

THE AUTOMATION OF THOUGHT

If the word 'thought' be taken in the meaning conferred upon it by the late A.M. Turing,¹ there is no doubt that our computing-machines think; just as, according to a certain meaning of 'select', our potato-sorting machines do select tubers of various sizes. There is no reason to find fault with writers like Turing over such use of words. When computer-men agree to call the operations performed by a calculating-machine 'thinking,' and to speak of them as 'logical,' they are exercising the technician's right to impose new meanings on old names, or perhaps to revive worn-out meanings recorded only in etymological dictionaries. De nominibus non curat sapiens. So we may easily receive Turing's opinion:

The original question, 'Can machines think?' I believe to be too meaningless to deserve discussion. Nevertheless I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted.

But we are perhaps closer to the end of the century than Turing knew. As the word 'thought' is now used frequently enough by philosopher or scientist, it is difficult to see why its meaning cannot be verified of things other than man. Carrots, apparently, 'know how' to grow, and even wheelbarrows how to be pushed around. The human mind may be more complicated than UNIVAC, and UNIVAC more complicated than a wheelbarrow, but the position of the computer-men is that all three are machines in the same sense,

1. "Computing Machinery and Intelligence," in Mind, 1950, vol. LIX, no. 236, pp. 433-460.

with operations equally mechanical. After making this point, Turing might have been expected to let the matter rest. He does not. Certain difficulties may be raised against the identification of 'thinking' with both the mental act of man and the mechanical movement of the machine, and these difficulties he is determined to face. The first opinion opposed to his own he calls the "theological objection," and he formulates it as follows: "Thinking is a function of man's immortal soul. God has given an immortal soul to every man and woman, but not to any other animal or to machines. Hence no animal or machine can think."

The argument which he professes to cite is of course a hopeless one. But the first question is why he should concern himself with theological objections at all. Even when all appeal to authority is ruled out, as it ought to be in philosophy as such, his theory, one would think, might still be discussed in terms of what we already know and understand. However, it is precisely here that the difficulty lies nowadays. The new conceptions of scientific rigour are such that no acceptable account of what we already know and understand seems possible.¹ Lord Russell, Ludwig Wittgenstein, and Kurt Goedel constitute empirical proof of this retreat, or advance — for it may be looked upon as neither. An advance it is at least in the respect that it reveals, once for all, what happens when certain types of question are entirely put aside. These I would describe as the kind which, historically, have led to endless controversy; I mean philosophical questions,

1. The present idea of rigour simply precludes human speech. Exactness demands that we behave like our computers and say nothing at all.

and all of them, at least in the Platonic or Aristotelian sense of philosophy. This initial exclusion of all the classic problems was plainly formulated as a principle by the late Richard von Mises when he said: "It is impossible to accept as the basis of mathematics merely statements that seem self-evident, if only because there is no agreement as to which statements actually belong to this class." How could we fail to agree, at least in words, that such is in fact the case? This of course means the immediate rejection of mathematical science as understood by the ancients, who considered it a branch of philosophy and the very model of what they meant by disciplina. And, though it may be objected that the mathematics which von Mises is thinking of has almost nothing to do with that of Plato or Aristotle, or even Euclid, this objection is actually irrelevant. The distinction between science and calculus, like every similar distinction, is ultimately based on some self-evidence or other, about which there may always be at least oral disagreement. Well, what line of inquiry is left to us? Where do we go from here? This question too has been taken care of. It seems that, to find out where to go, or even where to start, would be to deprive oneself of the spirit of adventurous inquiry. People who want to be sure of something - or even, more modestly, of nothing - have no place in our time. There exists a type of psycho-analysis to show that they are victims of a morbid craving to return to the vegetative night of the embryo. As for debate about the soul and its destiny, there is no reason to fear that, if the men behind the calculators take part, the result can only be a comedy of errors. For instance, if by soul is understood what the latest critics of ancient philosophy

mean by this word (a meaning easily derived from the context of their criticism), any Aristotelian, whether Averroist, or Thomist, or whatever his dissension, will realize that he owns no such thing, personally or collectively, and will shudder at the prospect of ending his days with an 'immortal' one. The modern interpretation of this term, for instance, is as remote from Aristotle's psychè (originally 'breath,' 'wind,' 'breeze') in Book III De Anima, as would be 'exhaust,' used of the exhaust of a modern engine. So we cannot make out, any better than Lord Russell can, why the dissolution of that tedious bundle of events, Mr. Smith, should be trailed by some kind of perpetual exhaust. No living thing stands in need of such a soul.

So, to pursue the rigour demanded by the bundle-of-events-and-computer-philosophy is to be led to this utter impasse. No questions can now be asked or answered; no significant statement made which is not a tautology; no mental act performed which cannot be matched by a machine. Since we are at a full stop anyhow, we may as well spend our time trying to understand what we have done, and why the result should be such a dead end.

The ancient distinction between what is per se — either in being, in unity, occurrence, etc.—and the abysmal per accidens, the subject of Plato's Sophist, is largely ignored nowadays, even by representatives of traditional philosophy, as one can see in their writings on such subjects as existence and contingency. But all the main principles of this philosophy stand or fall with the old distinction. We must agree nonetheless that there are domains in which things can be both studied and handled efficiently, where the distinction is indeed of no account. There is the respect in

which the trucking business ignores it: a heap can be hauled away as well as an elephant. A more pertinent example would be that of number. Whether, as Thales and Democritus did, we consider two to be one and the same as ~~once~~ twice over, which is to take numbers as heaps or ways of bringing together certain collections; or whether, with Plato and Aristotle, we take two to be once two, and three once three, not just one, ^{twice or} three times over, the art of calculation must ignore the distinction. You can see in this the reason why mechanical computers can take over so much of the drudgery that mathematical science can hardly do without.

But to ignore this distinction at all levels of knowledge is to be caught in the elaborate mental traffickings of the sophist who, uncontrolled by any standard of truth, has the infinite store of what is merely incidental, of ens per accidens, which Plato called non-being, to draw upon. He may thus make the worse appear the better reason, that which is least seem greatest, whatever there is most of seem synonymous with that which most truly is and, in the end, lead his hearers to conclude that nothing is but what is not.

What about ^{Lord Russell's} poor Mr. Smith, then? The only choice left us is to be scientific and, scientifically, Mr. Smith is a bundle of occurrences. The choice is simple enough, in all conscience: him is cast aside in favour of a 'mere bundle' of fleeting 'occurrences' which happen to nobody, as being far more a sheer many opposed to the one than particles of dust helping to make up the per se whole of a human being. To meet this new scientific standard of reality, to announce the primacy now desired, how can one do better than to present the rational animal as a mere bundle rather than as a substance? If, even of those particles

of dust Mr. Smith holds in himself a number greater than the number of men on earth, as a bundle of events, he is multitudinous beyond imagination. So, with substance forever banished as "a hopelessly muddle-headed notion," Mr. Smith, "a collective name for a number of occurrences," no matter how you look at him, is Legion. Every single one of us is a crowd of something or other. 'I' always stands for a bundle, somewhat like the pronoun 'we' in 'We, the Cricket Club.' And everything else is Legion too. If a house could speak for itself, for example, without falling into the snare of mere linguistic convenience, it would say something like 'We, the boards, bricks, mortar, nails, etc.;' while each board in turn would cry 'We, the woodfibres, cells, etc.;' each brick in turn 'We, the molecules of calcium, silica, etc.'... and so on, with not a thing knowing where to stop. Besides, whether there is a 'thing,' and a 'where to stop,' are now distressingly meaningless questions (unless stated in language exhibiting how meaningless, and then quite unimportant). It is some consolation to note that even the old self, if mere linguistic phenomena be ignored, is now quite emptied of its ego. If 'ego' is only a collective sign for a bundle of non-egos, there just isn't anybody there to utter a defiance.

