear.

This statement may seem difficult to understand, for the eye is at the front of the head and that part of the cerebral cortex which deals with vision (presumably "the internal sensory") is at the back, so the eye and its internal sensory are as far apart as they can be—and how can it communicate by a shorter way? And what is a "more interior way"? An attempt to answer such questions could be made by considering all the anatomical and physiological qualities known to us that make the eye so special. Obviously there are many of them, but there is one in particular which is the natural centre and cause of the rest. Knowledge that is now available enables us to go a step further than could safely have been indicated in the Writings, for we can now say that the eye is, as it were, the brain itself responding to light. The other senses serve the brain, but they are not themselves the brain. Certainly several parts of the eye are not the brain, but the retina, the optic nerve, and to some extent the vitreous body are more truly represented as a part of the brain than as any other tissue. Thus the eye shares with the brain a more exalted status than any other organ. This, as will become clear, helps to answer some of our questions.

6. *Why the eye is part of the brain*

Although it is not necessary here to justify a view generally accepted by anatomists, some readers may be interested in the evidence, which is as follows.

(i) The eye begins as a small pit or dent in the side of the brain of the embryo very early in its development. The pit is soon covered by another layer that forms the lens, and the brain cells lining the

pit become the retina, which is thus a part of the brain from its first moment of differentiation. The ensuing formation of the optic nerve is merely a lengthening of nerve cells in the retina still within their own *milieu* of the brain.

The development of other sense organs follows a different course, and they are linked to the brain by the subsequent growth of nerve fibres.

(ii) The membranous sheaths around the optic nerve can be recognized as *dura mater*, *arachnoid mater*, and *pia mater*. These are the membranes that enclose the brain and nerves arising from it, but in most if not all other cases they give place to a different kind of coat as the nerves leave the skull.

It might be thought that there would be insufficient length of optic nerve outside the skull for a change in its coat to be easily observable, but this is not so. There is muscle and fat behind the eye, and the length of the nerve in the eye socket is 2.5 cm.

(iii) All nerve cells whether in or out of the brain require assistance, support, and protection by other specialized cells which do not conduct nerve impulses. Those assisting cells within the brain, known as *glial cells*, are quite different from those associated with other nerves, and known as *Schwann cells*. In the optic nerve the assisting cells are *glial*. (*Glial cells* also accompany the acoustic nerve, but only in its proximal part.) Even in the retina the assisting cells have many features in common with one of the types of *glial cells*.

(iv) The retina itself is also like a little brain. Even the rods and cones, which are the light sensitive elements, are modified nerve cells; but there are also several layers composed of many additional cells like the nerve cells of the brain, and they make multiple contacts with one another and with the rods and cones like the multiple contacts in the brain.

In this connection the following part of AC 4407 is of special interest:

Hence also it is that certain animals, being destitute of understanding, have, as it were, two subsidiary brains within the orbits of their eyes, for their intellectual depends on their sight. But with man this is not the case, for he enjoys the use of an ample brain.

As in innumerable other instances the structure of man's body has much in common with those of animals, and as we have just

seen he also has subsidiary brains within his eyes. The phrase "with man this is not the case" means that his intellectual does not depend on his sight, but the little brains within the eyes must be of use to carry out some preliminary processing of sense impressions in order to leave the main brain more capacity and freedom for intellectual response and rule.

7. *How the Optic Pathway is More Interior*

Having shown that the eye, unlike other organs, is itself part of the brain, we can conclude that the image on the retina is already in the brain; and therefore the pathway conducting information from the retina to the internal sensory must be more interior than others.

8. *How the Optic Pathway is Shorter*

None of the myriad nerves sending information from the head and body towards the cerebral cortex makes direct contact with the cortex. Every nerve ends in one or more relay stations in the spinal cord or in the brain. Here each fibre passes its impulses on to one or many other nerve cells. There are many relay stations and most of them have several (or many) other functions such as for example inhibition, excitation, integration and interaction between incoming impulses from sense organs and out-going (controlling) impulses from the central area or cerebral cortex. Some sense organs, for example those of touch, can even be instructed to respond to different stimuli, such as warmth instead of pressure.

