The Writings of
CHARLES DE KONINCK

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The Philosophy of Charles De Koninck

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Charles De Koninck devoted his philosophical career to answering three of the questions which have most exercised contemporary men and women: How can we understand the growing chasm between our scientific world pictures and the world as it appears to common sense? How can we understand the power of modern science and accept its insights while maintaining our most central and traditional religious beliefs? And how can we maintain the responsibility and dignity of the individual without undermining the communities in which we live and without denying the scientific accounts of human nature?

Many philosophers have tackled these questions, but De Koninck was one of the relatively few to do so while denying himself the right to change the terms of reference. He wanted, that is, to retain his religious faith and not, as perhaps Whitehead did, to create a new religion. He wanted to accept science as it really is and not insist on redefining its functions and practices. And he wanted to maintain commonsense notions of human responsibility and to defend human dignity as it was understood by ordinary men and women around him.

A priori, there is no reason why the philosopher should not, if he deems it wise, question the terms of reference and propose new religions or new tasks for scientists. De Koninck’s significance lies partly in the fact that he did try to answer the very questions which intelligent men and women were asking and continue to ask. It seemed clear to him in any case that any intelligent enquirer would conclude that science was one of the great human achievements. And his religion was to him a matter of unshakeable faith. Both religion and science were to be enquired into, but each had claims which a philosopher was unlikely to overturn. Human responsibility and the dignity that went with it seemed to him beyond reasonable question. The problem,
therefore, was to understand both of these so that religion and science did not
destroy one another in a fruitless war and so that human freedom was not
bought at the expense of the community and the community was not sus-
tained at the cost of human dignity. I think, within his terms of reference, that
he came as close as anyone has to answering these questions and that, while
his philosophy has many loose ends, it is capable of substantial development.

1. The Structure of Charles De Koninck’s Philosophy

It is a commonplace that Charles De Koninck was a philosopher of sci-
ence and a religious man, but it would be almost as true to say that he was a
philosopher of religion and a man of science. For, despite his long and com-
plex involvement with ecclesiastical affairs in Quebec and despite the fact
that bishops in Quebec and senior church bureaucrats in Rome both sought
his advice and took it seriously, he was by no means a figure of conventional
piety. If he had a quarrel with contemporary science, it was that mathemati-
cal physics, in pursuit of its legitimate policy of abstraction, sometimes for-
gets the richness of the facts of experience on which it is founded. De Koninck
came to Laval University in Quebec in 1934 from Louvain, where he had writ-
ten a doctoral dissertation in the philosophy of science, and he came as Pro-
fessor of the Philosophy of Nature. He was to become Dean of the Faculty of
Philosophy, and would write on moral, political, and social theory as well as
religious meditations. But science and its relation to nature remained always
at the centre of his thought. Students find it curious—even paradoxical—
that a man who not only devoted himself to the study of the intellectual foun-
dations of modern science but whose writings show all the usual marks of a
“man of science” should also have played an important part in the discus-
sions which led up to the promulgation of the dogma of the bodily assump-
tion of the Virgin Mary. That promulgation, which took place in 1950, was
seen as an embarrassment to many Catholic intellectuals; even those who
welcomed it often did not relish the thought of explaining it to outsiders. But
De Koninck (though he once said in print that he understood their embar-
arrassment) felt no unease whatever.

The problems posed by this dogma both illustrate and are symbolic of
the tension between science and religion in the last half of the twentieth
century. They illustrate the tensions because the idea expressed in the common understanding of the dogma seems so clearly to run counter to our whole scientific world picture. The problems are symbolic because the case became, for a time, notorious: it seemed to many non-Catholics to be a case of the Church deliberately challenging science and urging the faithful to choose between one and the other. Understandably, then, when students read De Koninck they are startled. How can anyone be on both sides?

Hopefully, those who read the writings of De Koninck will see for themselves how someone could be—and was—on both sides. De Koninck’s writings are, however, fragmentary. Even the apparently complete works are, in a sense, occasional and unfinished. *The Hollow Universe* was a set of public lectures given at what was then still quite strongly a Baptist institution, McMaster University, intended both to whet the appetites of philosophers and members of a general public who did not share all of De Koninck’s presuppositions and convictions, and intended as well to open rather than close a discussion about our contemporary world picture. Equally, *De la Primauté du bien commun, contre les personalistes* was produced under the difficult conditions of a world war. It was intended partly to deal with some current controversies which had become pressing (compiled in part from previously published articles) and opened more questions than it finally settled. De Koninck did not want it published again as it stood and did not live to rework its contents.

He died at the age of fifty-eight and at a moment in his career when he might have begun the rounding off and tidying up of what was already a distinctive philosophical position. He left behind not only one extensive unfinished manuscript but many published fragments whose ultimate intentions had to be inferred by his readers. Yet De Koninck himself surely saw his work as a unity which made sense against the issues which dominated his time and place and which made sense, equally, within the long and richly developed philosophical tradition to which he belonged, and many of his contemporaries would have seen it as he did—though some of the controversies in which he became involved show clearly enough that not all of them did so. The contemporary reader most likely finds himself in a different position. The specific issues which dominated the 1930s, 40s, and 50s have, in some cases, faded from view. The Quebec in which De Koninck lived and worked has been transformed by social forces and by changes in religious outlook so
much that many propositions about the social order which in De Koninck’s
time would have been taken for clichés are now actually false.