Heaps of dust, disconnected thoughts, bundles of occurrences with no string to tie them, all these are bad enough; but there is worse to come. We have not yet measured the full scope of the perverted desire to accord primacy to the things which have most of all the nature of the many. This appetite is not sated until it has triumphantly embraced the order of a multitude which is negative — its final feat, as it were, and one which can procure man's deliverance from anything at all that he chooses to be delivered from. In his

discussion of the classic arguments "professing to prove the existence of God," Lord Russell offers the frightening spectacle of a thinker become the contented captive of a logical fiction, namely, of the kind of infinity which can have no meaning whatsoever outside the art of calculation. Here are his own words: "All of these[arguments]except the one from teleology in lifeless things, depend upon the supposed impossibility of a series having no first term. Every mathematician knows that there is no such impossibility; the series of negative integers ending with minus one is an instance to the contrary." ¹ So, in the order of pure science, of speculative activity, man is asked to find ultimate satisfaction in seizing an infinity which is only a negation.

In the order of operation, as we have seen already, the new science asks man completely to renounce thinking as a power peculiar to him, and to persuade himself that he stands on the same level with his own tools, that is, of the complex tools called machines. We have come a long way from non serviam, at any rate, since the only thing tools actually can do is to serve, and in the strict sense of the word, as a hammer serves to drive nails; for a tool, like any instrument, is of its nature movens motum. Hence, Aristotle held that we ourselves, in one way or another, are the agent and final cause of artificial things. This opinion is no longer acceptable to science, of course, not only because it distinguishes between art and nature, but more especially because it distinguishes between instrument and principal agent. For the computers, if we can believe their interpreters, present us with an utterly new kind of tool: an instrument divorced from any

1. Op.cit., p.462.

principal agent, like a sign that does not signify, or a relation adrift without terms. The point is that the tool-maker, the agent, in whose interest the machine was built, has faded out of sight, he is "refined out of existence." And he has been deprived of all grounds for existing by the possibility of one computer giving birth to another, a notion which Lord Russell might accept, since he has proved something to the effect that we may have tools of tools and nothing but tools, to no end, without end, like a series without a first term. A tool that is made to say 'I will not serve' seems a sinister kind of boomerang.

Whatever the ultimate value of those venerable scriptures to which Turing referred, it is clear that they utter a strophe which he ought to find deeply significant, a strophe for which we have been attempting to provide an antistrophe. We have thought it our duty to expose the implications of the desire that primacy be granted to the sheer many, and even to the many of an utterly negative kind. And we have seen that the new light-bearers do not express their rejection of ultimate order in the romantic fashion of Marx quoting Prometheus; nor by simply making over some of their own servitude to the machines; by using these for "the more repulsive drudgery" of science; but by actually identifying knowledge and science with the mechanical process which may attend them, by insisting that what goes on in the computer is the same as what goes on in man's more abstract thinking. If man could accept this identification, he would never again need to face any question with power to disturb him, so that it is not surprising that those who make this reduction do so with an air of triumph. As for the primacy of the many, its most entitative expression becomes the mere bundles that are Mr. Smith, Lord Russell,

and so on. Logically, of course, the dispersion must be carried on and extended to all things, and ultimately to the universe itself — that supreme bundle out-bundling all.

Lord Russell warns us that we may some day blow up our pieces of the cosmic bundle. The curious thing is that he is appalled at the prospect. If the grand scattering be surveyed from his scientific point of view, what reason can there be for emotion? For Russell, the time is neither in nor out of joint, so that it is difficult to see what significance he can attach to an eventual dislocation. Under his tutelage we ought to have learned, surely, that for all living creatures without exception, destruction implies only that it shall be as if they had never been, and that to attach any significance to the annihilation of such things is to betray a foolish devotion to that "organismic conception of nature" which furnishes the world with substances, animate and inanimate, rational and irrational. Further, if Mr. Smith, like the good scientist he is, can accept his own impending dispersal as he would the scattering of a set of nine-pins, one is at pains to see why equanimity should be disturbed where the whole bundle of humanity is concerned. Such inconsistency looks suspiciously like nature thwarting theory. And even though Mr. Smith does not accept the destruction of all mankind as calmly as he does the effect of a well-aimed ball on the nine-pins, what can it matter? The final catastrophe would take place in strict fidelity to law, and with merciful suddenness.

Suppose we did precipitate that transformation of all matter into pure radiation, that "stupendous broadcast" which is Sir Arthur Eddington's version of a possible end of the world, why call it a

catastrophe? Upheavals in the universe are an everyday occurrence. Life thrives on them. On our little planet, is anyone troubled by the fact that the sun is in continuous explosion? And any loss incurred may not be irremediable since, according to some people, when thermo-dynamic equilibrium is reached, the universal process of degradation will sweep into reverse, so that eventually the whole farce will be acted out again. And an almighty farce it has been and would be a second time, if it is a world where the distinctions between living and non-living, between rational and irrational, are to be rejected as evidence only of man's basic vanity, and even of his unfeeling cruelty towards what Turing calls "the rest of creation;" where man is accused of 'brutality' because he cares more for the living than for the lifeless, and for man than for beast; a farce to which no words will ever do justice, if machines are brought to prove that rationality, the 'specific difference' of the human being, finds its proper home at last in its opposite.

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TEACHING AS A FUNCTION OF DIVINE GOVERNMENT

No matter what your future occupation, teaching by word and example will be part of it. Let us therefore face the question, on this important day in your life, just what teaching is.

As Aristotle observed, man is born the most helpless of all animals, naked, defenceless. But this is compensated for, he adds, by reason, hands, and tongue. For these organs, hand and tongue, have a freedom and infinity which reason demands. But, as we all know, reason, manual dexterity and speech develop gradually. The child would remain quite helpless if left with what nature alone provides. I mean that native indigence is not immediately compensated for by the child's own reason, hands, and organ of speech — assuming that noise is not all the same as articulate speech. The original helplessness is to be immediately compensated for by the reason, hand, and speech of the parents.

Among some animals other than man there is likewise a certain amount of teaching. But the organic structure of those animals is by nature so highly specialized that the range of development, as compared to man, is extremely limited, and achieved in a very short time. On the contrary,

a man has to learn if he is to live as the rational creature he is taken a very long time. In fact, the greater his innate ability, the more help he will derive from those who are already trained in thought, behaviour, work and communication. Any person who all too soon and too readily believes that he stands in need of no one else will never get very far and bears witness to a mediocre endowment.

The parent of the child, and especially the mother, is the original teacher, and in this particular regard the most important of all. For, as Plato taught: "Do you realize that the beginning of any thing is most important, especially for something both young and tender? For it is then especially that it is shaped, and takes on any mould that one wants to impress upon it." For man, he adds, though gentle and capable of being the most divine of all animals if rightly trained, becomes if brought up badly the wildest of all creatures that live upon the earth.

Aristotle and St. Thomas went so far as to say that unless a child has been encouraged to like what is right and beautiful and to dislike the wrong and the ugly before the so-called age of reason, it will be almost impossible for it to acquire virtue in later life. Notice, now, that they are dealing with teaching, by example and by word, before the child is sent to school.

The rights of the child, then, who is the common good of its family, are not confined to shelter, clothing

and nourishment; its chief right is to a proper education right from the start. Education must begin at home; it is the parent's charge. An increasingly difficult one. Greater leisure inflicts upon the parents more distractions than man has ever known; irrelevancies within the home and without are bound to expand and, accordingly, there will be an unconscious, growing tendency to evade and postpone the chief function of parenthood until the burden can be pressed upon professional shoulders. This is unfair to the child as well as to the persons entrusted with its further training.

