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PERSONS

In today's lecture which is the seventh of the series I propose to bring to a conclusion my argument up to a certain point. I shall begin therefore by recapitulating briefly what has been said before. In doing so I want to lay all my cards on the table, and show you if I can that they all belong to the same set.

But I must confess in advance that in an important sense this will prove impossible, for there will always remain in my hand an indeterminate residue, a kind of joker. It plays the part of an ubiquitous trump card without which all the rest would be nothing but bits of cardboard. This ubiquitous ultima ratio is my own signature, by which I underwrite the risks of my own words, in the conviction that no more can be demanded of me, or of anyone else speaking of his convictions, than that he sincerely declare the beliefs, which after due consideration of all that he believes to be relevant to the issue he finds himself holding. I shall elaborate this conception of commitment in my last lecture which should satisfy such ultimate questions raised by my discourse, in respect to which you may find yourself in doubt for the time being.

So let me now go back to the survey of human knowledge which I have given you so far. I had started with the exact sciences, defining them as a mathematical formalism with a bearing on experience. There appeared to be present a personal participation on the part of the scientist in establishing this bearing on experience. This was least noticeable in classical mechanics and I accordingly accepted this chapter of physics

as the closest approximation to a completely detached natural science. Its statements could indeed be so formulated as to admit of strict falsification by experience. There followed two sets of examples for a more massive and not conceivably negligible personal participation in the exact sciences. The first of these comprised the knowledge of probabilities in science; or more precisely of the degrees of coincidence involved in assuming that an apparently significant pattern of events had come about as the result of chance. The second set demonstrated the assessment of orderly patterns in the exact sciences and showed that standards of orderliness, though bearing on experience, cannot be conceivably falsified by it. On the contrary, as in the case of statements of probability, they serve to appraise any relevant samples of experience.

Experience can of course offer clues to encourage or disappoint statements of probability or standards of order and this effect is important, but not much more important than the factual theme of a work of a novel is for its acceptability. Yet personal knowledge in science is not made but discovered, and as such it claims to establish contact with reality beyond the clues on which it relies. It commits us, passionately and far beyond our comprehension, to a vision of reality. Of this responsibility we cannot divest ourselves by setting up objective criteria of verifiability - or falsifiability, or testability, or what you will. For we live in it as in the garment of our own skin. Like love, to which it is akin, this commitment is a "shirt of flame", blazing with passion and, also like love, consumed by devotion to a universal demand.

Such is the true sense of objectivity in science, which I illustrated in my first lecture. I called it the discovery of rationality in nature, a name which was meant to say that the kind of order which the discoverer claims to see in nature goes far beyond his understanding; so that his

triumph lies precisely in his foreknowledge of a host of yet hidden implications which his discovery will reveal in later days to other eyes.

My argument was clearly overflowing at this stage into domains far beyond the exact sciences. I chose to pursue the hunt for the roots of personal knowledge towards its most primitive forms which lie behind the operations of a scientific formalism. Tearing away the paper screen of graphs, equations and computations, I tried to lay bare the inarticulate manifestations of intelligence by which we know things in a purely personal manner. I entered on an analysis of the arts of skilful doing and skilful knowing, the exercise of which guides and accredits the use of scientific formulae, and which ranges far further afield, unassisted by any formalism, in shaping our fundamental notions of most things which make up our world.

Here, in the exercise of skill and the practice of connoisseurship, the art of knowing was seen to involve an intentional change of being: the pouring of ourselves into the subsidiary awareness of particulars which in the performance of skills were instrumental to a skilful achievement and in the exercise of connoisseurship functioned as the elements of the observed comprehensive whole. The skilful performer was seen to be setting standards to himself and judging himself by them; the connoisseur was seen valuing comprehensive entities in terms of a standard set by him for their excellence. The elements of such a context, the hammer, the probe, the spoken word, were seen pointing beyond themselves and being endowed with meaning in this context; and on the other hand a comprehensive context itself: like dance, mathematics, music, was acknowledged as possessing intrinsic or existential meaning.