Finally, the Thomistic philosophy which De Koninck very often used as
a fundamental model—though he was never its slave—has fallen on hard
times. Those who have followed its adventures over the centuries may well
suppose that its story is not yet over, but reaction against this philosophy
began to gather momentum less than a year after De Koninck’s death. The
Vatican Council, which was widely taken to have opened the doors to other
kinds of philosophising within the Church, was part of the explanation, but
the Council itself was the product of forces which had long been at work.
Some were obvious and deplored by few. For instance, non-Thomistic
strands in the Catholic tradition had always claimed attention, and another
Quebec philosopher, the Franciscan Ephraim Longer, played an important
part in opening the way for the revival of the Augustinian and neo-Platonic
traditions. In England the philosophy of John Henry Newman claimed atten-
tion as well. But the “mainstream” philosophers usually called “Thomist,” in-
cluding Jacques Maritain and De Koninck himself, had always maintained
that philosophy, in the end, had to stand on its own feet, and that Thomism
must stand or fall on its intellectual credentials and could not depend for-
ever on the fiat of the Church or simply be defended by scholars of medi-
aeval thought who devoted themselves to finding out what St. Thomas had
said. De Koninck said that he hoped to know enough of St. Thomas not to
have to remain forever just a disciple who has faith in his master. One had to
be intellectually convinced and, for that, one needed to develop the Thomistic
system so that it could solve the live and pressing problems of the day. Too
often the dead hand of rote belief and the formulae of the manuals got in
the way. More importantly, no doubt, in France, in Italy, and in northern and
western Europe generally, competing philosophies—philosophies of the en-
lightenment, the philosophies which developed from Hegel (and from Marx)
and the phenomenological and existentialist movements—provided stiff
competition for the minds (and hearts) of Catholic intellectuals; even the
most creative thinkers who worked with the Thomistic tradition could make
only limited gains. Louvain, where De Koninck was educated, and the Quebec
universities, where he taught, formed, along with the American Catholic
universities and the Catholic universities in Rome itself, the heartland of a
Thomism which was always under siege.
When the official defences were lifted, the besieging forces moved so quickly and the change was so rapid that Quebec Thomism was swept out of sight before anyone really had a chance to make a scholarly estimate of its condition and of its achievements. Both those who look back to the period of its dominance in Quebec as a golden age and those who look back on that period as one in which philosophy was the unhappy prisoner of the Church are alike apt to make false assumptions about the way it was understood by De Koninck and his contemporaries. The reader who comes afresh to De Koninck’s work therefore has a good deal of reconstructing to do. In the absence of De Koninck’s own gathering-together of his philosophical system, the reader must decide for himself or herself in what framework the work ought to be read and, cut off as he is from De Koninck’s time by a kind of temporal fault line along which there has been a minor earthquake, he must decide how to position himself so as to understand what is being said.

The justification for this introduction is simply that few readers will have the time or the inclination to do all the work for themselves. De Koninck’s philosophy is thus likely to molder on the shelves or, worse, perhaps, to become a grab-bag out of which anyone with a cause of his own can pluck stray bits of ammunition. All past philosophy is, of course, an idea-mine from which anyone may legitimately draw whatever is needed, but it is important to distinguish, if we can, what the philosopher wanted to demonstrate from what we want to demonstrate. Respect for our predecessors is important, but it is not the central point. Rather, the point is that the history of philosophy has a certain logic: in seeing how ideas are pushed this way and that by the force of argument, we may gradually be able to chart the direction of a development which leads on to the truth. If we obscure the past too much, we have no such hope.

To begin with, I think, we must accept the fact that De Koninck himself might never have “rounded off” or “tidied up” his philosophy even had he lived several more decades. He was, by nature, a man who loved arguments and he was, therefore, a natural controversialist. He died as he often lived, in the midst of controversy. And the controversies tended to occupy his time. If these controversies sometimes gave his philosophy the look of being dominated by particular occasions, it is important to see that the controversies themselves generally had their own unity and almost always served to express the essence of De Koninck’s own philosophy.
The controversy in the midst of which De Koninck died is a perfect example. It was characteristically a mixture of theological and scientific issues—the question of whether or not the use of drugs to control fertility for the purpose of birth control was or was not a violation of natural law. De Koninck believed, on philosophical grounds, that it was not necessarily so, though he had doubts in the end about whether or not those in use should be approved. On moral grounds, he believed that there was a serious question involved about the nature of motherhood and about the rights and duties of women. Since it is natural for human beings to be educated—we are not born with enough instincts to govern our lives without education—it is also natural for women both to have the time to learn enough and to have the time to impart enough to their children. Too many children, therefore, can threaten the highest notion of natural motherhood. It can also threaten the humanity of women. The example makes it easy to see how scientific, theological, and moral issues merge to form a philosophical question and this merging of issues was central to all of De Koninck’s thinking.

If this is so, we must start, I think, by seeing De Koninck’s philosophy as a response to a series of tensions. The nature of these tensions is not always so obvious as one might think, but, basically it seems to me they are the growing tension between science and experience, the tension between science and religion, the tensions created by the fragmentation of knowledge—especially the divisions between philosophy and science and the division between factual and moral knowledge—and the tension between the individual, the community, and the human relation to the universe at large. Growing out of these is an ever more pressing tension between theory and practice.

De Koninck had other continuing concerns. One of them was to show that wisdom is not a special state given only to those with special experience or extraordinary talents but simply the right outcome of the application of natural human reason. But this, it will turn out, is a problem associated with the fragmentation of knowledge. Another of his concerns was to prevent the encroachment of “le grand État” on the real basis of community and on the responsible life of the individual. But this has to do with the balance which he believed must be developed in order to master the tensions between individual, community, and universe. A third and growing concern was with the relation of time to eternity.

I propose, therefore, to organize this discussion around the basic tensions.
2. Science and Experience

De Koninck’s first extended work *Le Cosmos*, his most popular book *The Hollow Universe*, his last major series of articles “Abstraction from Matter,” and his one remaining substantial unfinished manuscript, a study of the philosophy of nature, all point to the major preoccupation of his life: the relation of science to experience.