When the angelic doctor turns to the share than man has in divine government, his first question is "Utrum unus homo possit alium docere". The question whether man share in divine government through self-propagation of his nature comes last of all. Notice, now, that the Summa is a theological treatise, in which what is most perfect in itself is considered first. And so, when theology treats of man's share in divine government, the first activity considered is that of teaching, because it is the most perfect; and the very last to be considered is physical generation which, no matter how good in itself -- for, after all -- we owe to our parents the goodness of existence and of our natural life; yet, compared to teaching, it is far inferior.

Why should illumination and teaching be so superior to any other activity "ad extra" ? The reason is that knowledge is life of the highest kind. Concerning God, Aristotle had reasoned thus: God is pure actuality; that which is most actual is also most alive; but to think is to be alive in the highest degree; the life of God is therefore one of thought, thought of the most excellent actuality, namely, that of thought itself; it follows that God's life, which is God, is to think Himself as pure thought, and this is God. Hence, to be a proper cause of such life is to be a cause of the highest kind.-- Little wonder that the very first fruit

of Charity, the first of the spiritual works of mercy, should be the act of teaching the ignorant: "docere ignorantes." (Cf. IIa IIae, q. 32, a. 2)

But how is it, you may ask, that we can apparently play around so freely with the word 'parenthood' ? When we call the teacher a parent, are we not resorting to metaphor, as when we speak of mother earth, or of a celestial body such as the sun a father of life?

In his commentary on Saint Paul's Epistle to the Ephesians Aquinas asks how we are to understand the statement: "...I bend my knees to the Father of our Lord Jesus Christ, from whom all fatherhood in heaven and on earth receives its name." One may wonder, saint Thomas says, whether fatherhood among the angels and on earth is derived from the Fatherhood in God. And reason for our difficulty is that the name father is first said by us of the parent who gives us life, i.e. our natural life, for this is the father whom we know first. Hence it is only by an extension of the word that we can say Father of God, so that it is from our fatherhood that the fatherhood of God receives its name.

To this St. Thomas replies that a name may be taken in two ways: a either as expressing or signifying our intellectual conceptions, for vocal sounds refer to or are signs of the affections or conceptions which are in the soul, and in this sense a name is first verified of creatures, then of God; b again, the same name may be

taken as manifesting the nature of what is named as it is in itself outside our conceiving and thus naming it, and this is to be found in God primarily. "Hence the name fatherhood, if meant to signify the conception in our intellect that imposes the name upon the thing, is verified primarily of creatures, and then of God, since we know the creature before we know God. But, if taken as signifying the very thing named and not primarily the way we conceive of the thing, it is to be found in God before it can be said of us, seeing that the power of generation in us is from God. It is as if the Apostle said: Fatherhood in creatures is merely nominal, as it were, or vocal, whereas the Divine Fatherhood, by which the Father gives all of the divine nature to the Son, without any imperfection whatsoever, is true fatherhood i.e. fatherhood in the fullest way " In ad Ephesios, cap. 3, lect. 4.

From this it is plain that if we attend to the res significata, to the thing named, a human father shares more profoundly in the Fatherhood of God in educating his offspring than in generating. Accordingly, the teacher who does not share in natural generation, is nonetheless more truly a father of his pupil than the one who merely gave birth to the child. The substance of the offspring is of course the basic good. Still, 'to be a human person' is not the same as 'to be a good person;' for the goodness which is ours in virtue of our substantial being is only

relative — secundum quid (Cf. Q.D. de Veritate, Q. 21, a. 5). Hell is full of substantial being, all persons, but they are good only secundum quid and not simpliciter; it would be better for these not to be at all rather than to be absolutely. Naturally speaking, a man can become a good person only through proper education, both moral and intellectual. He who devotes himself to this task enjoys vera paternitas.

I consider myself a very ordinary teacher, and it is therefore with well-founded misgivings that I emphasize the importance and nobility of teaching. All the same, I have been at it for nearly thirty years. During this time I have had a large number of young priests as students in philosophy, and in theology as well. Some of these are now teaching in seminaries and universities. It has happened many times: only two weeks ago I received a letter in which a teaching priest expresses frustration. Almost as old as I am, he feels that in devoting nearly all of his time to study and teaching he is not doing the work of a priest; that he should now get into a parish and do some active work. That, of course, is the business of his Bishop or religious superior. Meanwhile I refer him to St. Thomas's QQ. Quodlibetales, I, art. 14, where he asks "Utrum vacans salutem animarum peccet si circa studium tempus suum occupat." Here is the answer of this great Doctor of the Church: "....." (Voir 'In Memory of a Catholic Teacher.)

Saint Thomas is merely repeating the early Fathers when, in his commentary on I Cor. he says that the teachers in the Church are the 'eyes' of the Mystical Body; that those who lead a more fully practical life are its feet, and the prelates its hands. To be the eyes of the Mystical Body is of course most fully true of those who teach divine truths, I mean revealed truths. And so we think immediately of professors of theology. Yes, but who first speaks to the child of God, of his Incarnation, of his Mother and of his foster father? The child's own mother, and sometimes its own father. Hence the mother, as a teacher of her child, is truly an eye of the Church in that full sense of the word.

But how far does human teaching as a function of divine government go? Is it confined to the truths of Faith? This is of course the highest function of all. But inasmuch as a living Faith seeks understanding, y Christian mind naturally strives to use even the purely human disciplines and arts, for all of these can and must contribute to turn our whole being to the one who is that utter knowledge of himself in which He wants us to share. This achieved by teaching wisely no matter what subject. Even grammar and mathematics can be taught with wisdom. No matter how humble the subject of his art or science, the true teacher must have some grasp of where his particular discipline stands with regard to all the other departments of knowledge. He does not have to deviate from his subject and teach philosophy or theology instead of the art of computation, for instance. But the pupil must be discreetly made aware of the limitations of any given subject. I mean, to take an extreme example for the purpose of illustration, that the mathematician who would breed contempt for theology, or the theologian who would underrate mathematics, would be an unworthy spiritual parent. No matter what the subject, it must be taught in such a way that it does not divide the mind of the student, by over-emphasis, or by setting one discipline against another, for this would be to instill the very opposite of wisdom. Now it is precisely because of the wisdom

which, no matter how unostentatiously, informs his subject whatever it may be, that any such teacher is an eye of the Church.

Permit me to say a final word in behalf of your teachers here present. Since they are true parents of your spiritual life, all your life long you will owe them a duty of true filial piety. Just as the child will never be able to render full justice to the parents who gave it birth according to the flesh, neither will you ever be able to do full justice to those who devote their whole lives to the teaching of truth. I'm quoting Aristotle. Some people seem to have misunderstood this doctrine which St. Thomas has made his own. Of course, when these great teachers say that it is impossible to achieve justice in the matter, they are not exactly speaking of money, but neither do they exclude it. For some are inclined to reason: since we cannot pay adequately, why try to pay at all? Most of you graduates will one day be parents. Remember then that the sacrifices — including material exactions at the expense of better plumbing — that you will have to make for the education of your children, are the noblest thing you can do.

You owe a very special duty of gratitude, of filial piety, to those of your teachers who devote their whole lives to a common good that reaches far beyond that of the family. One chief reason for the excellence of

celibacy is that this state of life allows one to share more deeply and universally in the true Fatherhood of God which is purely spiritual. Bearing in mind the distinction we quoted from St. Thomas, the teaching nun is a mother in the most profound sense of this word, just as the priest, both as teacher and as minister of the sacre for the life of divine grace is most truly a father. In fact, that is precisely the reason we give them these names.

Our Lord says, in St. Matthew: "You therefore are to be perfect, even as your heavenly Father is perfect." (v,48) And now apply these words to yourselves as teachers, and to all those who have helped to make you know the Father who is in Heaven, and to understand what this means to each and every one of us.

meaningless term, which is easy enough for anybody who does not know that it simply means tool or instrument. Anyhow, if there be no purpose in nature, what use can she have for tools? ¹

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called one only by virtue of a certain proportion? Meantime, the relevance of confused knowledge stands in need of defence.