The arts of doing and knowing, the valuations and the understanding of meanings, are thus seen to be only different aspects of the act of ex-

tending our person into the subsidiary awareness of particulars which compose a whole. The inherent structure of this fundamental act of personal knowing makes us both necessarily participate in its shaping and acknowledge its results with universal intent. It is the prototype of intellectual commitment.

Here was revealed the source of personal convictions of which we had previously traced the remotest streams as giving life and meaning to the formal structure of the exact sciences. And as personal knowledge was seen to involve the extension of a living body, it became clear that the conception of personal knowing will have to be included in a general conception of life; so that knowing life and being alive would be accounted for in similar terms.

In preparation for this program I had to turn first to systems which embody rules or serve us as machines. Such artefacts are fragments of man's intellectual life, which operate with a considerable measure of independence, but can be said to be what they are, namely rules of logic or ethics, or machines, only if they are relied upon by a person who believes their operative principles to be right. He will then account for any process which he believes to be controlled by these principles in terms of its reasons, while any failure of such a process to comply with its supposed operative principles will be explained by the intervention of events of a different kind, not subject to the operative principles of the process. The failure of a machine for example will be explained in terms of physical and chemical events, precisely because physics and chemistry can in themselves never define the operational principles of a machine.

These threads of thought tend to converge towards a new joining meaning the moment I acknowledge the presence of living persons of which I

myself an one. As the exercise of personal knowing sets up standards for my own skill and connoisseurship as well as for the things known by me, it may be exercised also for setting up standards for other living beings known by me. This I do by identifying myself with them and, simultaneously, criticizing their standards from my own point of view. This logically three storied structure of my appreciation of a living being naturally includes my appreciation of myself as a living and knowing being, and thus the perspective is thrown open of an evolutionary process, leading up from the amoeba to the highest animals and including the animal holding this discourse. My skills and connoisseurship, my knowledge of speech and my understanding of science, like all the rest of my intellectual proficiencies, are then seen as forming part of my life, and the enquiry into the nature of knowledge which I have so far pursued here appears as an extension of biology, while biology itself appears in its turn as a process of life reflecting on itself.

I shall now specify this perspective at a few points, since time will not permit more than that. The lowest manifestation of individual life - but not the least wonderful - is its manner of existence, in shapely forms, ruled by specific standards. The meaning of such harmonious being and our appreciation of its significance are two allied forms of life. For the appreciation of harmonious beings is, like the enjoyment of a work of art, itself a harmonious being. Our contemplation of living beings finds a justification in itself, which is derived from the significance which it accords to the living beings which it contemplates, as beings in themselves.

Morphogenesis is the process by which these significant shapes come into existence, from germs which by comparison are mere featureless lumps of protoplasm. It represents an achievement, which we appreciate by vir-

tue of our own experience of achievement, but we appreciate its aptness from the point of view of its own standards, as attributed to it by ourselves. It makes no decisive difference here whether we find that morphogenesis is performed by the going into operation of preformed fixed mechanisms, producing independent interlocking sequences, which are characteristic of a mosaic egg; or alternatively, by a comprehensive process of equilibration as discovered by Hans Driesch in the fact that any fragment of the early sea urchin embryo will develop into the whole individual. Both are processes which can be biologically appreciated and analysed only in relation to the rightness of a morphological goal to the achievement of which they contribute.

I postpone further comments on this in order to include other achievements of living beings, our knowledge of which is similar to that of morphogenesis. The automatic functioning of our internal organs is such an achievement. It differs from morphogenesis in the first place by the fact that the changes involved in it are transitory so that the "wisdom of the body" has been acknowledged pre-eminently in its capacity for keeping its internal condition unchanged in spite of widely varying external conditions. The circulation of our blood and the process of our breathing operate at a rhythm that is counted in seconds while our digestion of food, its resorption and storage, its oxidation and the elimination of the refuse through lungs, kidneys and bowels extends over cycles of whole days and nights; but whether quick or slow, these pulses leave the animal unchanged and indeed form part of a vast system of activities, including the external behaviour of the animal which are concerted in achieving this stability.