It was De Koninck’s contention that the objects available to us in experience are much richer than those described in modern mathematical physics and that, without in the least denigrating physics and its attainments, it is important to philosophise about the difference. In De Koninck’s theorizing, concepts and world pictures derived from the Aristotelian tradition are developed in various ways as he develops his critique of modern thought. Questions about the nature of experience, the concept of matter, and the difference between names and symbols all concerned him. But, basically, his position is this: the external “objective” world is a collection of objects which can be sensed in a variety of ways. In particular, they can be seen and touched. They are actually unique individuals. We know about the world because we make use of a “common sense,” i.e., we have a facility for putting together these elements in a way which assures us of the existence of the ordinary, solid world around us. The natural world is indeed, in De Koninck’s view, above all a solid world. Though our most sophisticated information comes to us through the sense of sight, it is the sense of touch on which we rely more than anything else for our assurance that the world is really there as it seems to be. Our scientific picture of the world is, however, rather of a world stripped down from this rich environment and it is this simplified world to which the various facets of the human intellect are peculiarly well adapted. Mathematical physics deals, literally, with abstractions and there is a tendency to take these abstractions for the whole of reality. The result is what De Koninck meant by the expression “hollow universe.”

It is important, however, to be very careful about this. It is not a mistake of mathematical physics that it deals in these abstractions. That is its function. There is important knowledge to be gained in this way which cannot be gained in any other way. Mathematical physics is not flawed because of its abstractive method. On the contrary, it would be flawed if it did something else. But mathematical physics also presents us with a puzzle. Its great
powers of prediction and the power it bestows on us to control nature present us with difficulties. For, if we are not careful we are apt to read our most advanced sciences as if they were reductionist in essence. Without understanding what we are saying, we may say things like: “Within the realm of physics—which includes everything that can be talked about rationally—there is nothing special about life. Living things are just collections of molecules whose behaviour is chemical, and molecules are just collections of atoms whose behaviour is described by physics.” And all this is true. Only it doesn’t mean what we may think it means. We may think it means something like: “Only atoms are real. To believe that life is something over and above them is just a remnant of a superstition.”

Curiously, we are more likely to try to dispose of life (“life is only a kind of atomic behaviour”) than to dispose of molecules; the molecular sciences and the atomic sciences still retain a kind of distinction and, indeed, some British universities have replaced the old disciplines called chemistry and physics with new ones called molecular and atomic science. If we think about this example for a moment we begin to see something of the point De Koninck strove all his life to make. Each of these sciences confronts the material world. The material world, for De Koninck, is what is revealed by the normal functioning of the human intellect within its proper context of rationality. Its correct analysis is a matter for philosophical physics. Early on, in *Le Cosmos*, he had distinguished, as did Jacques Maritain, between the philosophy of nature and natural science; later, for reasons which will become apparent, he abandoned that distinction. What I am here calling “Philosophical Physics” (the term is my own, but expresses De Koninck’s intentions) is something in which both philosophy and physics have a part to play. How these parts are to be understood is explained, for instance, in De Koninck’s papers published as “Abstraction from Matter.” Other versions can be found scattered in various discussions, but the claim is basically this: human knowledge proceeds by taking elements from what is presented and by doing so in a consistent way at a given level of abstraction. Thus chemistry, in its most traditional modes, made its fortune, as it were, by discovering that things which look quite different—bits of glass and bits of stone for instance—might nonetheless be made of the same basic stuff. The molecules in these different objects were of the same sort. Physics, by generalizing further so as to find elements common amongst molecules, proceeds to a level at which
we find that molecules are in their turn composed of atoms. But along the way something is lost. Ordinary objects are coloured. Chemists, even, are interested in the fact that certain chemically treated papers change colour when exposed to acids. But in physics colour has disappeared. It is not sensible to ask: What colour is a hydrogen atom? The abstracting activities of each of the sciences are necessary and normal. And the ease with which properties “disappear” in these various analyses is furthered, De Koninck thought, by changing from names which designate particular entities found in experience to symbols which do not designate anything in this way. But it does not follow that the importance or unimportance of these disappearances is something for science alone to pass judgement upon. It is also not, in De Koninck’s view, just a matter for the philosopher to decide upon. For everything depends on just how it is to be done. The questions involved are philosophical, but the answers depend on an understanding of how the sciences work. If we are to understand what is at issue here and also understand just what De Koninck’s discussions amount to, we must look for a moment at the period of the rise of modern science and the philosophies which, in science’s name, reacted to (and against) certain elements of sixteenth- and seventeenth-century scholasticism. De Koninck’s discussions do not consist in a simple reversion to the scholasticism of the early modern period. Nor are they Aristotle restated. De Koninck does make use of doctrines found in Aristotle and in St. Thomas, but he puts them to new ends and he develops them in new ways. And we need to see exactly how this comes about.

At the heart of the problem which De Koninck faced in the middle of the twentieth century was the situation created by the fact that one of the central features of the rise of modern science was the growing conviction that reality is not directly revealed in our experience. We are apt to forget this obvious truth for a number of reasons. One of them is that we associate the rise of science with the Renaissance concern for experienced reality. Another is that we confuse the use of selected experiences as the test of scientific hypotheses with a concern for experience as a whole. A third is that we tend to contrast “empirical science” with the “rationalist metaphysics” of the seventeenth century in a way which would not have occurred to the thinkers of that era.

Modern physics had many of its roots in the physics of optics which, in turn, had its roots in the art of the Florentine Renaissance. The desire to paint things as they were—to portray nature and the human form in all its
perspectives—was a departure from the main lines of mediaeval art which used symbols to convey a reality more fundamental than that of immediate experience. This concern with painting things “realistically” stimulated interest in the processes of vision and we therefore tend to think of Renaissance science as an exploration of the structure of experience. There is, though, more to it than this. Concern with the physics of optics did influence the development of the telescope which, in turn, played a part in the development of astronomy. But the great advances in the science of the time—and of the succeeding centuries—were essentially conceptual. It is said that the great shock provided by “science” was the growing realization that the earth revolves around the sun. The displacement of the geocentric universe was supposed to shock people because it displaced the earth from the centre of the universe. I suspect that this shock has been greatly exaggerated, but another, greater, shock is less often noticed. The heliocentric universe forced us to believe that the senses deceive us: the earth seems to stand still and the sun certainly appears to move. What led to this change was, initially, nothing more than the discovery that the calculations of the whereabouts of the planets are much simpler if one assumes that the planets move and the sun “stands still.” The growing interconnection between science and “calculation” was one of De Koninck’s persistent interests.