Terms like 'body,' 'animal,' 'man,' are of course those of primordial knowledge, of what is sometimes called 'common sense' and of natural language as distinguished from technical language such as that of theoretical physics. But even natural language is not tied down to simple naming of things first known. It may still turn up in the type of definitions and demonstrations which does not resort to logical fictions. Yet even when merely defining this way we already move on a different level of knowing. The only point I want to make here is that distinct knowledge obtained by definitions of what a thing is — whether these be construed by direct analysis and composition, or achieved only at the term of a demonstration — is a later knowledge that can never be divorced from the earlier kind. Hence, even when the physicist defines time by the way he measures it, he cannot abstract from what time is as first named, although he may abstract from the definition of what that time is. If his symbolic construction of time bore no reference to time as we know it before any of it is measured, this construction would be pure fiction, with no reference to reality at all.

Take the definition of animal as 'a body endowed with sensation.' After this definition is reached, are we now able to disregard ~~all acquired knowledge of the definitum?~~
the knowledge we had acquired of what we sought to define?

Brouillons de la confer.

- ① The Anatomy of Mind 4p.
- ② Copie 5pp.
- ③ Aristotle's Anatomy of Mind 16 ~~pp~~ pp.
- ④ 2pp.
- ⑤ 21pp. corrigée par Th. De Koninck

THE ANATOMY OF MIND

There are many obscure passages in Aristotle's De Anima. This talk will hinge upon one which I find particularly baffling. Here is its literal translation:

"Now a point, and every division, and thus indivisible, is known in the same manner as a privation. And the same reason holds in other cases: the way evil is known, for instance, or black. For each somehow is known by its contrary. That which knows must be in potency, and die [of the contraries] must be in it. If, however, one of the causes has no contrary in it, it knows itself, and is in act, and separable." ¹

Read out of context, the last sentence would be hopelessly unintelligible. Still, in view of the preceding lines, what could it mean? I would never dream of trying to lay down an interpretation that would satisfy an Aristotelian scholar. Time has become too short for such ventures. Any misgivings on this score can be removed

by allowing that Aristotle nowhere makes much sense. This might even be true of nearly every philosopher worth his salt. And so you are warned: in speaking of Aristotle's anatomy of mind, I really mean what goes on in my ^{own} head as I read his treatise On the Soul — and the more when, ^{leading to} ~~I finally read~~ it backwards. After all, to philosophize consists mainly in talking to oneself; communication, however necessary, remains incidental. This does not prevent me from admitting to myself that without the help of ancient commentaries I would never even begin talking to myself on the subject I am about. My only reason for thinking out loud is that I have been asked ^{to do so, Henry} ~~something~~ I would rather not. ~~QQA~~

What does this text convey (to me)? A point can be defined in many ways. Aristotle had just explained that something may be indivisible in act yet divisible in potency. But the point, like the unit, is not even divisible in potency, another way of saying that it is simply indivisible. Let us define it as that of which

there is no part. This mode of defining is negative.

So is the mode of signifying 'indivisible.' To define it as the end of a line, ~~and~~ would not manifest the point as such, for not all points terminate a line. Besides, such a definition would require some further clarification,

e.g. 'the end of a line which is not itself a line,' ~~but~~ *in which* negative mode of signifying again comes to the fore. If

we took a point as that at which one line cuts another, we would indicate a point still to be defined. Unless we took the cutting of one line by another as a definition, but this would only tell us how to achieve a point, not what a point is. We might also define it as a limit of halving a line, halving the half, etc. Such a point, however, lies at infinity and is never produced the way any halving of the line produces a point. I could always tell myself that the limit of halving is of course already there. Still, what is it that is there? A point? So I already know what a point is, somehow. What I am in effect trying to do is to make more plain something I already knew, called 'a point.' And as I do so I notice that, in

qualifying ~~what I knew~~ as an indivisible the point already known, or in defining this, my modes of signifying and defining are negative. Nonetheless, what I signify and define in a negative way is not something negative.

Of the point Aristotle here says that it is "known in the same manner as a privation." What is a privation? How do we know it? A privation is and is known as a negation. E.g., I could not know what ignorance is without having some knowledge of knowing. More generally, a negation is always the negation of something; even the negation of a negation, ~~such as 'not ignorant'~~ refers to something

positive, ~~in 'ignorant' as the negation of knowing, and as it negates this negation, it refers to the affirmative~~

~~knowing~~ Now, there is a considerable difference

between point and privation in this regard. Both are made plain by a negation. But, in the case of the point, the

negation only is in the mode of defining, whereas a privation is in itself a negation. The first case ^{is of something positive that} can be

made manifest only by means of a negation; the second case ^{is of what}

~~by means of a negation, while the case~~ is, itself, a negation.

for instance, in 'not ignorant,' 'ignorant' is a negation of something affirmative, viz. 'knowing.'

Now, what we are ^{affluent} concerned with is not whether what is defined is something affirmative or negative, but with the fact that in either case we ^{signify or} define in a negative way. And this is to say that at least our mode of knowing is in either case a negative one.

So much for the first sentence. Let us ^{now} turn to the next. "And the same reason holds in other cases," instances being those of evil and of black. Good and evil are contraries, and so are white and black. Evil is known as the negation of goodness in that which ought to be good. Evil is not just a privation, however. It is like error, which in the order of knowing is not quite the same as the privation called ignorance, although error is not without some kind of ignorance or other. Now, of evil we said that it is the negation of good in that which ought to good; but we cannot say the same of black, namely, that it is a negation in a subject which ought to have another colour. However, this is not the point at issue. What is at issue is that black, as distinguished from dark taken as the absence of light, cannot be known except by contrast with another colour, the extreme opposite being white.

chemise 122
boite 16

ARISTOTLE'S ANATOMY OF MIND

There are two complementary sides to philosophy.

We attempt to know as much the best we can; but this is attended by an awareness of how little we achieve of what is knowable and how tenuously we know what we do. The history of human endeavour shows that these two aspects of philosophy do not fit easily into one and the same head. Yet, to stress ignorance at the expense of knowledge, or knowledge to the point of presumption is to ignore the very meaning of the word 'philosophy.' For the philosopher does not pretend to be wise, as the sophist does, but to be at least, yet no more than, a seeker of wisdom.¹

1. St. Thomas, In I Meta., lect. 3, (édit. Cathala) n. 56:

«Motandum est autem, quod cum prius nomine sapientiae [Philosophus] uteretur, nunc ad nomen philosophiae se transfert. Nam pro eodem accipiuntur. Cum enim antiqui studio sapientiae insistentes sophistae, idest sapientes vocarentur, Pythagoras interrogatus quid se esse profiteretur, noluit se sapientem nominare, sicut sui antecessores, quia hoc praesumptuosum videbatur esse; sed vocavit se philosophum, idest amatorem sapientiae. Et exinde nomen sapientis immutatum est in nomen philosophi, et nomen sapientiae in nomen philosophiae. Quod etiam nomen ad propositum aliquod facit. Nam ille videtur sapientiae amator, qui sapientiam non propter aliud, sed propter seipsam quaerit. Qui enim aliquid propter alterum quaerit, magis hoc amat propter quod quaerit,

important (but read @)

③ The point of all this is that the Cartesian theory of doubt is that in the end we should in the end assert

Now, there are two ways of knowing how little we know. We may have a general awareness of ignorance in the face of any problem, ^{and then} ~~realized~~, in a confused way, that there are problems without end. Yet, if such awareness were enough, to be a philosopher one would merely have to state that the only thing one knows is that one does not — and leave it at that. This is the agnostic way some people interpret Socratic wisdom. All the same, the true philosopher does not wander aimlessly in a general fog of dismay at the innumerable problems one might raise; on the contrary, he faces very concrete difficulties, already enjoys the ability to raise them distinctly and, whatever solution he may achieve, he not only continues aware that his knowledge falls short of the object but also seeks to know the best he can why his knowledge must remain forever inadequate. There is not more wisdom in vague skepticism than in blind audacity.

