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Question: To what extent in your own intellectual development was your familiarity with science an aid? Did it help to establish the critical realist position? What is the role of chapters 2-5 of *Insight* in the enterprise of self-appropriation?

Lonergan: There are three questions there, and we will take them in turn. And first, my familiarity with science. Well, really it was Fr Eric O'Connor's familiarity with science. I had some knowledge of mathematics, a grasp of the irrelevance of a fresh-air course on physics. We had five hours a week in second-year philosophy that did not presuppose calculus or analytic geometry; and ability to read such a book as Lindsay and Margenau and re-express it in terms of insight. But that is where Fr O'Connor comes in: I was teaching theology at the L'Immaculée Conception in Montreal, and he was teaching mathematics at Loyola and quantum theory at McGill in the early days of the Second World War. And I asked him how his math classes were going, and he said badly. I asked, was he using the formalized methods, and he said yes. And I said, Give them the insights, and they will be able to figure out the rest for themselves, and it worked. So we got along well from then on. I would read a book like Lindsay and Margenau and put it in terms of insight and ask, Is that it? And he would say whether it was or it wasn't, and that was an enormous help. That was my familiarity with science.

I was also helped by reading H.B.W. Joseph's *Introduction to Logic*. He was an Oxford Don who always gave the people he was giving the tutorial to, at some time in their time with him, the question, What evolves? The first part of the book was deductive logic, and from then on it was method of science, and it was more or less Mill's methods, but there was no adoration of Mill's methods. The method of agreement and difference was illustrated by a Don who each evening ran around the quad a number of times and then came into his rooms and had a drink of black coffee and wasn't able to sleep. So the first night, in applying the method of agreement and difference, he gave up the running around the quad and kept the coffee, and it was just as hard to sleep as ever. So the next night he gave up the coffee and ran around the quad and was able to sleep well. And so he was able to figure out from that which was the cause.

Fr O'Connor was teaching quantum mechanics at McGill at a time when the textbooks, at least those available in Montreal, were just simple occasions [?] of quantum theory, and he had to work back to what really was going on from the indications and the surmise of the textbook. And you had to be a pretty good mathematician to do that.

Secondly, did it help to establish a critical realist position? Well, it prepared the way; it certainly helped. It eliminated the one-track notion of knowledge, taking a look; and if you want to talk about intellectual matters, well, that's taking another look; this time you are seeing a universal, a concept; knowing is objective because you take a look; and that is naive realism. And if understanding has anything to do with it, it is a long time before you understand anything at all, and a still longer time before you are certain of anything. And human knowledge is not simply a matter of taking a look. It is a lot of other things too. If you understand science as developing understanding – the scientists usually don't understand it that way – you have a breakdown of naive realism.

Another component in it was [Peter] Hoenen, who studied physics under Lorentz, of the Lorentz-Einstein transformation. He was appointed professor of cosmology at the Gregorian, and

Lorentz said, 'I've lost my respect for the Society of Jesus, putting an intelligent man like Hoenen professor of a thing like cosmology.' But cosmology hung on at least till the Second World War. It was a rearguard action in favor of Aristotle's physics, with minimum modification. Well, anyway, Hoenen on geometric knowledge would use things like the Moebius strip, which is a matter of taking a strip of paper and giving it one twist and gluing the two ends together. You have something that has only one surface, and the proof of it is that you can start drawing a straight line down the middle of the strip and it will go along both sides without lifting your pencil from the paper. There is only one side to the Moebius strip. Well, where do you see the universal there? That was the sort of question he raised. He expressed it, however, not in Thomist but in Scotist terms. He held that this shows that intellect not only abstracts terms from phantasm but also the connection between terms. Aristotle and Thomas held that you abstracted from phantasm the eidos, the species, the idea. And my first clue into the idea was when I was reading a book by an Oxford Don by the name of Stewart, who in 1905 had written on Plato's myths and in 1909 on Plato's doctrine of Ideas. He explained the doctrine of Ideas by contending that for Plato an idea was something like the Cartesian formula for a circle. That exemplified an act of understanding to me, and the idea was getting what's in behind the formula for the circle. So you have something in between the concept and the datum or the phantasm. That was the sort of thing that you can't hold and be a naive realist, because understanding is a hit and miss process. Insights are always a dime a dozen. I once gave a talk to psychiatrists at Halifax General, and at the end of the talk one of the doctors said, 'Our patients have lots of insights. The trouble is that they are wrong.' It was perfectly true; most insights are wrong. You have to have a lot of them before you get something that's worth having. Hoenen's stuff also threw further light on Hilbert's implicit definitions. The trouble with Euclidean geometry is that it proceeds not merely from the definitions, the postulates, and the axioms but also from the diagram. To eliminate the diagrams Hilbert used implicit definitions. He defined straight line and point in one sentence. A straight line is determined by two points, and two points determine a straight line, so that an ordered pair can be a point, and a first-degree equation can be a straight line: not merely represent a Euclidean straight line, but be what is meant by a straight line; and he worked out Euclidean geometry that way. It was an axiomatic presentation of Euclidean geometry; this was about 1886, Grundlagen der Geometrie.