Much later the bits fell into place with Newton’s theory of gravitation. This, too, was a conceptual discovery. The “facts” about falling bodies, moving planets, and the tides had all long been known and, as far as the observations go, even the calculations about planetary movements were not possible in detail until the invention of very large computers. Newtonian science was neo-Platonic. Newton (who had learned from the neo-Platonists at Cambridge) surmised that there were standard patterns, which he expressed in the form of his laws of motion, and that what had to be explained were observed deviations from them. Newton supposed, for instance, that, if nothing got in the way, bodies would move in a uniform direction at a uniform velocity—and would continue to do so for ever. We have never observed anything but deviations from this rule. But the deviations are explicable. Science did, of course, progress in an important way by “observation.” But observations increasingly came to be made by instruments which replaced human observers. I feel hot and you feel cold. But the “temperature” is given by reading a thermometer. It does not matter what either of us feels. And, though different observers will all very likely report different sensations of
heat and cold, all of them will almost certainly report that they read the same numbers. Physicists, as De Koninck realized, when they boast of their experiments, talk of getting “good numbers.” But notice that the humble thermometer reading as much as the grand theses of astrophysics teaches us that the world may not be—usually is not—quite the way it seems to be. The selective use of experience breeds the distrust of ordinary experience. Just as it is easy to suppose that, because the physics of optics grew out of a concern for the immediacies of experience, the astrophysics which was stimulated by the physics of optics must be “empirical,” so it is easy to suppose that data derived from instruments intended, as much as possible, to replace the senses must still be “empirical data” just because, at some point in the process, the senses continue to play a role. The sense which functions in instrument reading is, of course, sight. But it is not important as sight. It would be all right if the machine spoke its numbers—or whistled them. Anything which can convey numbers will do. De Koninck was concerned by the fact that touch, which normally plays a vital part in our determinations of what is “real” and what is not, plays no part in these processes. Finally, because there came to be a tendency to distinguish certain metaphysical questions on which no experience seems to bear from “scientific” questions (on which some experience always bears), there came to be a tendency to think of science as “empirical.” But this is not, itself, an easy issue to determine. No experience provided evidence for the proposition that the earth revolves around the sun. The issue was a matter of convenience of calculations and, indeed, questions about what moves are always questions which are, in a sense, arbitrary. One thing moves in relation to another. It makes no practical difference whether you say that your aeroplane starts over Montreal but stands still and the earth rotates under it until you are over Chicago, or say that the aeroplane moves while the earth stands still. For many practical reasons we talk about “air speed” and “ground speed” and assume a little of each, but our reasons for doing so have nothing to do with any experience about what seems to move. Experience does play a role. We leave Montreal and find ourselves in Chicago, and so there is something to explain. The problem is given by some experience, but the solution is not. And so it is perhaps with even the most abstruse metaphysical questions.

The problem posed by the question “Why is there something rather than nothing?” is given by the surprising fact that there is anything at all. The surprise is given (as St. Thomas suggests) by the fact we know full well that
whatever we find in existence might not have existed. In reality, of course, the
gradual opening of the gulf between the world of the physicist and the ordi-
nary, experienced world posed serious philosophical problems. In the seven-
teenth century, philosophers responded by developing the “way of ideas.”

The “way of ideas” took many ingenious forms which, alas, cannot oc-
cupy us here, but, after Descartes, one common version had it that what the
mind confronts in experience is not itself the primary reality but only some-
thing that represents that reality. From these “representatives” we can infer
the world, but the world differs from our experiences essentially because there
are some properties—primary qualities—which can be “objectified,” in that
they can be read by anyone from the instruments of science, and others—
secondary qualities—which cannot be so objectified. Thus anyone can tell
the wave length of light rays given the right instrument, and we can all agree
upon the answer but no two people perhaps will see the same shade of blue
or of green. Light rays therefore, it came to be said, were out there “in the real
world.” But things in the real world are not blue or green. Light rays are made
up of particles called “photons” or of wave patterns (depending on what
one needs to talk about). Photons are not blue or green. Nor are light waves.
Indeed, the final conclusion is interesting: photons enable you to see other
things. Therefore you cannot, in principle, see photons. If you could, you
could not see anything else.

This story leads us to take reality as more and more abstract. Wave
lengths are given numerically. In the end everything is expressed in a for-
mula by substituting numbers for the values of the variables.

The tendency is then to claim that what is “real” is simply what is spe-
cified in scientific theories. Among scientific theories De Koninck thought
we accept the theory which is simplest and the theory which lends itself best
to calculations from which we can predict the future. De Koninck noticed
that, in the end, we tend to think of the world as a single giant Turing ma-
chine. A Turing machine is a machine which can calculate anything whatso-
ever. If whatever is can be calculated, and if the universe runs by the rules of
such calculations, the world must be such a machine.

Ideally, perhaps, we might think of such a world as consisting only of
calculations. Indeed, Willard Quine, the Harvard logician and logical ontolo-
gist, once suggested that perhaps all we need in our ontologies is the set of
natural numbers. This would be the result of taking the strong form of the
Löwenheim-Skolem theorem very seriously. This theorem specifies, innocently enough we might think, that all acceptable theories have denumerable ontologies. Then suppose we add Quine’s further claim that “one ontology is always reducible to another when we are given a proxy function $f$ that is one to one.” Then we get the result that all we need are the natural numbers. A “proxy function” is a relation that is true whenever the original function is true. So, if the number “13” designates Percy the pig, then we need merely say that whatever is true of Percy is true of “13.” If our universe is denumerable, then there is one natural number for each and every entity specified in any intelligible theory.