It is ^{impossible} to imagine a situation more difficult than the one which is natural to our mind. The slow and devious progress of knowledge is a tale of labour that bears

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It is impossible to imagine a situation more difficult than the one which is natural to our mind. The slow and devious progress of knowledge is a tale of labour that bears the true philosopher does not wander aimlessly in a general fog of dismay at the innumerable problems one might raise; on the contrary, he faces very concrete difficulties, already enjoys the ability to raise them distinctly and, whatever solution he may achieve, he not only continues aware that his knowledge falls short of the object but also seeks to know the best he can why his knowledge must remain forever inadequate. There is not more wisdom in vague skepticism than in blind audacity.

sufficient witness to this fact. Why should the life of our mind be one of toil and trouble? Why must it depend upon hindrances, obstacles thrown its way?

(Probléma comes from proballēin) If a man has trouble lifting a stone, the difficulty is to be found both in the inertia of the stone and in the weakness of the man. The labours of our mind may well ^{alone} be due to the nature of the things cast its way, the objecta themselves, and to the inherent weakness of our power of knowing. If the world around us were in itself perfectly intelligible and our power to know just as adequate, we would know it at once without effort. Whatever kind of problem the world around us may be, the original problem, the true obstacle, may well be the very nature of our mind. Even Plato would agree, if mind is to embrace both intellect and sense. But, whereas Plato believed that the weakness of our intellect is due to its union with the senses, Aristotle held that our intellect is by its nature the power of an animal, in such a way that without dependence upon sense we would never come to know anything at all nor continue in the activity of knowing, for the darkness is

Handwritten notes:

① You really are a philosopher

② I don't think I am a philosopher

③ I don't think I am a philosopher

④ I don't think I am a philosopher

⑤ I don't think I am a philosopher

⑥ I don't think I am a philosopher

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㊽ I don't think I am a philosopher

㊾ I don't think I am a philosopher

㊿ I don't think I am a philosopher

within our intellect itself, and only in dependence upon sense can it come to a measure of light. To use St. Thomas's expression, our ^{is an} intellectum ~~is essentially~~ in sensitivo. In this view, our intellect is not imprisoned by body and sense; on ^{the} contrary, ~~conditions~~ these are ^{conditions} of freedom. In other words, the Aristotelian does not assume that an intellect is either one kind of intellect or no intellect at all. If such an assumption were valid, then an intellect that stands in need of sense would be degraded by this dependence; an intellect by its nature free, but enslaved in fact.

These diverse conceptions of the human intellect have divided philosophy from its beginning. The one, which reached its peak in antiquity with Plato, is an attempt to view our intellect, along with its means of knowing, as prior to what we know by the senses. This view may be understood as a protest against the priority of nature to our knowing. Aristotle agrees that sensible reality is intelligible only in potency. When it does become intelligible in act, it owes this condition not

which would be like saying that the mind is a living thing is either a horse or no living thing at all.

(1) All this and a good deal of what follows is most explicit in the Quaestio III, and is also repeated in the Quaestio IV - could well be explained by a reference to the Quaestio III and IV especially.

Still even that is not all. The intellect is not a living thing, but a living thing is either a horse or no living thing at all.

to itself, for in itself it remains obscure; it is our own intellect that renders it intelligible inasmuch as the known is in the knower according to the condition of the knower. In order to understand nature we have to make it understandable, and yet what we understand must be nature and not primarily our understanding of it. ~~What we know~~ Otherwise, what we know first would be our own knowing, which no doubt would be a more perfect way of knowing, but it would not be the way we actually know.

That an intellect of its nature must be perfect is an assumption which may in the end be based upon a misinterpretation of words. Parmenides had supposed that the word 'being' is said in one way only. Now, that which is absolutely ~~unconditionally~~ without any possible qualification, most truly is; and hence all else is not and could never be more than appearance. Plato seems to proceed in a similar way as regards intellect: it is either pure intellect or no intellect at all. It follows that, if to know we depend upon the senses, if we require sense experience to know even first principles, if these are known

For the history all this is standard -
In the context of the paragraph below, myself
you not oppose (i.e. to Parmenides' thesis
and then Plato's in the next) the

capital passage in Enchiridion explained by

St Thomas of II, 1, Q. 234, as follows:

ET hoc est quod dicitur quod non operatur intellectus
sicut anima est corpore sit unum, sicut nec
distinctione circa remem et figuram, neque
invenit circa aliam materiam et formam,
cuius est materia, est unum et ens in
seculo (metaphysicae sunt forma per
secula secundum materiam, sicut deus

Et sic, et est unum et materia unum formam,
quod materia esse in actu. Et hoc

est etiam quod hoc dicitur quod anima
(~~per materiam~~) unum est ens (metaphysicae)

Et dicendum, scilicet de ente in
potencia et de ente in actu, id quod

propter est ens et unum est actus."

The foundation is all there. The

multifacetedness of our "being" is a very

peculiar one. Just consider II, 1, 2, 3.

V. Ch. 382 at the end: (unus per se)

est spiritus sunt de unum per se

animae ~~propter~~ anima dicitur haec
deus in his

by way of composition or division expressed in enunciations, if we must have resort to discourse and demonstration, all this is purely incidental, not just to intellect considered in the abstract, but to the very kind of intellect which is ours. The condition of man is therefore ^{to him} an unnatural one, and our actual way of knowing quite contrary to what it ought to be.

According to Aristotle, all our knowledge is acquired. Originally, man's intellectual power is in total darkness. But there is an abyss that divides this power of knowing from the things it first comes to know. For these themselves are only potentially intelligible. This does not imply that all ^{things are} ~~potentially~~ of this kind. Aristotle did not at all do away with a reality that is in itself utterly intelligible in act. For the pure actuality, which is God, must be of the highest kind; it must therefore be the actuality of life, and life of the highest kind, which is to think; because pure actuality excludes potentiality of whatever genus, His act of thinking must be identical with its object, the pure act that His thinking is. Now, we may ask, if God is pure intelligibility, why should He be the least intelligible of

all as to us? A Platonist might blame our senses. But to Aristotle the matter is not that simple. "...As the eyes of bats are to the blaze of day, so is the reason in our soul to the things which in themselves are most evident of all."¹ To know at all, our intellect must be brought to bear on things that are not in themselves intelligible in act. Because of the frailty of our reason we stand in need of the twilight world that impresses itself upon our senses. We are like ruminants, who can feed only on the lower forms of life, the vegetative; cows do not care for beef and would starve if nothing else were available.

It is because of this paradoxical situation that Aristotle distinguishes two powers in our intellect: one that enlightens the sense-world to make it intelligible in act; and a power which, thanks to this light, can become the known and thus knows it. If our intellect were a single power, its first object would be intelligible in act both as to us and in itself. But if this were the case, it would be difficult to explain how the senses could prevent the

1. Metaph. II, 1, 993 b 10.

Handwritten notes:
P. 1000
sec 101
Scott-Lewis
(6)
Wanda Lee, 12 Feb

but then there comes

to arise a difficulty with respect to the difference between intellect and sense - i.e. intellect would be another sense.

Intellect from seeing what is intelligible in act. If such an intellect can be darkened by the senses, we would in the end have to attribute this to a weakness of the intellect. On the other hand, if our intellect is naturally weak, then its need of the senses is likewise natural; and the senses, instead of being obstacles become indispensable aids.

Now, this complex character of our intellect, which makes it naturally dependent upon the sense-powers of knowing, will give rise to further divisions in its activities. We distinguish the first, vague, apprehension of what a given thing is, from more distinct knowledge achieved by discourse. We move on to more distinct knowledge by dividing and defining. In all this we know, but there is as yet no truth in this knowing. It is truly knowledge, but not knowledge of truth. ~~It is~~ When I say to myself that a thing is so and so, or that it is not so and so, and the thing is so and so or is not, ^{then} my knowledge is true or false. A definition is already a composite, ^{But} when I attribute the definition to what it defines, I am faced with a new type of composition, and accordingly with a new kind of operation of the mind, expressed by what we call an enunciation; and this is either true or false.