The process, getting to critical realism, was something beyond insight. There the first step was Newman's illative sense. When I was between second- and third-year philosophy, I read the *Grammar of Assent*; well, I read the whole of it once, and the juicier parts, the more theoretical parts, about six times, and I realized that this was something that means something. That was the first step.

The second step was a friend who was with me in the scholasticate when I was studying theology at the Gregorian, Stefanos Stefanu. He was an Athenian who joined the Sicilian Province and studied philosophy under Maréchal at the Jesuit scholasticate at Louvain, when Maréchal taught psychology and the other professors taught Maréchal. So I got Maréchal through osmosis from Stefanu. We prepared our exams together, and the theses meant very, very little by the time you figured out what they meant – they were easier to prove that way. And he told me that human knowledge was discursive. You know when you are saying something. In other words, human knowledge emerges when you arrive at the judgment, and a judgment is not simply having a nexus between terms. Any hypothesis includes a nexus between terms. It is when you are positing the nexus between terms, when you are affirming or denying a nexus, that you arrive at the judgment. Of course, it is good Scholastic doctrine that *Veritas formaliter est in*

solo iudicio, truth formally is found only in the judgment. And that put me into a Scholasticism, but it put objectivity in a place. I had rejected naive realism, but I had put objectivity up in the judgment, and that is one form of critical realism; it is not the only form, but we will come to that presently.

The third point was the role of chapters 2-5 of *Insight* and self-appropriation. Well, chapters 2-5 are part of a phenomenology of knowledge. You have a phenomenology of knowledge in mathematics in chapter 1; of physics in chapters 2-5; of common sense in chapters 6-7; of knowledge of things, which haven't been mentioned so far, substances they are called – whatever substance means; it means all sorts of things; things in chapter 8; judgment in 9, 10, and 11; the proposition that is affirmed, the motive for affirming it, and the possibility of making a true judgment, 'I am a knower,' in chapter 11. But we get to metaphysics only in chapter 14, and that is contrary to the great Scholastic principle, which is to start from metaphysics; that is the fundamental science. If you start from metaphysics as your fundamental science and have the average cock-eyed notion on knowledge, then it will be incorporated in your metaphysics, and once it gets there you are never going to get out of it, because any other theory of knowledge would destroy your metaphysics, destroy your morality and your proofs for the existence of God, and so on. You are really up the proverbial estuary.

This raised the question, Am I an idealist? You don't make this transition without being aware of it and finding it very strange. And if you haven't found something very strange that really upsets where you were before, you are not with me. It detaches cognitional theory from epistemology, and epistemology from a presupposition of metaphysics, and it is a gradual process of what the French call eliminating the stupidity that we pick up so easily. That is the role of that stuff in the enterprise of self-appropriation. You discover that it is quite something to know what you are and what you are doing. And it puts first of all the question, What am I doing when I am knowing? which is an empirical question. It is not a matter of any argument or theory. It is an empirical question, and you ask it – what am I doing when I am doing mathematics? what am I doing when I am knowing physics? what am I doing in my commonsense knowledge? what am I doing when I judge? and so on. And once you have a cognitional theory, you have the basis for an epistemology: what are the conditions of knowing anything? And when you have those two, you have the basis for a critical metaphysics of proportionate being, because any of your metaphysical assertions will run parallel to some element in your cognitional theory. You have an empirical basis, not empirical in the sense of what is out-there-now that you can put your paw on, but in the sense of something in-here-now that clicks inside you. But it has to click, because if you haven't had the click, you are not going to get anywhere with Insight.