Quine is a wise as well as a witty man and he quickly pointed out that this “Blanket Pythagoreanism . . . is unattractive for it merely offers new and obscurer accounts of old moves and old problems.” What Quine means is that such an ontology is always relative, and it is only intelligible as he says repeatedly in terms of some “background theory.”

We can see this in various ways. For instance, Quine’s most consistent expression of his own view is expressed in the curious phrase “to be is to be the value of a bound variable.” If we say “one of the things which exist is the pig, Percy,” we express this in logical terms by saying “there is an $x$ such that $x$ is Percy the pig.” The general form of this expression is $(x) (fx \text{ and } gx)$, “Pig” and “Percy” are ways of filling in the blanks. They are “values” of $f$ and $g$. Thus $(x)(x$ is a pig and $x$ is Percy). The “values” of these variables are what exists. The rest of the formulae consist after all of bits and pieces of logical apparatus.

When someone says “all the values of the variables are natural numbers,” what is being said is that a choice has been made. But such a choice always implies some theory in terms of which it has been made. This is the “background theory” of which Quine speaks. It makes no sense to make such a choice unless one has the appropriate theory.

The “Blanket Pythagoreanism” which Quine in fact derides does not suggest only that the background theory involves some claim like “everything that exists would be described by an ideal and complete science of physics or at least by the basic natural sciences.” If this is taken together with the further theory that what matters in such theories is their references to natural numbers, one will get “Blanket Pythagoreanism.” Quine, of course, thinks the real is what is described in the sciences, but sees the absurdity in saying that the numbers are what matters.
But notice that the plausibility of the thesis about reality and science is less than obvious. One reason for thinking this is that its strongest partisans (Quine, for instance) long ago abandoned the “way of ideas” so that it is no longer actually claimed that one can infer one’s way back to reality. The objects in such theories are all “ideas” in the Cartesian sense. No one ever actually sees, tastes, or touches an electron or a photon. (Photons are particles of light which actuate our optical apparatus. If you could see them, you couldn’t see anything else. Electrons are “used” in electron microscopes to enable us to see other things, but we cannot see them.) Thus these things are known to the mind and not to the senses. “Ideas” in the very special sense which governs the way in which this particular post-Cartesian theory is usually taken are mental entities and science cannot get at them. Quine, indeed, says “there is no place in science for ideas.” The result is that those who think this way take all beliefs about reality to be purely pragmatic. Quine calls himself a logical pragmatist.

It is convenient to believe in science, in short, because science gives us power over nature—and over one another. The theory, taken in this way, undercuts science as a discipline which gives us insight into reality and turns science into an instrument of the power brokers. It is this thought, above all, I think, which always horrified De Koninck. Not only did he think better of science than that, he thought, for reasons which will emerge as we go along, that the view that knowledge is primarily a form of power was ultimately dehumanizing. His alternative has four basic elements. One element is the concept of experience as something which is richer than all our abstractions from it. His claim here centres on the notion that science departs from experience not because what we experience is not there in reality but because science uses experience selectively. Philosophy must, therefore, consider the nature of experience itself, but it must do so in the light of science. Part of what we know about experience, after all, is what science abstracts from it and this, in itself, may contain important information about the original situation.

The second element has to do with the fundamental concepts which one should use to grasp the original situation. How should we look at a state of affairs which can reveal itself in a set of successive abstractions? We should not look at it as an onion which appears when one peels off the successive layers but rather as a set of abstractions each of which may make some claim to be the whole object. It is here that De Koninck used the Aristotelian con-
cept of matter which he was still, as the reader will see, struggling to make clear toward the end of his life when he wrote the papers called “Abstraction from Matter.”

The third element has to do with the way in which the human intellect works together with the senses. Though the senses bring us fragments of information they do so in an orderly way so that one sense can confirm—frequently—what another suggests. We think something is there because when we touch it, it feels as it ought if it is what it looks like. Doubting Thomas is convinced by touching Jesus. The problem of the “common sense,” the ability to put things together, fascinated De Koninck because the workings of the human system of knowledge-finding do enable us to move toward an idea of the real. This is so, at least in De Koninck’s view, because the intellect is so designed as both to receive characteristics from reality and to be able, by appropriate rational activity, to assemble them in a way which displays the origins of the successive abstractions. The intellect is not like a camera which simply records, all at once, the object presented. Rather, the intellect is analytical and can display the data in various logical orders.

The fourth and final element of De Koninck’s theses about the world and knowledge is his insistence that the objects of immediate experience are unique individuals—particulars which are quite different in kind from the sorts of things which can be designated by scientific symbols. Let us look briefly at the contentious facets of these claims. The first claim is not easy to state with absolute clarity, but I think its essence lies in the belief that experience always outruns or extends beyond any attempt which we make to analyze it into specific components. And this seems to be true as a matter of psychological fact. Look at any object. Make a list of what you see. You can always add something to it. There seems no limit to the range of discriminations which are possible. If this is so, no science can claim to have grasped the whole of experience, but every science can claim to have added something to what we know about experience. This is true even of mathematics as mathematical physics so clearly shows. A vast array of mathematical theories reveal to us ways of ordering which in turn have led us to look for unsuspected elements and connections in experience.