Between the retina and the cerebral cortex there is only one relay station, but between the cochlea or inner ear and the cortex there are several relay stations. Thus in physiological terms the pathway is shorter.*

*The pathway for sight may be described very briefly as follows. The optic nerves from both eyes come together in the optic chiasma near the centre of the base of the brain, and then diverge again. In the chiasma about half the fibres from each eye cross over to the opposite side, and as it is only about half there is no difficulty in each eye having the same sort of correspondences as the same side of the brain. Moreover each side of the brain sees through both eyes, the right side using the left halves of both retinæ. From the chiasma nearly all the fibres continue to the lateral geniculate body which is the one relay station whence new nerve fibres radiate to the visual cortex. The few fibres which do not connect the retina with the lateral geniculate body send impulses via a different relay back to the iris for adjustment according to light intensity (a typical reflex).

The path of the nerves for hearing is more complicated. Some impulses reach the auditory part of the cerebral cortex through as few as three relay

The anatomical facts adduced above serve to show that although some of the statements in AC 4407 might be difficult to accept at first, a quite brief excursion into the anatomy as now known shows them to be correct in a way that was not known, and probably could not have been understood or accepted, when they were written.

9. *The Sight of Hearing*

Another aspect of the phenomenon of sight being more closely connected with the understanding than is hearing appears by introspection. It may not be universal, but for some of us at least the experience is that words spoken to us are often translated first into visual memories before being submitted to the understanding. For example, on receipt of the command, "Thou shalt not eat of it," we first make a picture of the things mentioned, the fruit of a tree. This explains the use of the phrase "sight of the interior hearing" (AC 4653: 2). It is confirmed in other places: "What is heard passes into the internal sight which is that of the understanding" (AC 8361, 9311). These things do not detract from the neurological correspondences. They are part of the same phenomenon.

10. *The Heavenly Quality of the Brain*

It still remains to demonstrate the link between the anatomical facts and the special quality of the representations seen in the province of the eye. We have seen how it is that the eye is a part of the brain itself. This truly remarkable fact is most pertinent for an explanation of the form given to these parts of the Writings. Thinking of the eye as the brain leads us to consider correspondences of the brain. These are best summarised in a phrase from AC 4049 which, though it may not have been intended to be taken literally, is peculiarly true. In the last sentence of that number we read, "The brain is heaven." To realise how near this is to a literal statement, consider the following:

The brain is formed in accordance with the form of the flow of heaven. [AC 4041]

All these things are in exact accordance with the heavenly

station. Others may pass through as many as five besides extra ones involved in several places where some (N. B. not all!) of the fibres cross from one side of the brain to the other.

These details confirm that physiologically speaking the pathway to the internal sensory involves fewer stages for sight than for hearing, and in this sense it is shorter.

form; for such a form is impressed by the Lord on the heavens, and thence on the things that exist in man, and especially on his cerebrum and cerebellum. [AC 4040] It is the brain and its interiors through which the descent and ascent [from the heavens into the world and from the world into the heavens] is effected. [AC 4042]

The brain, like heaven, is in the sphere of ends which are uses. [AC 4054]

Of course we do not lose sight of the fact that the brain is a natural substance of this world, but it is organized in such a way that it can respond more excellently to inflowing life. Ordinary correspondences must still obtain; but extraordinary correspondences obtain also, for in the brain love occurs as love and wisdom as wisdom rather than as something different that corresponds to them. The love and wisdom that flow in are superior to those that manifest themselves in the man of earth, so there is still correspondence and not identity; but it is a special kind of correspondence which requires a brain. (These points have also been made in the *New Church Magazine*, July-September 1979).

In this way we see how heavenly the brain is and why the eye, being part of the brain, has correspondences that are so beautiful. Such correspondences are not related of the brain itself. This is perhaps because, as we are repeatedly told, its inner form is beyond our comprehension. The eye provides an eminent substitute, being still of the brain, but a little removed.

Perhaps these comments will be of use in bringing us a little nearer to the realization of the Divine quality of the Revelation. ■

COMMUNICATION

To the Editor:

I have been following with a great deal of pleasure the articles in *The New Philosophy* concerning "Thinking from Correspondences", by Dr. N. J. Berridge. In the January-March 1979 issue he discusses the importance of distinguishing between representatives, correspondences, and significatives. He states that the information from which we think should be based as far as possible on true and accurate natural knowledges. By this I understand that he means that in determining the truth of any external or internal phenomena, in this case the bodily function of any organic part, we should understand as far as possible the process by which it operates. He states further that "the wider and truer our natural knowledge the better will be our understanding of spiritual things." He reemphasizes this in part