I don't understand it stands. I think not that the

"forms" apprehended by the senses are individual and thus apprehended by

the intellect universal (or rather

absolute - since universality at such

is a reflection of action correspond to

need to be brought to something

Imagination, which is material factors

a scribble, i.e. covered by external

senses and sensitible, could in

any way account for our "Intellectual

forms" etc. etc. It is nevertheless

that St Thomas should usually

inductance 'Intellectuals' in words

Enter these: "Intellectuals" etc.

just Plato's point, just intellectual

essence per se substance of corporeity,

of sense's sense in act, of sense's

essence capacitatem of sense's

in itself within him or false.

sensitible. Quod Aristoteles habuit

inconveniens videtur ex his, ex actibus

est specie intellectum operantem.

He uses the same kind of language even in the 1st & 2nd 221 24

Now, some enunciations are principles of further knowing. For instance, a plane triangle, being a closed figure bounded

by three straight lines, having its external angle ^{therefore} equal to the two opposite interior angles, will have its three angles equal to two right angles. This, again, is a new type of

discourse, an operation involving ^{now} a middle term; and knowledge ~~is~~ ^{truly} achieved is called scientific in the strict sense of this word. ~~All this~~ ^{is} ~~goes~~ ^{is} to show how complex are the workings of

our reason, even in a case as simple as the one just stated. And it is not even knowledge of the world around us, for we

know of no plane triangle in nature, although ^{it} may have ^{not} a first hint from some sensible designs. If it is the things

of nature we want to know, our searchings will be far more devious. Of course, some of the things of nature we know off-hand, if vague knowledge be allowed. For how else could

we even start asking questions? But when it comes to knowing exactly what a thing is and what are its properties, let it be a horse, for instance, or an elephant, we must be ready to move on and on towards a term we are not likely ever to reach.

In his little book entitled Nature and the Greeks,¹

Erwin Schrödinger says that as a physicist he believes it "to be true that I actually do cut out my mind when I construct the real world around me. And I am not aware of this cutting out. And then I am very astonished that the scientific picture of the real world around me is very deficient." This 'cutting out' is inevitable in

mathematical physics, which merely goes to show where this science stands with regard to "the real world around me."

It is historical fact that we have become accustomed to the superficial belief that to be truly objective about the world, we must cut out our mind, our understanding, everything related to intellect and will, even life itself.

The scientific picture of the real world around me, he goes on to say,

"gives a lot of factual information, puts all our experience in a magnificently consistent order, but it is ghastly silent about all and sundry that is really near to our heart, that really matters to us. It cannot tell us a word about red and blue, bitter and sweet, physical pain and physical delight; it knows nothing of beautiful and ugly, good or bad, God and eternity. Science sometimes pretends to answer questions in

1. Cambridge, at the University Press, 1954, p. 93.

these domains, but the answers are very often so silly that we are not inclined to take them seriously."¹

This may appear to you a strange way of introducing a sketchy view on Aristotle's anatomy of the human mind.

But ^{it is} ~~this~~ because we have taken too seriously the so-called objective outlook on the world as complete in itself, unaware that in such a world there is not even room for an 'outlook.'

We might settle for a more humble example. My arm, which surely belongs to ^{the} real world, cannot be entirely accounted for in the physico-mathematical

view which can describe ^{for instance,} the motions my arm goes through;

but why it should go through those motions at all ^{appears to be} ~~is~~ of no concern. ^{Beitlich, which could, and even possibly mean, to matter, disappears.} Of no concern to whom? Notice that 'who' is

assumed to be the scientist, the only one who's outlook is

1. On an earlier page (10) he wrote: "It is certainly not in general the case that by acquiring a good all-round scientific education you so completely satisfy the innate longing for a religious or philosophical stabilization, in face of the vicissitudes of everyday life, as to feel quite happy without anything more. What does happen often is that science suffices to jeopardize popular religious convictions, but not to replace them by anything else. This produces the grotesque phenomenon of scientifically trained, highly competent minds with an unbelievably childlike — undeveloped or atrophied — philosophical outlook."

objective; while the grand illusion is that in such a view the scientist can have no place at all except as an 'object' that can be hurled around and most indubitably undone. But even this is to concede far too much. For how can we undo what never was?

...My body is implied in quite a few of the more interesting changes--movements, etc.--that go on in this material world, and is implied in such a way that I feel myself partly the author of these goings-on. But then comes the impasse, this very embarrassing discovery of science, that I am not needed as an author. Within the scientific world-picture all these happenings take care of themselves, they are amply accounted for by direct energetic interplay. Even the human body's movements 'are its own' as Sherrington put it. The scientific world-picture vouchsafes a very complete understanding of all that happens--it makes it just a little too understandable. It allows you to imagine the total display as that of a mechanical clockwork, which for all that science knows could go on just the same as it does, without there being consciousness, will, endeavour, pain and delight and responsibility connected with it--though they actually are. And the reason for this disconcerting situation is just this, that, for the purpose of constructing the picture of the external world, we have used the greatly simplifying device of cutting our own personality out, removing it; hence it is gone, it has evaporated, it is ostensibly not needed.

Schrödinger is painfully aware that the Cartesian outlook in nature, which has been so successfully thrust upon us, is totally inadequate. To Descartes, nature is no more than

Op. cit., p. 94.

res extensa, with the emphasis not on res but on its extension, so that there is room not even for 'nature' in any of the until then accepted meanings of this term. To him, a man has a body the way he has a hammer or an automobile. He differs from other animals, which are no more than machines, because he has a soul to steer around the machinery the way he handles a wheelbarrow. The body is part of man's equipment, but only as a hammer is, or a saw.

Both Schrödinger and Heisenberg have exploded this Cartesian world—and among ^{modern} physicists who understand what they know, they are not alone. ^{again, that} We may therefore, if only ^{again, that} for the sake of contrast, look to ^{again, that} a Greek philosopher for a very different outlook on man and his place in nature.

The most outstanding of contemporary physicists are more interested in ancient natural philosophy than the 'philosophers' of our day.

Aristotle laid down the principle that he who considers things in their first growth and origin will obtain the clearest view of them. Let us therefore examine the human animal from a genetic point of view. Through what stages does nature reach this rational being? Allow me to begin with an observation made by Aristotle in the Historia Animalium:

Nature proceeds little by little from things lifeless to animal life in such a way that it is impossible to determine the exact line of demarcation, nor on which side thereof an intermediate form should lie. Thus, next after lifeless things in the upward scale comes the plant, and of plants one will differ from another as to its amount of apparent vitality; and, in a word, the whole genus of plants, whilst it is devoid of life as compared with an animal, is endowed with life as compared with an corporeal entities. Indeed, as we just remarked, there is observed in plants a continuous scale of ascent towards the animal. So, in the sea, there are certain objects concerning which one would be at a loss to determine whether they be animal or vegetable.

When we observe a sculptor carving out a statue it is very difficult to see at what exact point the work begins to be what its maker intends it to be. ~~In the end~~. So it is in nature. To this day it is impossible to determine the exact line of demarcation that separates the inanimate from the animate. What is in fact the first and obvious criterion of the animate as we come to know it? It is indubitable in our awareness of having sensation, in seeing that we see, in hearing that we hear, in perceiving that we walk, in knowing that we know, "and in the case of all other activities similarly there is something which perceives that we are active, so that if we perceive, we perceive that we perceive, and if we think, that we think; and if to perceive

that we perceive or think is to perceive that we exist (for existence was defined as perceiving or thinking); and if perceiving that one lives is in itself one of the things that are pleasant (for life is by nature good, pleasant and to perceive what is good present in oneself is);...".¹ No doubt dogs too have sensations, and in walking about they are moved by their perceptions and the desires aroused by these perceptions. They need food, grow, and reproduce. Now the things that grow in my garden, which we call plants, also need food and reproduce. This they somehow have in common with the things we first call animals. Trees need food to exist, to grow, to produce seed. Much of their food shows no sign of life at all; and yet, when assimilated, it becomes part of the thing we call alive.