The further claim which De Koninck makes is that experience reveals to us a solid and substantial world on which science works and that the best evidence about this world of concrete objects (concrete in the literal sense
of bringing together the elements of form and matter) is not in any abstraction taken alone but in the whole considered as the potential from which the abstraction arises. It is evident that this is a more contentious claim and it depends on two things: one is the Aristotelian theory of matter; the other is the theory of the intellect and the senses which De Koninck uses. This is the part of his theory which derives most clearly from the Thomistic-Aristotelian tradition, though his lifelong struggles with it do not suggest that he believed that it was simply “there” to be read off the page like a set of do-it-yourself instructions from Sears Roebuck.

“Matter” is a curious expression. The most common modern view held by people on the street approximates to the view held by the Greek atomists Democritus and Leucippus and their successor Epicurus. On this view, matter consists of bits of ultimate hard stuff which do not come into being or go out of being but which combine in different ways to make up the things of the world. The Aristotelian view was, of course, quite different and so, no doubt, is the view commonly held by contemporary physicists, though it is not easy to say what it is that physicists (or philosophers who claim to be guided by them) actually mean. Indeed, contemporary philosophers who claim to be guided by physics to the extent of believing that the world ultimately contains all and only the things described by physicists usually do not call themselves “materialists,” but “physicalists.” Chiefly, however, matter is best described as sets of fields and forces which determine the forms which visible and tangible objects take when confronted by human brains. The word “matter” usually is a technical term with an agreed-upon meaning among its users. But it is one of the more casual of such terms, and it is not something on which editors of physics journals greatly rely. The entities described in such journals are often discontinuous in space and time or, more exactly, define only space-time systems in which the identifiable entities exhibit discontinuity.

In many senses the Aristotelian notion of matter is, in fact, closer to the accounts which physicists use than is the view of the Greek atomists, but the comparison of conceptual systems so different from one another is a task of great magnitude whose outcome may, in any case, prove at best uncertain and at worst misleading. It is as well, therefore, simply to look for a moment at what De Koninck was theorizing about and to ask what advantages (and disadvantages) might accrue to the conceptual system which he chose. He tells us a good deal about the problem in The Hollow Universe, though in “Ab-
straction from Matter” he may appear to be less forthcoming than we might hope. *The Hollow Universe* was written for a general audience and therefore tends to give the kinds of reasons which an audience with many different commitments might expect whereas the articles which formed the “Abstraction from Matter” series were part of a project from which it was at one time hoped to generate a philosophy of nature text for Catholic colleges, and it assumes, without much question, that the issues are to be posed, broadly, in the Aristotelian-Thomistic tradition. The reader should not assume that De Koninck made this assumption for himself as a matter of course, but only that the project in question demanded that assumption. *The Hollow Universe* text makes clear that he was quite prepared, as a serious philosopher, to begin without prior commitments or, at least, to justify his prior commitments on philosophical grounds. The difficulty, however, is that *The Hollow Universe* lectures deliberately avoided certain technicalities and the “Abstraction from Matter” series deliberately avoided questions about the basic framework of the discussion.

Despite this, it is not unduly difficult to establish De Koninck’s general position. To begin with, we can see that the view of science as a succession of abstractions naturally provokes the question “Abstraction from what?” If one conceives the abstractions as successive identifications of forms, then the natural answer is simply “abstraction from whatever it is that the forms inform.” As I said, the simplest and most traditional definition of Aristotelian matter was “matter is the capacity to take on form.” If matter is the capacity to take on form, then abstraction, if it concerns forms, must be, by definition, “abstraction from matter.” The basic reason, historically, for the Aristotelian theory was epistemological, and it is certainly the case that De Koninck always saw these problems in the context of the theory of knowledge. Even when he was concerned with the ontological nature of man he tended to use epistemological expressions. He spoke of the “Sapientia” nature of man. Following St. Thomas, indeed, he thought that the most informative account of the nature of man was in terms of man’s capacities as a knowing being. (So much for those who have suggested that Descartes gave philosophy a wrong turning by overemphasising epistemology at the expense of ontology. De Koninck had other objections to Descartes, some of which, no doubt, concerned the precise relation between the two enquiries, but he would not have suggested that ontology and epistemology can really be separated.)
The reason that epistemological problems suggest the Aristotelian view is a simple one: if I know something, there must be something of the thing in the knowledge. But it must not be the thing itself which is possessed “in knowledge.” One does not get to know about pigs by becoming a pig. On the contrary, pigs have a limited capacity for knowledge—even for knowledge of pigs or of piggishness itself. But if the thing known is not present in some way in knowledge, then the skeptic must win the ancient battle. The Aristotelian theory proposed a straightforward account. The form which informs the thing can also inform the human intellect—though the object which is the knowledge will be ontologically quite different from the object which is the thing. This view, as I have suggested, came to grief with the rise of modern science because it seemed that nothing of the object was actually in the intellect, and skeptics like Simon Foucher taunted the Cartesians with the claim that even “ideas” could not fill this gap. They could not “fill the gap” because, if they were to fill the gap, they would have to resemble the objects in the world. To do this they would have to have some property in common with the things in question. And this would bring back the scholastic (Aristotelian) theory.

There are many possible answers to the questions thus posed. In order to understand the force of De Koninck’s solution, however, we must look briefly at two of the most interesting of them. By means of some transformations of the distinction between formal and objective reality in ideas (a distinction which Descartes developed from Suarez) one can generate effective ways of distinguishing the referring powers of ideas from the forms embodied in them. In order to refer effectively to lions one need only, for instance, have an idea which, whether it has anything to do with lionhood or not, infallibly enables one to identify lion-containing situations. You might have a trip wire which only a lion-sized thing would activate and your idea of lion might be only “the thing which rings the bell.” This would do if there were no other things in the environment with the same capacity to trip the wire. This principle is used extensively in physics, for instance, in cloud chambers which enable one to identify particles by reference to the vapour trails which they make as they pass by.