Insofar as the organism is a machine it can be analysed only in terms

of operational principles and the observation of any physical or chemical process occurring within the system can be relevant to its essential function only as an embodiment of these principles. Our appreciation of operational principles is borrowed from our experience of engineering and the use of machinery, forming one part of our life and is used for the appreciation of the machine-like functioning of our organs, which is another part of our life. On the other hand, the kind of goal seeking equilibrium discovered by Driesch in the sea urchin embryo is appreciated by us on the grounds of its kinship to conscious purposive behaviour. For this process seems to display an inexhaustible resourcefulness making the best of an infinite variety of given circumstances, for achieving an invariable end.

At all levels of animal life we can recognise these two always mutual interacting types of rationality, namely those of machinelike operations and of a more flexible integrative behaviour, defined by our acknowledgement of its persistent resourcefulness. Both principles of purposive operation are essential to life, but it seems that the second is in a sense the more vital, for it implies in its higher forms the presence of an actively striving conscious individual. To illustrate this we shall pass on to the level of consummatory actions, like feeding.

At this stage the individual has become a doer of things and it is felt to be driven to action by a desire of its own. The critical appreciation implied in acknowledging its achievements becomes correspondingly more elaborate and more emphatic. Since we recognise as 'food' only materials which we believe to be nutritive and not deleterious to the animal it falls to us to this extent to determine

what the purpose of feeding ought to be. This is often far from obvious. When a sheep eats the wool off the back of another sheep, or cattle eat bones, the uneducated may object to this as an aberration but physiologists approve of it as a compensation for certain mineral deficiencies in the animal's diet. Yet not everything that animals eat is nutritive or wholesome. It is easy to poison animals by arsenic or strychnine; we can deceive them as the angler does when making fishes bite at his fly. Rats will drink saccharine solution which has no nutritive value and captive apes eat their faeces which seems to be quite useless as food.

Feeding may undoubtedly be wrong, and our criticism in such cases is more substantial than that which we have expressed in respect to morphological malformation, for we know that the animal is satisfying a desire. The dog-lover is painfully conscious of his dog's craving when it is showing signs of hunger; the rat's enjoyment of a sweet taste is the only reason that can be stated for its feeding on a solution of saccharine. And where there is conscious desire the performance which satisfies the desire has the character of an action. The rationality of such action is ascribed to the desiring and acting person and any failure of his action may then be regarded under new headings. False feeding may be classed with embryonic malformation as a diseased process; a maniac devouring paper or sand is suffering from a disease. But to the extent to which action is prompted by desire we shall acknowledge also the possibility of a normal preference for merely subjective satisfaction, and to the extent to which action is intelligent we shall recognise further that error may be a possible reason for failure.

The expansion of the critical framework required for the observation of conscious forms of life is revealed also by reflecting on the observation of perception. We see the size of an object approaching the eye as constant so long as a certain relationship prevails between the effort of accommodation and the size of the retinal image. More precisely, we are jointly aware of the retinal image and of the adaptive effort as well as of certain relations of the two while both are undergoing a change, in terms of the constant size of an object seen at variable distances. The observer of this process of perception will regard it as a rational performance if he endorses the affirmations implied in it, which is that the object has remained of constant size. But it may happen as in the experiments of Aymes that the observer varies, unknown to the observed subject, the size of the object, a white sphere, by inflating it. The subject will then be found to increase his accommodation as if the object were approaching and to become aware of the increased effort coupled with an increased retinal image by seeing the swelling object approaching at constant size. In this case the seeing of a constant size is regarded as an error due to a mistaken perception. If the effort required for a certain measure of accommodation is increased by atropin poisoning an approaching object will be seen shrinking to a tiny size and the reduction of its size will make it appear farther off. Owing to the conscious character of perception we can know this anomalous appearance as such and regard it as a subjective experience of the perceiving person.

We have now ascended to the level where our knowledge of a living being becomes an encounter with a living agent. At the appetitive and

perceptive level the animal is the centre of conscious efforts directed towards possession of things and knowledge of things. We are aware here of the animal's active person in terms of the same kind of particulars in terms of which the animal integrates its own action. An understanding of the hungry animal choosing its food or of an animal on the alert listening and watching, is an act of personal knowledge quite similar in its structure to the animal's personal act which it appraises. Like all personal knowledge of a comprehensive feature this act involves a critique of this feature. It affirms that its particulars are its rational subsidiaries and acknowledges a wide field of such possible rational relations, centering on the achievement of the same total intention. Within this framework every observation has a critical significance, being seen as contributing to the success or as causing the failure of this intention. Since the centre of this particular comprehensive achievement, namely the craving and perceiving animal, is a conscious being and we can share its consciousness to some extent, this allows us not only to understand its achievements better, but also enables us to assess certain failures as errors or as merely subjective satisfactions.