We observe that recognizably living things are organisms, that is, bodies produced by nature, provided with tools, such as hands, mouth, legs, fins, eyes, ears, stomach, heart, roots, bark, and so forth. We cannot say that organisms may be classified simply after their degrees

1. Nic. Ethics, IX, 9.

of complexity, for the protozoa consisting of only a single cell are, ^{in a way,} less complex than even some of the lower plants. It is plain, however, that familiar animals, such as we can see with the naked eye, are highly heterogeneous organisms. It is however not obvious that any measure of awareness requires a bodily structure more complex than that of organisms with no sign of sensation at all. I mean we cannot say absolutely that each and every higher kind of life requires a more heterogeneous organism. The matter is not that simple. Still, we do not hesitate to believe that sensation is a higher degree of life than mere growth and reproduction.

So far we have implied that the most obvious kind of living being must be tackled from opposite yet convergent directions. For instance, we first know that we see and then investigate the highly complex organ of sight. Notice now that man is the only animal who desires to know the best he can all, ^{that} eyesight involves. This is presumably related to his particular way of knowing that he sees, and of knowing that he knows; which may in turn be the reason man is the

only animal that seeks to know what kind of thing he is, what kind of living thing, what kind of animal, and who in some measure eventually succeeds in his inquiry; and he not only knows but is wise, in a special sense of this term, to the extent he knows that his knowledge of whatever he knows remains inadequate and how this follows from the kind of knower he is.

We have just mentioned that our investigation of what is most obviously alive starts from opposite ~~directions~~^{directions}. By this I mean that we resort to different though interdependent kinds of experience: external and internal.

'To see Socrates walking' is one kind of seeing; 'Oh I see!' may express seeing of a very different kind, though the word be the same. The word 'to see' comprises an unusually large number of meanings.¹ Let us look into some of these.

— I see Socrates walking.

— I see that I see him walking.

— I see that I see and hear him walking.

1. In the present context it would be useless to argue whether 'to see' has many meanings or whether it is a mere metaphor whenever we use it a propos of anything that is not external eyesight. In either case we would have to bear distinctions in mind.

/ I see that to see and to hear him walking are not the same.

— I see that I remember seeing him walking.

— I'm doing my best to see whether Socrates did walk.

— I see that Socrates' daily walks are good for his health.

— I see that the man I see walking and the man I hear walking are the same man.

— Now that you tell me I can just see him walking!

— From what you tell me I see that he can walk again.

— I see that he is a man.

— I see that he is a man!

— I see that he is a good teacher.

— I see that he is kind.

— I see that he is dead.

These are different kinds of seeing. We enjoy them all if

we have (a) eyesight, (b) if we are aware of seeing; (c)

if aware of seeing and not hearing or of seeing and hearing;

(d) if we can see Socrates walking when he is not walking;

(e) if we see that it was yesterday he walked; (f) if we seek

to remember when he last walked and see that it was last Sunday;

(g) if we see or try to see some connection between his habit

of walking and his good health; (h) if we see that he is a good

acher, even though we never saw him at all; for we see that he knows how to show his pupils that they did not really know when they so firmly thought they did, and knows how to lead them from what they knew to what they did not; (1) and if we see that there are things more real than ourselves, which we cannot see as they are no matter what our seeing. This induction had led us from external sensation to understanding, even to understanding that a thing may be so understandable that we cannot understand it—not to mention the things that no one can understand because *we are that* they are simply impossible, such as the diagonal of a square equal to its side.

Eyesight differs from all the other external senses not only because of its proper object, colour, but also, ^{by} the enormous multiplicity and variety of objects it can reach at a glance. Light is a condition of seeing. To Aristotle its transmission was instantaneous. But even in modern physics the speed of light is a constant of nature, independent of the relative rest or velocity of the source from which it proceeds. In either case, then, the eye may be called a

cosmic organ. At the opposite extreme of sight we have the basic sense of touch. This is the least cognitive of our external senses, the grossest, the most material; yet it surpasses them all, not in exactness, but in certitude as to brute fact. Tactual perception requires contact with its object, according to the first meaning of the word 'contact' (from cum, with, and tangere, to touch). Contact is involved in all our external sensations, but not quite in the same way. If our eye were in contact with the thing to be seen as the hand is with what it feels, we would not see but feel. There is tactual feeling in all our senses; but this does not account for their differences. If strong light smarts the eye, or sharp noise pierces the ear, it is because these organs are thereby affected in the touch which is their base and which is also the sense of pain.

Our sense of touch is quite obviously conditioned in a more contingent way than sight. The feeling of temperature differs according to the varying temperature of the organ of touch. The far more delicate organ of sight is nonetheless more constant in the relatively detached way its object is

Very good. Blue? See's
indicate less de temperature
and accord 2/19
od curve with ratio
greater affinity than
in this respect than
in order more effect

conveyed. Sight reaches vast multi-coloured expanses in the wink of an eye; it would take a long time to explore by touch even the mere surface of my desk, and I would not at all be sure that it is as flat as it looks. The tactual image of a sharp edge is not as clear as the visual one.

They who can see remember colours far more distinctly than odours, for smell and taste are close to mere touch. The word 'image' conveys primarily something visual, like the image of a tree reflected on the water, or the shape and colour of the tree we retain in the imagination. But it is in tactual sensation that we are deeply aware of being thoroughly rooted in nature. Our natural fears have to do with touch: the fear of excess heat and cold, of being banged about or crushed. Touch is the sense of the most vehement animal pleasures, and of torture. It is the most entitative of our knowing powers. Tangibility is the kind of verification which we naturally seek as the criterion of existence in the most striking sense of this term.

Prof. Heidegger

Plan (1 p.)

Lecture I → 4 pp. dictyl. + 2 pp. manusc.

II → 4 pp. manusc.

III → 2 pp. " "

Quelques notes

The Mediaeval Outlook on Nature

- I
1. The general conception of Nat. Sc.
 2. The lack of scientific Progress.
 3. The Contrast between Alford & Thomas.

- II
1. The decline of Interest in Nature.
 2. The Abuse of Authority in Philos.
 3. New Interest in logic.

- III
1. Contrast between Ancient and Modern conceptions of Science.
 2. The New Relevance of Common Knowledge
 3. I. H. S. and ~~Aristotle~~ Perennial Philosophy

Lecture I

The subject of these lectures is chosen from what appears to be the most precarious and putmoded part of mediaeval philos. Reflecting on what was unknown to Albert the Great and Aquinas in Mathematical physics, chemistry, and biology, how could what they had to say about nature, how could their outlook on nature be of relevance today? Fortunately, this is not our first question, and we do not have to answer it today. Our purpose this evening is to show what their mind was on the method to be followed in the investigation of nature and what they meant first and last by the word 'nature'. We are not concerned right now with the truth of the matter, but merely with what they thought was true.

In their theological writings, both Albert and Thomas borrowed a great deal from Platonic and Neo-Platonic doctrines, but in philosophy, and especially in natural philosophy, they were in the main Aristotelian. Albert knew all that was known in his time about nature and made some original contributions in the field of zoology and botany, but nowhere do we find a radical departure from ancient modes of observation and thinking. Thomas, on the other hand, confined himself to Aristotle's text, explaining it in great detail, but there is no sign in his writings of personal research in the domain of what we call experimental science.