Question: Has your viewpoint on the philosophy of the natural sciences changed at all since writing *Insight*?

Lonergan: Well, I've never had a philosophy of natural science. I've had a phenomenology of natural science. My views on the subject have enlarged. I can get a method of natural science out of my cognitional theory. In *Method in Theology*, I had to develop what goes on when you are interpreting a text, what goes on in writing history, what is the difference between critical history and pre-critical history. And what is the relation between history and human living? The relation in my mind is what Carl Becker says: the function of history is not to enable you to predict the figure; it helps you to face the future.

My present position appeared in *Studies in Religion/Sciences religieuses*, a Canadian theological journal, in the fourth number of the sixth volume, 1976/77, pp. 341-55, entitled 'The Ongoing Genesis of Methods.' There I start from Aristotle's idea of method, as represented in the Organon, and the distinction between the creative work of the Organon, which doesn't quite satisfy what science is, and the actual practice of Aristotle in his other writings. And then modern science, Butterfield on The Origins of Modern Science up to Newton; and after Newton, Maxwell and his equations of the electromagnetic field, Einstein and his relativities, quanta i.e., the reinterpretation of the statistical. Einstein would never accept quantum theory because God doesn't run the universe with a dice box; probability theory cannot be knowledge of reality; it is just a cloak for our ignorance: overturning that view. And that produces, going on into history, philosophy as cognitional theory, epistemology, and metaphysics: what am I doing when I am knowing? why is doing that knowing? and what do you know when you do it? And that enables you to move on into other methods. You not only have a diversification of the empirical method, in the sense of an appeal to sensitive data, but also empirical method in the sense of understanding what was going forward in the past. No one knows the history of his own time. The soldier in the thick of the battle doesn't know what is going on in the battle; and the commander in the field doesn't know the relevance of the battle to this stage of the war. And taking part in the war and being the general and knowing all that occurs in the war and knowing just where things are going and what's happening and what can happen and what can't happen and so forth has nothing to tell you about the significance of winning or losing the war. That's further. History is a matter of putting things together that the man on the spot, the man of the period, does not know. No one was in a better position, probably, to write about the Second World War than Churchill. He was right in the center of things in England, in touch with the various allies and so on and so forth. He had all the secret information, and he wrote six volumes on the subject. Well, that is just one source on the history of the Second World War, and a lot of other people have written on it, and the historian is the person who can put all these things together and reconcile them according to his viewpoint; and there are a lot of viewpoints, and lots of historians, and the process goes on. The purpose of that paper was to move into the relationship between theology and religious knowledge, study of religion.

The rejection of the deductivist view is not the rejection of first principles. But for Aristotle, knowledge of first principles, knowledge of principles, is not a matter of insight. It is a matter of wisdom. We will have more on that on Thursday night. What is basic in Aristotle is not the Organon. It is books 7 and 8 of the *Metaphysics* and book 3 of the *De Anima*. An enormous text has been written, published at his brother's expense, by a Swiss Jesuit, to the effect that 80% of the Aristotelian corpus was written not by Aristotle but by his disciples. Well, who was the intelligent man? The intelligent man was the one who wrote books 7 and 8 of the *Metaphysics* and the third book of the *De Anima*. In the seventh book, he discusses, What do you mean by *ousia*? and it turns out, What do you mean by 'what?' And the answer is you mean why. And the answer to the why is the form. Why is this a man? The soul, the human soul. If it had the soul of a giraffe it would be a giraffe, and it would grow that way, and so on.

Question: Why do you think reductionism is so appealing a worldview to many scientists? How would you dialogue with a reductionist?

Lonergan: Well, on the one hand, there is the traditional opposition between philosophy as represented by the Aristotelians up to the breakthrough with Newton. During that period the

scientists made all sorts of discoveries, from the fourteenth century on, but they also were Aristotelians, and they were expressing themselves in Aristotelian terms, more or less, and the scientific people would tear them to pieces because of that mixture, but the scientific people did not have something as comprehensive as Aristotle, and they weren't really able to defend themselves. It was when Newton provided universal gravitation that they began to see that you could have a comprehensive view, and they were able to stand on their own feet, and they have been doing it more and more ever since.