Behaviorists teach that in observing an animal we must refrain above all from trying to imagine what we would do if placed in the animal's position. I suggest on the contrary that nothing at all could be known about an animal that would be of the slightest interest to physiology and still less to psychology except by following the opposite maxim of identifying ourselves with a centre of action in the animal and criticising its performance by standards set up for it by ourselves.

Once we have acknowledged conscious cravings in an animal, we may proceed to elicit from its acts of intelligent choice. For this purpose the psychologist places the animal in a situation which constitutes a problem for the satisfaction of some of its major drives like hunger, fear or pain. An intelligent act will originate from this arrangement only if first, the animal responds to the problem set to it by the situation and second, if this problem demands an appreciable measure of ingenuity, but not more than the animal in fact possesses.

By an appropriate arrangement of limited alternatives we may force the animal to respond, if it responds at all, in a manner that can be classed as strictly correct or strictly false; and the experiment can be so devised that the animal's choice between a correct and a false response has to be made at a particular point in time and space. The narrowness of the experimental situation tends to key up the animal's state of perplexity at a choice point to a tension which is not likely to be reached in the wider circumstances of nature, and thus the laboratory spotlights and also intensifies the moments of intellectual effort, by which the animal's personhood is once more elevated to a new level; the level at which it performs an act of intelligent judgment.

In order to compress my argument I shall concentrate on one form of intelligent performance, namely on the recognition of signs pointing towards an event. I shall consider particularly the kind of experiment in which the animal has to discriminate between two alternative signs, one true and the other false. In all such cases we must rely on our capacity to observe a change in the animal's habits. A change of habit which is thought to manifest that the animal has solved the problem set to it is called 'learning'. In a sign event problem, the process

of learning clearly amounts to the drawing of a correct inductive inference from observed facts. Take an experiment in which a rat is faced with two different signs, say a white triangle and a red circle placed in a random sequence on either side of a discrimination box, with food presented if and only if the animal chooses the white triangle. The animal who has mastered this situation has arrived at the correct empirical generalisation that a white triangle (p) is a sign of food (q) whereas absence of a white triangle (not-p) signifies no-food (not-q); in symbolic terms, if p then q and if not-p then not-q.

This shows that the question, How does an animal learn to recognise a sign? (or if the reflex language is preferred, How is an animal conditioned to a particular stimulus?) co-incides with the philosophic question, How are correct generalisations drawn from experience? The fact that the animal is generalising about events engineered by ourselves does not distinguish it from us in this parallelism, since as subjects we are both faced with events beyond our control. At this point the three storied structure of biological observations comes fully into view. The experimental setting presented to the animal is at the first level; the generalisation 'if p then q, etc.' referring to the first level is made on Level Two, and the psychologist's enquiry into the origins of this generalisation is on Level Three. I propose to show now how the analysis of the animal's performance, carried out at this level reveals the rudiments of responsible personhood in the animal.

This analysis of a process of learning entails two antecedent judgments on the part of the psychologist; namely, first that the animal has arrived at some generalisation (i.e. has established a habit implying some generalisation) rather than is acting obsessively or at random and secondly that the generalisation made by it is correct.

Let us illustrate how we can discriminate between the various alternatives mentioned here. Take first an example of an erroneous generalisation. When grains are spread equally over a dark grey paper A and adjoining light grey paper B the grains on the darker grey ground A being glued to it while those on the lighter grey ground B are loose, a chicken will learn to peck only at the grain on the lighter grey ground B, where the grains are loose. But when the dark grey paper A (which had the grains glued on to it) is replaced by a new strip A of an even lighter grey than B, the chicken will abandon the grains on B and start pecking from A. It turns out then that the animal had not learned to associate the particular hue of B with the looseness of the grains found on B but rather with the relation of B to A as the lighter of two papers. Within the standard procedure of the discrimination experiments this generalisation is false. There is strong evidence (Lashley, Krechevskij) that animals placed in a discrimination box will start by acting on the lines of some usually false generalisation, such as 'turn right' or 'Choose alternately right and left', and that learning is arrived at by abandoning these successive errors for the correct solution of the problem.