A second way of dealing with the relation of ideas to reality is to follow the eighteenth-century neo-Platonists (Malebranche, for instance) and hold that ideas are themselves efficacious. If ideas tend to have instances—in the
manner of the emanations of Plotinus—then we can infer from the idea that we have that reality will have certain properties unless more powerful ideas (those closer to the One) interfere. This idea sounds curious to the modern ear but, as I suggested, it is the principle of Newtonian physics. According to Newton, there are master patterns which hold unless something compels deviations from them. Our ideas give us the master patterns. Our experience shows us deviations. Our reason connects the two by generating scientific laws. It is still true that our experience does not show us ultimate reality; but it does play a role along with reason.

De Koninck chose neither of these. But he certainly knew that he could not simply go back to the “scholastic” view that the properties of things are in some simple way just transferred to the intellect. For this would be to suppose that the modern crisis which one might call the separation of the intelligible and the sensible had never occurred.

De Koninck’s answer was to develop the theory of abstraction. Science works by developing particular abstractions which are not necessarily—or even often—apparent in the immediate confrontations which we have with the things in question. When you look at a glass of water, you are not aware of its molecular structure. Much less are you aware of its atomic structure. Water is composed of molecules which, in their turn, are composed of atoms of hydrogen and oxygen. None of this is apparent to the “naked eye.” But the distinction can, rather easily, enter into experience. If you separate the oxygen from the hydrogen you can quite readily blow yourself up. Now notice that these abstractions which yield knowledge do not work by separating some parts of the glass of water from others. The whole glass of water consists of molecules. The whole of every molecule consists of atoms. There is nothing in the water “in addition to” the atoms. But, in talking about the atoms, for instance, one does ignore certain properties of the glass of water. The atoms are not wet. They are not even a liquid. Rather one attends to certain features of the whole and one makes a series of transformations in the types of concepts which one employs. One moves to different levels of generality and these involve different types of discourse.

The glass of water is a distinct and unique object. This is what I designated as the all-important fourth element in De Koninck’s account of science: the objects from which the abstractions are made are quite different from the objects that nuclear physics are talking about. A glass of water is
this glass of water and not any other. But any hydrogen atom can do as the replacement for any other. A glass of water is the glass which is here and no other. It makes no sense to talk about the atoms in quite this way. Geography has problems as a science because every point on the surface of the earth is unique. Physics has no such problems because every hydrogen atom in its standard form—even one which is an isotope or a member of some other subclass must be exactly like every other member of that sub-class. If one needs to identify them one must do so by some extrinsic reference—by means of the path of the particle through space and time, for instance.

As a consequence one changes one’s way of talking; just as when we replace talk about our feelings of being hot or cold with talk about the measurements of a column of mercury, we no longer talk about a particular state of affairs—Susie’s sensations of approaching frost bite or John’s complaints about the cold—but rather about something universal, a reading of −27 Celsius or +89 Fahrenheit. De Koninck’s distinction between names and symbols may sometimes seem puzzling. In some passages they are actually difficult notions, for he was struggling with complex ideas. But in these cases, it is quite clear what is going on. It is perfectly comprehensible that “John’s sensation” is actually the name of something which can be directly encountered in experience as part of our transactions with the ordinary world. So one may name one’s dog Fido. But the element marked out by the thermometer is not in the same sense an element in the world, for 89 degrees Fahrenheit does not name the state of the mercury column; rather, it refers to something else, the temperature of the air which surrounds the thermometer. Nor does one name Fido’s atoms, for each atom is not distinct in the way that Fido is.

The symbols, in the end, are traceable back to interconnections with the world. If the issue belongs to chemistry, then a particular chemist in a particular laboratory made the discoveries and wrote a particular paper which was published in ink on paper in a particular chemistry journal. And, of course, it is the actual concrete world which will be explained by his theory.

Are atoms real in the way that dogs are real? The answer will depend, inevitably, on what you mean, and here we come to a difficulty. I have been writing as if the transformation of feelings about heat and cold into temperature readings and the transformation of descriptions of glasses of water into theories about atoms of oxygen and hydrogen were transformations of
much the same kind. But there is a difference. The numbers on the thermometer symbolize feelings rather indirectly for there are not things in the nonliving world which are hot and cold in just the way that there are hot and cold feet amongst pedestrians in Quebec City. There are, on the other hand, complex structures within a glass of water which correspond in a more direct way to the things which physicists or atomic chemists like to talk about. In fact, hot and cold feet are part of a whole universe which, in De Koninck’s view, represents a causal system. Our symbolizing of temperatures skews our picture because it throws the weight of the description onto an “objective” element, the column of mercury. Our symbolizing of the glass of water does not have this effect but, like all such transformations, it may skew our picture, too, however different the process may be. We may think of glasses of water as being built up out of atoms of hydrogen and oxygen, whereas the truth, more exactly, is that we can analyze the glass of water into atoms of hydrogen and oxygen. It is the whole glass of water—cold and wet—which is real. We can, when we have learned about molecules and atoms, separate the hydrogen from the oxygen. But we should remember that what we will have is another whole concrete object—a cylinder full of hydrogen or a gas-filled balloon which will spin off into the sky if we let it go.

De Koninck’s concerns about the way in which science influences civilization had first of all to do with the effects of misunderstanding the priorities. The misunderstandings are not, primarily, the work of physicists or chemists or of “scientists” in general. Presumably, they are no more and no less prone to philosophical confusion than the rest of us. The principal misunderstanding results from the fact that it looks, when we read the physics books, as if what must be being said is that “all reality consists of atoms” or “all reality consists of physical forces and fields.” The notions of force and field, in turn, would have to be understood through mathematical formulae. But what is being said is only that reality, conceptualized in a certain way at a certain level of abstraction, is to be understood as a set of forces and fields.