There was that traditional ongoing opposition. An opposition between method and Scholasticism did not exist until the Augustinian/Aristotelian controversy towards the end of the thirteenth century. Before that the theologians had a method, and scientists such as Roger Bacon had a method, and both of them were proceeding methodically. But after the Augustinian/ Aristotelian blow-up, they reverted to the deductivism of the *Posterior Analytics*, and they knew that by heart, in the most thorough possible way. Ockham has the admiration of modern logicians, symbolic logicians; it gradually dwindles down to nothing; you couldn't really prove anything to be true.

Now there is that traditional block. But also there is the point that reductionism blocks off further questions. The one thing that is certain is science, because everything else is reduced to science. It makes the scientists top dogs. You have something the same in linguistic analysis. If you want to tell a linguistic analyst anything, well, he will put it in terms of linguistic analysis and then tell you what the different analysts have said on this and that and so on, and you listen. It is quite a technique. And the advantage to it is that they block off further questions; they shut off the uneasy conscience. Anything that isn't grounded in science is ideology.

I believe in the Province of Quebec at the present time the Catholic school commissioners are having a hard time because the government wants ideology removed from the programs, and is very hard for a Frenchman to be illogical. The English don't mind policies; you can get around things, and so on. The Latins have a different background. We will be hearing from Sebastian Moore shortly on Ernest Becker's human living based upon buttressing self-esteem in his book *The Denial of Death*. And science, and reductionism as making science the ultimate, blocks off the uneasy conscience.

Again, they are unaware of intelligence as a personal experience. When Kuhn wrote his *The Structure of Scientific Revolutions*, there was a Festschrift written mostly against him, and they looked upon Kuhn as irrational. All these jumps in development – he was just being irrational. What is being rational? Well, it is the accumulation of tiny observations and getting them together, and the accumulation of measurements and getting them all together, and that's it; and it is a continuous process. There are no jumps; that would be irrational. But what intelligence does is jump and then verify. And they are unaware of conversion.

In the States, according to fundamental documents, there is to be no religion established by law. But what has become established by law is the income tax; and if you have an income tax you can't have an educational system that satisfies individual needs. We will come back to that in the further question on why institutions are so unsuccessful.

'How would you dialogue with a reductionist?' Well, you listen a lot for a long, long time. The purpose of reductionism is to eliminate the dialogue. 'This is where I stand.' And you need a very sharp axe to get any sort of a place where you can apply a lever to lift the earth.

Question: In chapter 20 of *Insight* you spoke of love as willing the good of a person. Would you modify that way of speaking about love in light of your more recent thought?

Lonergan: Well, first of all, willing the good of a person: *Insight* is written in the language of faculty psychology, which presupposes a metaphysics; but it is doing intentionality analysis. I want to modify that use of the word 'willing,' because it presupposes a faculty psychology. Willing the good of a person: well, where does that come from? It comes out of Aristotle's question, Should a man love himself? If you mean by 'love' loving in the vulgar sense, then he shouldn't; but if you mean by 'love' willing that a person have the very best things in the world, wisdom and virtue, then if a man doesn't will them for himself he can't be a friend either to himself or to anyone else. I think that it was Gustave ? in the history of French literature quoting somebody remarked that it would have been terrible to have had Voltaire for an enemy, but it would have been worse to have had Rousseau for a friend.

So, willing the good I now talk about as self-transcendence, willing self-transcendence in oneself and in others. Only, self-transcendence always has to be done in the self and largely with God's grace by the self. We will come back to that again on Thursday night.

Question: In a footnote in the epilogue in *Insight* you mention that personal relations could only be studied adequately in the larger and more concrete context of the collaboration between humanity and God. Could you give some pointers or suggestions as to what that larger study would entail?