An animal acting on the lines of any generalisation is acting rationally. If the generalisation is erroneous its behaviour is rational only in view of its own premiss; while we may regard it as objectively rational, if the generalisation is correct. The distinction will depend on the observer's judgment as to what is the true state of affairs confronting the animal. A behaviour sequence lacking either kind of rationality will be classed as random, as senseless or as obsessive, and may be regarded as a symptom of mental deficiency or neurosis.

We may now resume the question "How can we justify the attribution to an animal of the capacity for acquiring a rational mode of behaviour that corresponds to the facts?" and try to answer it in two parts. We should remember first that our standards of intelligence are originally based on ordinary experience, and that intelligence tests are devised to conform with this anterior assessment of intelligence. They are accepted on the grounds that they approximate this informal assessment by a more formalised method. Our conception of intelligence and rationality in animals is likewise anterior to the formal investigation of these faculties. They are personal facts which we know by identifying ourselves with the animal in the same way as with other intelligent beings. Hence follows the second part of the answer; namely that the animal's capacity for establishing correct empirical generalisations can be ascribed to it only with such qualifications as we attach to our own capacity for doing so by virtue of our own similar mental powers.

These qualifications will be found to carry far-reaching consequences, implied in the personal character of all knowledge. Empirical generalisations are personal facts which we discern by our subsidiary awareness of the evidence supporting them. They are comprehensive features of experience of which the particulars are largely unspecified and in which we participate by virtue of our own ultimately unaccountable standards of order, coherence etc. They can never be strictly determined by the evidence which can only furnish clues for their discovery; indeed, empirical inferences may set up standards of perfection by which experience itself will henceforth be valued. And finally, true generalisations, true standards, true valuations are the universal pole of a personal commitment. They can only be affirmed by persons who believe them to be true; but these can affirm them only as

valid for everybody and thus personal knowledge implies its own universal intent.

If pressed to justify our personal knowledge, we can always be brought to admit having set aside conceivable doubts at some point, by the act of our own judgment. We may say therefore that such acts are indispensable, in order to bridge the logical gap between the evidence and the inference that we draw from it. The great scientist may be said to possess specific gifts for crossing wide logical gaps which afterwards can be much reduced by adding further evidence. We may distinguish here between the initial or heuristic gap, the traversing of which measures the scientist's originality and the residual gap, which persists throughout the process of subsequent verification but is plastered over by current scientific opinion. Our appreciation of a scientist's originality by which he is acknowledged as a scientist, and granted his proper distinction and responsibility involves an estimate of the logical gaps closed by his discoveries.

Psychologists setting problems to animals in order to study the process of learning, also trust themselves to grade the ingenuity required for mastering these problems, so that they may correspond approximately to the animal's ingenuity, as assessed likewise by the psychologist himself. How well this can be achieved, was shown in his famous experiments on apes by W. Kohler, who was able to devise a large number of problems which his more ingenious animals could just solve by making an effort, while the less gifted members of the group failed altogether.

The act of guessing right by which a logical gap is bridged is inherently unspecifiable, for if we could exhaustively represent it as a process carried out according to strict rules the logical gap

would be eliminated. Discoveries made according to known rules are not discoveries at all, but merely routine surveys, requiring no creditable measure of ingenuity. Consequently, any explanation of the process of learning in terms of exact science must dissolve the conception of intelligence if intelligence is regarded as the exercise of ingenuity.