We must note, however, that unlike the renaissance, they were not concerned with a return to the peak of Greek philosophy; they simply wanted to know as much as they could and as much as the contingencies of their lives allowed. (Their chief concern was with useless knowledge, of the type described by Aristotle in the Metaphysics: "For it is owing to their wonder that men both now begin and at first began to philosophize; they wondered originally at the obvious difficulties, then advanced little by little and stated difficulties about the greater matters, e.g. about the phenomena of the moon and those of the sun, and about the stars and about the genesis of the universe. And a man who is puzzled and wonders thinks himself ignorant...; therefore since they philosophized in order to escape ~~ignorance~~ from ignorance, evidently they were pursuing science in order to know, and not for any utilitarian end."

This text provides us with a convenient starting-point. What about that original wonder about the obvious difficulties? What would be examples of obvious difficulties? To understand what they meant by these we must revert of a while to a mode of questioning which is now very much out of date. What Aristotle had called the 'greater matters' ~~the~~ have turned out to be our first concern. The first ~~important~~ lessons I followed some forty years ago were on La dynamique céleste (celestial mechanics), the easiest part of my first course in Physics, which was also my first course in natural science. In other words, we began with ~~what~~ the greater matters, and they were simple enough. (Einstein was still much in debate and relativity theory was relegated to an appendix.) The teacher explained that the symbol t stood for time, v for velocity, etc. He nearly threw me out of the classroom when I asked him what exactly the word time stood for. The question was asinine, he said, since everyone knew what the word ~~mean~~ time meant. He may well have been right. But

*Med. & Th. infl.
mainly
due to Al.
& Thomas.
Aristotle's
weakest of
arguments.*

when I reached the university level, things had changed. The first thing we were told was that there was no relevant connection between the 'time' of ordinary language and the symbol t ; that symbols were no substitute for language, but symbolic constructions. From then on things went fine. I still had my little questions about what to me were obvious difficulties, such as the difference between a word and a symbol, but I asked them after class. The answer was consistently the same: you should study philosophy. My conclusion was that philosophy is concerned with obvious difficulties, *which most people did not care to discuss.*

My tutor sent me to Aristotle's Physics, which I found utterly unintelligible. He then sent me to the commentaries of Albertus Magnus and Aquinas. Now the obvious difficulties began to take shape--laboriously, until I ~~found~~ realized that an understanding of the Physics presupposed some knowledge of the Organon. It is in the Perihermeneias that I found out what a word is--with the help of those two commentators. I was moving in this realm of obvious difficulties and gradually realized that their solutions always had been and still remained in debate. Philosophy became the realm of obvious difficulties, in which there ~~was~~ had never been general agreement, ~~with~~ not only concerning their solutions but concerning the very difficulties themselves. Perhaps Bertrand Russell had a point when he said something to the effect that philosophy was the reservoir of unsolved problems. When a problem is solved, it ceases to be philosophical and becomes science. Lord Russell had abandoned this view. I think it was wrong because far too optimistic. The reservoir is still as replete as ever it was. Lord Russell's more recent writings bear witness to this.

If we observe the order of exposition in the corpus aristotelicum (as Professor Richard McKeon explains it in his preface to the Basic Writings) we cannot fail to be struck by the kind of questions ~~he~~ raises and by the time he spends on these--and the commentators have expanded them a thousand fold. Let us return to the Physics, the first of his natural treatises (I mean in the order of exposition). In the Bekker edition, it covers about 83 pages. // The commentaries are of course much longer. And what is it all about? It contains a small number of difficulties, such as, 'How can a thing ~~come~~ come to be?' 'What is nature?' 'What is motion?' 'Infinity?' 'Place', 'Time?' etc.

From the mediaeval commentators we gather that the general problem concerning this kind of question hinges on the word ti, quid, or 'what?' And this word happens to be extremely ambiguous. In connection with 'nature', for instance, it can mean 'What does the word nature stand for?' But it can also mean 'What is nature?' The same for all those other words/. I am not assuming that both questions are equally legitimate, except, perhaps, as relating to ~~the~~ artifacts such as a house. ~~I think~~ I may ask what the word 'house' means, but I may perhaps ask 'What a house is' as well. The answer to the first kind of question St. Thomas calls 'the interpretation of a name' or 'nominal definition', and this can be achieved by pointing to a house (we sometimes call ~~this~~ this an ostensive definition) which is one kind of interpretation or nominal definition); the answer to the second question ('What is

*but these contain
a great deal. We
do succeed
that appears
most of what
he wrote was
never intended
to be read but
by St. Thomas himself*

*What does
want to know
about nature
King and
how do we go
about finding
out?*

a house?) would be a definition of the thing that is a house.

Now some hold that the basic vice of all Greek and Mediaeval philosophy consists in the assumption that the second type of question is meaningful and that to pursue a valid reply is possible and may in fact be successful. Whether this judgment be true or not, likely or unlikely, it surely goes to show that the obvious difficulties are perhaps not that obvious ~~at all~~ after all. On the other hand, what were called the greater matters turn out to be ever so much more simple. For if you know why you spill off your ~~by~~ bicycle when you turn the corner too fast, you are equipped to visit the stars.

let

But/us pretend, at least for a while, that both types of questions are meaningful as applied to nature. The rules of this game will allow us to ask not only what the word 'nature' means (and it can mean quite a few things), but also what nature is?

What the word means can be shown by pointing out that in common parlance we attribute some things to what we call nature (whatever this actually is), such as animals and plants and their parts; other things we attribute to art or craft, such as houses neckties, eyeglasses, etc. These we ourselves deliberately make or construct, using certain materials, some of which we make from other materials that we do not make. Is it meaningful to say that nature grew my teeth, whereas art produced my glasses?

Following Aristotle, Albert and Aquinas made a radical distinction between what is first and more known to us and what is less knowable to us and most knowable in itself. At first sight this may appear commonplace. Yet, upon closer ~~xxxxxx~~ scrutiny we observe that in the course of history there has been very little agreement upon this distinction. Descartes provides us with a fair example. He believed... God, soul, and clear perception, not only of the fact of motion and place, for example, but not less exactly what they are. Give me matter and motion he said, and I will construct the universe. This implied that what is most...

~~Aquinas would distinguish here. In mathem., yes; in the study of nature, no. Here the difference between the two can be seen in the following two types of question... Aristotle did not believe that the certitude of motion was tantamount to exact knowledge of what motion is. And so for similarly basic notions and words.~~

They dwelt at great length on the notions of movement, place, time, etc. Of course, if the definitions of what these are adds nothing, as Descartes thought, to what we already knew as we named them, they ~~were~~ were wasting their time, they went off on an aimless tangent. This appears to be the more true that there has never been much agreement upon these subjects. All of which might lead one to conclude that they are not worth/pursuit either because ~~they were~~ pointless or because too difficult. We shall return to this question in our last lecture.

Meantime let us examine a few instances of basic terms which held their attention so long. Take the word 'nature', 'Phusis', hence our physics and physical. What the word means can be pointed out that in common parlance we attribute some things to nature, such as animals and plants and their parts, other things to art, such as houses, neckties, eyeglasses, etc., which we ourselves construct using certain materials, or making ~~some materials from others we do not make. Wxxxxxxkxxxxxxkxxxxxx~~ But does this mean that we know exactly what nature is and what art is? Vague knowledge may be sufficient to use these words significantly and correctly. But this provides no knowledge of what the names stand for apart from the knowledge which naming requires. Since this knowledge is vague, can it be of importance? Its relevance ~~could be shown~~ from the fact that when I ask what nature is, what I define, if I can, will have to be of that which I named. Else the question, 'What is nature' would be meaningless. The answer may well be worthless, but what about the question? Is a question to be deemed worthless because the answer may be so? *To them, vague knowledge was alluring.*

But the step from the interpretation of words to the definition of what it is that they stand for may be a very hazardous one. Take that word nature. It has in fact many meanings. It is one of those words which Lord Russell calls systematically ambiguous....