

Economics New Standard Model 8: Physics, *Haute Vulgarization*, and Future Minding

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It seems to me useful to make available—they are available as [Website Articles](#)—in the context of my two seminars of 2015, my lecture notes of 1959-60 prepared then for a yearlong course on mathematical physics, a first year honors course in University College Dublin. The set-up was such that the honors course was much tougher than the pass course, and I recall the chair asking me after a week how it was going. I replied that all was well, that I had about twenty keen students. His suggestion—quite foreign to my later experiences of teaching advice—was that I should lecture over their heads for a few weeks, thus clearing out the class, and then I would have a great year. I carried through nicely with about ten students. Later that week the professor went to the honors mathematics second-year classroom and announce to those present, “there’ll be no second-year honors class this year.” Again, quite a peculiar attitude towards students and respect for standards.

I look back now at the year of teaching in that field and realize that it was unique, really the only good year of teaching I had in my strange career. Why? Because there was an ethos of climbing in meaning. After that year and I moved into the world of philosophy and theology, where there was no seriously parallel ethos. A musing on that absence is a key usefulness of my providing now my notes for that class.¹

I had other classes of course: a first year ‘pass’ commerce class of about 80 people; a second-year class of over four hundred students in engineering mathematics; two graduate course for a group of four sharp students, one course in special relativity and the other in advanced stuff of differential equations. I can intimate neatly the ethos issue by noting that my good students in that first year course knew, felt, that not just the graduate classes I was teaching were way beyond them but that the next class in their own course was beyond them. The challenge of the class was to move them into the climb towards a comprehension that would make them capable of tackling the next class and the next class, and the next years.² The issue, increasingly obvious to them, was understanding, and an

¹ All along here I slip past difficult topics that emerge from simple parallels. The year following this year of lecturing, I found myself in theology, where the 2nd, 3rd, and 4th year students attended the same class. Obviously, there was an ethos of, well, commonsense, even complacency in an established religious meaning. But the reach of my suggestions and my criticisms go much further, with a farness that requires generations of cyclic collaboration to bring into minds and hearts. I return in the final footnote here, note 26, to this unimaginable challenge.

² None of the class would dream of venturing into my graduate class, a 4th year course. But, as I note immediately, advanced issues could emerge and needed to be answered with appropriate aesthetic heuristics. Contrast this with the situation mentioned in the previous note.

increasing control of meaning. I had never previously heard of *haute vulgarization* then, but there was a spontaneous wisdom in dealing with the future stuff and with questions that emerged in the class that I now think of as grounding positive *haute vulgarization*. So, we labored through my illustrative examples—that is the character of my notes—and sometimes a larger question would emerge, to which I would give an answer that I now luminously identify as positive *haute vulgarization*: lifting them to a large, exciting view of the heights they could reach by steady climbing. This point is important to pause over, but best leave that pause till later: what was this view of theirs, what is your view of their viewing and of your future viewing, our future viewing? The later pause, indeed, is to be the centerpiece of my second autumn seminar, “The Minders’ Reach for God,” when we will reach for a fantasy regarding and guarding the poise of spontaneous wisdom of early societies in relation to elderhood.³

I return, therefore, to some general comments on my lecture notes. They are not the lecture notes but work done prior to the lectures to ensure my competence. The lectures were given without notes, yet they included an accurate presentation of the contents of the notes and the prescribed texts. Other topics came up, such as problems with the exercises I had given them to do, usually from the texts being used. I have only a faint memory of those texts: I noticed e.g. references to “Loney” and, no doubt, the text is traceable. It would be found to contain exercise-problems at the end of sections: sometimes quite tough problems. Without doing them, the class would not have grown in explanatory competence. The class, of course, had to be competent in the calculus of second order differential equations: that was the assumed colored of the honors course.⁴ The examination structure revealed the ethos of climbing to understanding: we did not putter along with little exams during the year or even exams at Christmas. The set-up was that a final exam leaned on competent understanding: there was the expectation that out of ten problem-questions the really good students could handle about half. So, a first honors was 45%. One could get a pass with 18% and a second honors with 30%.

³ But the general task is drawing attention to the problem of cherishing the inner word, e.g., reading with one’s own inner word ‘in mind.’ Think, for example, of your reading of *Method in Theology*, chapter 2, section 4: were you reading the activities of your psychic skin, dwelling in the tent and content of your luminously attended-to mind-desires? This is a challenge for these next centuries, a point emphasized in the second half of my *Sane Economics and Fusionism* (Axial Publishing, 2010). Add, now, musings about leaving today’s luminosity acceleratingly behind in an endless zooming.

⁴ There was and is something odd about the assumption of pass courses, or indeed any course that leans on the memorization of technique as grounding educated competence. I met such a problem, e.g., in my second-year engineering class. I recall one day pausing over some problem of a rotating drum and asking the group whether they really knew e.g. why $d(x^n)/dx = nx^{n-1}$. Solidly they shook their heads, so we spent two days doing the fundamental theorems of the differential and the integral calculus. I certainly did not rescue most of them from the bad schooling Lonergan talks of on page 145 of *Topics in Education*, CWL 10. But there was at least a nudge towards seeing how they had been cheated, were still being cheated.