The exercise of ingenuity (as the acts of belief and understanding) are several forms of tension in which we commit ourselves to the acceptance of a rational structure, such as for example an empirical generalisation. A decision accepting such a view of the facts is usually prepared by a state of suspense during which this tension is specially intense. This can be observed even in animals. Kohler describes how chimpanzees regularly went through a period of perplexity and quiet, before producing the solution which was finally successful. On one occasion his ape Sultan made one attempt at a solution, and then a second and a third; "but (Kohler writes) nothing made so great an impression on the visitor as the pause after that, during which Sultan slowly scratched his head, moved nothing but his eyes and his head gently, while he most carefully eyed the situation."¹⁾

I have mentioned before how this intensification of mental tension is evoked artificially by placing the animal at a choice point in a discrimination test. The exercise of this intellectual effort can be strained to a breaking point by making the problem increasingly more difficult while keeping up the animal's determination to solve it. This is what Pavlov did when he first produced experimentally the

1) W. Kohler, "Mentality of Apes" 1925, p.200.

nervous breakdown of dogs. A circle or a nearly circular ellipse was established as a sign for immediately forthcoming food, while the showing of a flat ellipse would mean, and be accepted for, "no food just now". The hungry animal would be watching these signs and committing itself, as shown in the variations in secretion of its saliva, to the expectations which they indicated. So long as the two signs of opposite significance were widely different - the ellipses being either very flat or nearly circular - the dogs reacted to them without developing symptoms of nervous strain. But when the hungry animal was repeatedly shown intermediate shapes, its behaviour underwent a profound change. It turned wild and angrily strained and snapped to set itself free. At the same time it had lost its previous powers of discrimination, giving false reactions to signs to which it had been perfectly conditioned before. After a while the animal would fall into abnormal listlessness and refuse to react altogether to any of the previously established signs.

We can observe here the nervous strain setting in as the evidence for the existence of a rational structure becomes less distinct, or - in the terms which I used before - as the logical gap between premisses and conclusions is widened. As this gap is increased, the burden of decision shouldered by the animal's intelligence is continuously augmented until eventually its powers are pitted against problems of excessive difficulty, which it would not have otherwise recognised or essayed at all. With the consequent breakdown of the animal's rationality its whole person disintegrates emotionally as well as intellectually.

We realise then, if we had not done so before, that the intelligence of the animal and our appreciation of it was a link between his person and ours. The neurotic dog which can only snarl or sulk has ceased to be a companion to us, and even when a rat is driven into an obsession, we are deprived of a personal intercourse in which we stood with it previously.

This is confirmed by the fact that an appeal to the neurotic animal's affection may help to restore its intelligence. A visit by a person to whom the afflicted animal is attached may heal its neurosis. Again, according to Meier and Klee the most effective method for breaking down a neurotic fixation in the rat is to apply gentle manual guidance directing it away from its fixated behaviour, "rather in the manner of an animal trainer". The animal responds to personal contacts where all mechanical procedure fails to restore him to sanity.

The neurosis can also be healed by presenting the animal for a while with signs of a clearly distinguishable kind and accompanying these consistently with the offer of food, or the reverse. The successful solution of these simple problems seems to restore the animal's self-confidence, much as occupational therapy helps to restore the shattered personality of the neurotic.

The personal conception of intelligence which I have adopted here by regarding it as a form of guessing right, naturally links the faculty for intellectual judgment to the centre of personal responsibility. The connection is strikingly borne out by the fact discovered by Jacobsen that in chimpanzees intellectual frustration no longer leads to neurotic disturbances if the animal's prefrontal lobes are cut off

from the stem or eliminated. The animal now ceases to worry and is no longer exposed to any danger from mental stress even though its ability to solve problems has been seriously impaired. A similar operation, when performed on man may relieve neurotic depression and at the same time reduce the depth of personality, rendering it crude, improvident and tactless.

This is as far as I wish to go in my gradual ascent towards the acknowledgment of rising levels of personhood. It suffices to show that a continuous transition has been made from the I - It of the exact sciences to the I - Thou of interpersonal relations. This is the result of attending from the start to our personal participation in establishing what we believe we know. For the participation of the knower in the inanimate things with which the exact sciences are concerned expands gradually in the course of this progression into the knower's participation in the sentient, intelligent and responsible centre of another person.

We can see also how the establishment at this stage of three clear cut logical levels in place of the original two was pre-figured from the start in the evaluative nature of personal knowledge. For the moment we know something in our own personal way, we set a standard to the things known, grading them according to the extent to which they make sense to us. And as we appreciate comprehensive entities, we criticise their particulars as to their aptitude in composing the whole which they subserve, which leads on smoothly to the appreciation of living individuals from their own point of view.