Lonergan: Voegelin: the Pittsburgh Seminary in 1971 celebrated its 175th anniversary and put out a book of the papers read, and they were by top people, and one of them was by Voegelin, on 'The Gospel and Culture,' and his question was, Why was it that the gospel succeeded in being preached to the corrupt Greco/Roman world and it modified the subsequent history of Europe, and at the present time the gospel can't get a hearing? His answer was: a study of Plato and Aristotle, which we shall go into a little more fully on Thursday night. And again, there is continual talk about the surd in *Insight*, and the surd in the personality and sin as a surd, an irrationality, and chapters 6 and 7, especially 7. And a surd is something you don't mix up with other things. If you have five plus the square root of three as equal to A plus the square root of B, then B has to equal three. The surd and ordinary rational numbers don't mix. Ricoeur has it in the human field when he speaks of two dialectics: the dialectic of suspicion and the dialectic of recovery. Masters of the dialectic of suspicion were Nietzsche and Freud and Marx; and the dialectic of recovery is to find out what is right in the human mix-up, the human ideas. And that double dialectic of suspicion and recovery is the sort of thing you have to get into if you are studying personal relations. Why do they go sour? What helps them along? And so on and so forth. So a larger study brings you into historical theory, on the one hand, and theology, moral impotence, on the other. I did my doctoral dissertation on moral impotence. Literally it was a question on operative grace, but what does grace operate on? How do you operate on freedom? Well, it is only when a person is suffering from moral impotence that an operation on his freedom is a good thing, to remove the impotence.

Question: Is religious conversion a movement from above downwards? Is that true of moral, psychic, and intellectual conversion as well? If intellectual conversion does move from above downwards, why is it that the program of self-affirmation set forth in *Insight* seems to move from below upwards?

Lonergan: Well, moving upward and moving downward presupposes that you are thinking of all of them at once. In the order of exposition you begin from what's simpler, intellectual conversion, and you move on towards moral conversion and then to religious conversion. But in the concrete it is usually religious conversion that happens first, and that enables people to venture into moral conversion. As the Christians, up to the Council of Nicea, struggled to get hold of at least a dogmatic realism, it takes a long time for a religion to get people into an intellectual conversion, even taking it on faith as they did at Nicea. So the point about this moving upward and downward is that contrast between two movements. The two movements are equivalent, but which comes first in the order of time, which comes first in the order of logic, in the via synthetic, the way of synthesis? This starts from the smallest and works up, or you can start with the biggest and get its implications and work down. Tied in with this is the whole business of socialization, acculturation, and education; in which less and less you are moving from above downwards and more and more you are moving from below upwards. Like somebody said, the first time a person studying history is able to think for himself is when he is doing a doctoral dissertation. You have to have command of so much factual material before you begin to talk in a way that you are teaching people something.

Question: [Bob Doran suggests that you use the phrase] 'intellectual conversion' in two different ways: the intellectual conversion that occurred at Nicea and the intellectual conversion that emerged somewhere between 1935 and 1937 in the explicit self-affirmation of the knower. Are these really distinct meanings of intellectual conversion, and if so in what ways are they related?

Lonergan: Well, it is in one of my Latin texts that they are explicitly distinguished. A dogmatic realism is what was achieved at Nicea. No one in the Western Church understood what the decree of Nicea meant, and at the Council of Rimini they signed a symbol imposed by the Emperor, who was an Arian, and they thought it was all right. And Jerome commented, 'The world was astounded to wake up and discover it was Arian.' It was the Western bishops at Rimini who had signed this decree. In the East it wasn't an awful lot better. Well, at least the Arians up to about 361 more or less ran the show, kicking bishops out of their sees. Athanasius lost his see four or five times, and the man who was taking it from him was George of Cappadocia. We talk about the Hellenism in the Fathers. Athanasius admits that Arius was a Christian; he was a heretic but a Christian. But George of Cappadocia was just a Hellian. So the Hellenism of the Fathers was hardly skin deep.