This misunderstanding arises in part at least because of the way in which knowledge has been subdivided. The physicist does not, when writing an article for The Physical Review (or even for Scientific American) explain just what methodology produces the level of abstraction at which he works. No one does so because it would be necessary to say the same thing in every writing and the physicist supposes that everyone already knows the writing is a
specimen of physics, not a prose poem modelled after the philosophies of Coleridge and Wordsworth.

The prestige of physics and the consequent prestige of its particular level of abstraction derive from something else: our power over nature comes, above all, from applying knowledge obtained at this level. A poem by Wordsworth may well give deeper insights into nature than a dozen issues of *The Physical Review* or a whole year’s issues of *Nature*, but it adds nothing to our power. In De Koninck’s view, if we ignore the concrete reality of nature we distort, as we shall see, our relation to the universe as a whole. But the immediate effect of distancing ourselves from concrete reality is more devastating. We become preoccupied with the shells of things and with the aspects of them through which we can manipulate them. The title of *The Hollow Universe* is to be taken literally. It describes the universe as seen by science. We forget that things have insides, that they have a perspective which is their own.

For nonliving things, we have no way of approaching them from the “inside” except in the special sense that their inner essence is given by their place in the divine scheme of things. We must not, De Koninck thinks, forget that the things of the world have being, that their being comes from God, and that, therefore, in one sense, what they “really are” can be understood only if we see them as expressions of the divine intellect and will. But for living things, we can grasp that their inner nature is given in part by the kind of consciousness they have.

When in *The Hollow Universe* De Koninck talks about the “lifeless world of biology,” he is talking about living creatures seen as abstractions. Their inner life is, after all, what makes them alive. But even unconscious living things have a form of organization which focuses their environment in a way which makes it sensible to talk of their point-of-view as understood “from the inside.” De Koninck reminds us that we like to go to the zoo to see the animals. We would not have the same attitude to a collection of stuffed animals, no matter how “lifelike” the taxidermist had made them.

What is being developed in *The Hollow Universe* is an incipient natural theology, and more of its nature will emerge as we go along, but here it is worthwhile to notice the mainspring of its development: the inner being of the objects of nature is evidently determined by their relation to the ultimate reality or being-as-such, that is, to God and to providence. When that inner reality becomes aware at the different levels appropriate to different kinds of
living things, it is, of course, the eternal being itself which is being expressed through it just as it is the eternal being itself which is expressed through every act of creation. If man is made in the “image of God” it is because the inner being of man is expressed through knowledge and because, in knowledge, we, in our turn, can reproduce the whole universe. But “reproduce” is the right word. Nature is not our creation. It may seem to be if we mistake our own abstractions for the concrete reality. But what we cannot do is to create the concrete world for ourselves. The concrete world is given, and the evidence that it is given is in the fact that the original matter from which abstraction produces science is always richer than the abstractions.

These considerations, inevitably, bring us to the third element in De Koninck’s nature philosophy: the workings of the human intellect. It is not just that the given is never exhausted by our abstractions from it. In addition, our place as knowing beings suggests to De Koninck that nature and knowing beings are so designed as to go together, and so designed as to be unintelligible without one another.

Sir Arthur Eddington, about whom De Koninck wrote a dissertation, had been surprised to find that “God mathematicises”—to find, that is, that our mathematical formulae are able to grip reality. De Koninck was not so surprised by this. Mathematics itself is the result both of abstractions from experience and of transformations within the logical apparatus with which we confront reality. That it should give us power over nature may be surprising, but that it should grip nature is not surprising unless either our experience is delusory or our logic is not itself a natural order. (This last possibility is a vexed one which, however, seems not to have troubled De Koninck himself unduly, probably because he accepted that physics had anyhow proved that mathematics does grip reality.)

The explanation for the good terms on which intellect and reality find themselves lies, for De Koninck, at a deeper level. Curiously, for instance, there are properties of things which are genuinely discovered only by a combination of our senses. What did doubting Thomas learn by touching the Jesus whom he saw? Nothing, we might think. And yet it is characteristic of the real as opposed to the illusory world that touch confirms what we see. We do not touch what we see or see what we touch. Rather the property of being an extended, solid thing is the property of having a certain appearance together with a certain feel. We act in the world and learn about it in a way which is
quite different from introspectively imagining it. But this involves a combination of sense and intellect—of grasping characteristics and of ordering them intelligibly. The sensible and the intelligible do come linked according to De Koninck, despite the enlightenment philosophers. It is just that the abstractive function was not clearly understood by those philosophers.

To make all this work De Koninck used a good deal of the traditional Thomistic and Aristotelian apparatus. He regarded the senses as recipients of actual qualities in the world, and the intellect as providing a foundation for their intelligibility as well as an activity which enters in different ways into knowing and doing. Intellectual activity enters in different ways into knowing and doing, but does not itself, on his view, distort reality. De Koninck’s justification for it, ultimately, is just that it all seems to make the system fit together intelligibly—and, finally, that it enables us to keep the insights of the sciences while not dehumanizing ourselves. De Koninck keeps the notion of the concrete object as something prior to and not finally dissolved by the sciences—though something the sciences can and do throw much light on. Thus he preserves the natural world as the arena within which the traditional Christian dramas of life, death, resurrection, and confrontation—even miraculous confrontation—with God can still take place.

3. Science and Religion

Students find it curious—even paradoxical—that a man who devoted himself to the study of the intellectual foundations of modern science should also have played an important part in the discussions which led up to the promulgation in 1950 of the dogma of the bodily assumption of the Virgin Mary. De Koninck, though he once said in print that he understood the embarrassment of those Catholic intellectuals who found the promulgation disturbing, felt no unease whatever. He believed that a universe which works by divine providence can also be a universe which lends itself to explanation by scientific laws. These beliefs had both a negative and a positive aspect.

The negative aspect emphasises a certain kind of independence between science and theology. It is not unimportant in De Koninck’s philosophy, but it does not account for its originality. Certainly, given that physical laws are widely regarded as probable rather than certain, given that at