The shapeliness of a plant can be recognised by a purely contemplative participation in its appearance. But as we pass on to an animal, our participation in the core of the known individual is

quickened by our fellow feeling for its striving and sentience. We are then ready to reach out to it and to watch for an intelligent response from it as from its person to ours. And finally, in higher animals this approach brings us into contact with a centre of intelligent commitment. At this point a three storied logical structure fully emerges, with ourselves situated on the third level and knowing from there a fellow person, who is knowing in the same way some things on the ground level from the level below our own. This confirms the justification we had granted to our personal knowing to start with; for we now know fellow persons who can be understood only by accrediting them with the very faculties which we had and are claiming to exercise in knowing them.

The enquiry, which has thus led us from the knowing of things to the knowing of knowing, can be pursued further only by attempting to give an ultimate justification of our knowledge; but this I have decided to leave for my next and last lecture.

In the meantime let me look round once more from the vantage point that we have so far attained. We have moved a long way from the conception of knowledge as the act of ascribing truth or falsity to declaratory sentences. Knowing has been recognised as part of life; as inherent in the right functioning of living beings. But can all of life be described in terms of knowing: I mean in terms of skilful action and true apprehension? Let me state my beliefs in this respect quite briefly.

I acknowledge unhesitatingly the continuity between the lowest living functions and the world of conscious desires guided by the senses of touch, sight and hearing, from which the whole realm of human thought

and responsibility emerges. And I acknowledge that the complex order of living functions is itself pre-figured in the simpler patterns of the inanimate world.

I recognise here the unfolding from apparently sterile beginnings of highly significant beings; of the noblest fruits of creation. By evoking the spectacle of a universe which for billions of years had existed unseen, unheard, unfelt and altogether meaningless, except to its Creator, awaking here and there in tiny clusters of matter to desire, feeling and intelligence - these clusters eventually even coming to participate in the Creator's understanding of the universe and to feel obliged to justify their action before him - I bear testimony to the status of man which I implicitly claim for man by this appraisal of the universe by myself.

The limit of my knowledge is reached when I realise the abysmal depth of these mysteries. We have encountered these mysteries so far only in the unspecifiability of personal knowledge. But if knowing and living are identified, the principle of unspecifiability is generalised to the living beings themselves both as knowing agents and as things personally known.

Thus, to take an eminent example, my own responsible actions can never be specified in terms of my nervous functions. Admittedly, much of my intellectual responsibility is delegated to my nervous system, as when I allow it to carry out important perceptive functions on my behalf. But as a sane person I retain my claim to be the ultimate judge of anything my nervous system decides for me and its deliberate operations are by their very nature under my direct control. I can regard the services of my nervous system, therefore, only as those of

a tool which, though it may be operated unconsciously and occasionally may even get out of hand, can yet be said to function rightly only if accredited by me as my tool.

Nor can the responsible mind of another person be encountered except by subsidiarily attending to its workings while focussing on the mind of which these workings are the expressions and instruments. It is misleading therefore to say, as does Professor Ryle, that the workings of the mind are the mind.

Similarly, as my knowledge of sentience is not specifiable in terms of insentient particulars, so sentience itself is also unspecifiable in such terms. Take any sensory quality, for example the hearing of sound. No knowledge of acoustics can break the silence which surrounds the man born deaf. Even if he became an expert in the neural changes which accompany hearing in other person's brains, he would come no nearer to knowing what it is they are hearing.

But what is logically unperformable cannot be assumed to have taken place in actual fact. As living beings came into existence from the inanimate, and as these developed gradually into sentient, intelligent and responsible persons, a series of new principles must have come into action to account for the emergence of processes that are not specifiable in terms of their historical antecedents. The unspecifiability of personal knowledge is brought here to coincide with the postulates of emergence of Whitehead and Alexander, though it reproduces emergence in a somewhat more exacting form. It re-appears here rather as an insistent calling of meaningless matter to ever higher strivings of rightness.

This aspect may perhaps be better understood after I have shown how these efforts towards higher conditions of being are accompanied

by ever more far reaching acts of commitment. Of this I shall speak
in my next lecture.

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Samuel Johnson

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