There was achieved, with some luminosity related to that good cultural ethos, a modest competence. The class could handle two-body problems with a variety of forces, initial conditions, etc. The three-body problem was not in our ballpark. Still, what we did led to a glorious and illuminating competence for the students. For instance—and this is a question I foolishly raised with a Lonergan group once—how do you [yes, you!] get from Kepler’s three laws to the inverse square law? It is a matter of juggling neatly—see page 19 of the second part of the course⁵—with the right differential equations. The culture that grounded that illumination seems quite foreign to present educational patterns.

It was my recollection of that page that led me back to those lecture notes in recent days. What I thought of was the challenge in economics to be luminous about what I call “the swimming pool” character of Lonergan’s analysis. Might Newton’s laws, simply applied to two bodies, be a decent parallel to the simple analysis of orderly waves in a pool? Then the application of Lonergan’s heuristics of concomitance to concrete situations in villages and nations would be better recognized as being, literally, a quite different ballpark, but a ballpark that needed to be entered.⁶ Yet I have little confidence now in the value of the paralleling: the climb in physics needs to be seriously attempted, be it in hydrodynamics⁷ or planetary motions.

The notes illustrate very concretely the serious attempt needed, and I am led here to invite a pause over varieties of *haute vulgarization* that can give the illusion of competence, of shared meaning.⁸ Think, then—or now of course—of the first seven chapters of *Insight* in this context. Might we really think of them as *haute vulgarization*?⁹ A bit of a shock, this

⁵ I added the page numbers before scanning the two little volumes, the first on [statics](#), the second on [dynamics](#). Further, I placed the numerals to the right in the second volume and in center page in volume 1: a help to avoid confusion. The scanning enlarged the original small copybook pages of 8 inches by 6 and a quarter.

⁶ This is the focus of the seminar on the move to economic science. A neat context for the trickiness of the work in the small fragment on “Economic Control,” *For a New Political Economy*, CWL 21, 211-212: “there is a high degree of indeterminacy” (211, end); “despite the almost baffling indeterminacy, it remains that there is a definite dynamic structure” (last paragraph of piece). Lonergan used the analogy of accumulating balls on baseball bases.

⁷ The parallel with hydrodynamics is appealed to in chapter 7 of my *Piketty’s Plight and the Global Future* (Axial Publishing, 2014).

⁸ Read seriously and personally Lonergan’s blunt comments on *haute vulgarization* in CWL 6, 121 & 155.

⁹ Here again we have a complex and deeply personal question, to be faced in the second seminar on the “character” (*Method*, 356, line 12: recall *Magna Moralia*, paragraph one) of minders. It is a matter of detecting, within your best W_3 context, your neuromolecular disposition to ontic and phyletic inner-word progress. Concretely, one may think of the problem of section 1 of *Insight* chapter 17 as a problem of lifting all *haute vulgarization* into positivity.

suggestion? But let me go back to presentations in and of physics that can help us along. I think of three such presentations: those of Joos,¹⁰ Feynman,¹¹ and Schrödinger.¹²

There is paralleling of Joos' book, *Theoretical Physics*, with *Insight*, a very positive paralleling that I have made for decades. Joos was a handy companion of my graduate studies in 1955-56, compendiously presenting stuff done in previous years, such as my student version of what I lectured on from the notes given here. What if I had read parts of that book in my first year (1952-53) of study? Like my students of 1959-60, I would have been inspired: but I would have had no illusion about competence. There is no replacing the detailed intussusception that grounds the adequate inner word.¹³

What of Feynman's three volumes of lectures? The story of the organizing, giving and publishing of the lectures is given in decent detail in *Richard Feynman: A Life in Science*, and I would like us to begin thinking about them by musing over an early paragraph of the presentation:

In spite of its success as a world centre for research, at the beginning of the 1960s physics at Caltech had a problem. Undergraduates were still being taught courses along the lines laid down in the 1940s, learning a great deal of classical physics in their first two years, but only coming on the excitement of topics like relativity, quantum theory and atomic physics in their third year of study, by which time their brains had been numbed by the dullness of the first two years.¹⁴

Feynman was persuaded to tackle the job and he lectured, with little notes but with great preparation, the million words of the volumes. They are a magnificent read for a professional, especially the last volume, where he took the risk of trying for an elementary

¹⁰ Georg Joos, with the collaboration of Ira M. Freeman, *Theoretical Physics*, Second Edition, Blackie and Son, London and Glasgow, 1951. This was the edition that I used throughout my graduate studies in the mid-1950s.

¹¹ I focus here on the three volumes, *The Feynman Lectures on Physics*, edited by Richard Feynman, Robert Leighton and Matthew Sands, Addison-Wesley Publishing Company, 1964.