So: dogmatic realism – it is an implication of your faith. You are believing something, and what you believe is accepting the proposition. Now, everyone believes. Berger and Luckmann, *The Social Construction of Reality*: no individual constructs reality; most of it is a matter of belief. Scientists don't spend their time checking the results of other scientists; they take them on faith until something suspicious turns up and then they go to work. Something has to be received, and when something is received they just keep on building on that, and if they get into difficulties and they get a sufficient following, well, they may get a hearing. Max Planck in his autobiography asks the question, When does a scientific theory become acceptable? Is it because the hypotheses have been so clearly formulated, and all its suppositions listed so accurately, and all its implications set forth in detail, or all the implications verified by experiment, beautiful series of experiments? It is when the present generation of professors retire from their chairs. In other words, theology is not the only field in which things are sticky. With critical realism you are on your own. You have found out in yourself, for yourself, that this is the

way things are in human knowledge. Dogmatic realism makes a start towards critical realism more probable. You wonder why on earth you are believing, and you get to critical realism only by a lot of work.

Question: In *Insight* you spoke of expressions of meaning, while in *Method in Theology* you speak of carriers of meaning. Comment on the differences between the two.

Lonergan: Well, the most obvious difference is about fifteen years. However, 'expressions of meaning' is a perfectly general phrase. Carriers of meaning are related to the idea of specialization in some form or other. Artists understand what artists are doing, and non-artists are not in the game; and so on in any other specialization. Physicists have a language of their own and libraries of their own, and they write books and articles for one another, and no one else can read them, and so on for any science, and so on for philosophy, and so on for theology. When you get a specialization, you get into a new world, and it is carried on by a group. There is a social aspect to it. And the carrier is the group.

Question: Assuming the fact of general emergent probability and the ontic value of the person, how can one justify physical evils?

Lonergan: Well, at least you can explain them. If the good emerges via emergent probability, well, what's only slightly probable supposes vast numbers of instances at very long periods of time. No matter how small the probability is, you move towards something that is going to happen sometime.

Emergent probability in human affairs is a matter of what's to emerge being grasped by someone's intelligence and that person persuading others and people with the push and the power and all the rest of it to come along and put across a policy or a new idea. It presupposes intelligence and good will, wisdom and virtue. And you have to wait for emergent probability to bring them about. And how does emergent probability bring them about? If people are not wise they can't make themselves wise. And similarly for virtue. If you haven't got virtue you won't practice it, and without practice you won't have it.

So physical evil provides a strong motivation for applying the wisdom and virtue that will improve emergent probability. Carl Becker states that history does not enable us to predict the future, it helps us to face the future. And finally, there is a religious motive. What the Son of God as man accepted as his lot was physical evil, and if he can do it what about us?

Question: Would you say something about how it is that so much of present institutional practices cause alienation and destruction? Where is the path to reform these institutions so that they (church, university, state) serve humanity?

Lonergan: Well, institutions run on general principles. They run on standards. They run on universals. And principles, standards, universals are all abstractions, and no abstraction is the good. Aristotle says that if you are going to have justice besides the law you need epikeia, equity, in which knowledge of the concrete takes care of the application of the law to this concrete instance. Now, when you have an institution and an institutional hierarchy, the people that know the concrete are the people at the bottom of the pile, and the people that set the standards and

make the rules and so on, they are at the top of the heap; and for ideas to move upwards is very difficult; they get a rough time.

So things are pretty bad, and what is the solution to it? It is insisting upon the importance of insight; that is the human way out; and getting people to accept that. If your Congress and your Senate consists of lawyers, and they are making ever more laws to keep their lawyer friends in work, then you will have an awful lot of laws and an awful lot of lawsuits, and people will get turned off. The alternatives are not so happy, because the difference between the universal and the concrete: in science there is basic research; there are the breakthroughs in basic research. There are the journals. There are people reading the journals, people using the latest things in the journals to write textbooks, the textbooks being accepted by institutions for courses; and that is on the theoretical side; and there is applied science after that. And after applied science there is to there is booter to find out what is wrong with the DC-10.

The universal is one thing, and from it to the concrete there are an awful lot of steps, and the bureaucracy is not the solution to the problem, and standards are not the solution to the problem, and rules are not the solution to the problem. The exception to that is the old Medieval notion of judge-made law. The judge considers the precedents, previous decisions; he considers the difference between those concrete cases and the present concrete case. And on the basis of the precedent he sets a new precedent for cases like this. That is dealing with the concrete as it emerges. It is one way out. But it is very hard to sell it to a scientific world for which the judgemade law is an abomination.