¹² I am thinking here of Schrödinger's classic little book of 1950, *Space-Time Structure*, Cambridge University Press. In section 1 of my "Elevating Insight. Space-Time as Paradigm Problem" (*Method: Journal of Lonergan Studies* 19 [2001]) I deal with problems in the book and place these problems in the larger context of cyclic collaboration. The same context is needed for a full grip on the present little essay. A positive answer regarding the need for the little exercises of my lecture notes can only come through the massive pressures of recycling that focus uncomfortably on the mind in the exercises of Lonergan's 1833 Overture, lines 18 to 33 of page 250 of *Method in Theology*.

¹³ Lonergan is decently clear on the dynamics of competence "without tears", and its need for symbolization. See *CWL* 7, 151. But here we point to a deeper clarity of luminous self-possession.

¹⁴ John Gribbin and Mary Gribbin, *Richard Feynman. A Life in Science*, Plume Penguin, 1998, 173. One could well pause over the last statement. There is nothing dull about classical physics, but teachers can be dull and presentations can be conceptualist with memory work abounding.

presentation of quantum theory.¹⁵ But “the lectures failed the less able students, at least partly, and Feynman’s course did not become the basis of the formal teaching of physics undergraduates at Caltech (or, as far as we are aware, anywhere).”¹⁶ I have been asked occasionally about their possible personal use as an introduction to physics. My broad answer is—might you not have expected it?—that it would be better to start with something closer to my own elementary notes, even starting with battling seriously through [Wealth of Self and Wealth of Nations](#), chapter three and, e.g. slowly getting a serious luminous grip, in little ways, on “correlations of correlations of correlations”¹⁷ in scientific searchings.¹⁸ I return to this problem of little ways in the conclusion.

Last in my list is Schrödinger’s little book, because it leads me forward to chapter 5 of *Insight as haute vulgarization*, and towards the problem of and for future readers. The little book *Space-Time Structure* was a basic handbook for me in the year 1955-56: I battled continually with it, detailing its tensor equations, brooding over its suggestions. When I arrived at *Insight* a year later—the *Verbum* articles were a prior challenge—Lonergan’s volume was very clearly positive *haute vulgarization* for me. As I mentioned above, I regularly compared it to Joos over the years, but let me connect it usefully to another of my books of 1955-6, a text that was the basis of a full year’s course on complex variable: the classic Whittaker and Watson, *A Course in Modern Analysis*.¹⁹ I have often recounted my shock experience with *Whittaker and Watson*, as the book is traditionally called. Having read chapter one I ventured into the first of the long list of questions posed at the end of the

¹⁵ This third volume is quite magnificent in his honest and clear hunting for the meaning of quantum theories. My own copy of the volume, on which I spent a year, is a mess of separated chapters covered with scribbles. The volume was a great help in the struggle expressed in [Joisting 25](#), “Rescuing Quantum Mechanics.” The struggle was backed by Feynman’s advanced work [e.g. *Quantum Mechanics and Path Integrals*, edited by A. R. Hibbs, McGraw Hill, 1965].

¹⁶ Op. cit. note 14, 174. California Institute of Technology has, at present, reasonably conventional courses. It is, however, not easy to see the coverage of a decent core in the undergraduate program. The advantage we had in U.C.D. was that the degree in mathematical physics was a very focused business: one did not do literature or whatever on the side. When I arrived in Canada I was shocked to find that a ‘major’ in a subject was just above one-third of total undergraduate requirements. AND the programs were cluttered with little tests.

¹⁷ *Wealth of Self and Wealth of Nations. Self-Axis of the Great Ascent* was first published in 1974. The reference is to page 24. It is a curiosity that the stuff on the next two pages belongs to my mathematical efforts of 1953. Inverse insight was an unknown then, nor was it tolerable to me: I battled to get rid of the impossibility of counting—i.e. listing—the decimals.

¹⁸ Do not underestimate the meaning of scientific searchings. Think, for example—a topic of the second seminar on the reach for God—of the correlations of correlations of correlations that twine into the kataphatic contemplation of the claim: “We four are in an adventure of loving nOw Now noW₃.” (I give the claim a teasing fullness here!) The adventure of the loving inner word has to weave into luminous OW₃Nership a sublation of *Insight*’s little venture into relations (chapter 16, section 2) and the similar little adventure of *The Triune God: Systematics*, CWL 12, Appendix 3.

¹⁹ First published in 1902 by Cambridge University Press, yet still a fashionable challenge.

chapter. There must have been a gap between my reading and the facing of the puzzle-challenge, because I recall that when I found myself quite baffled by the first few questions I paged back to see was I really reading the questions of chapter one. The experience was a great education in reading.²⁰ The end-of-chapter questions were classic and complex, named at times by those who posed them or solved them. In the rest of that year my colleague, Lochlainn O’Raifeartaigh and I and the Professor Timmony battled on as a threesome with these puzzles, one or other of us breaking through on each. *Insight* has not such end-of-chapter classic puzzles: a great pity. Perhaps it will, when philosophy becomes a science instead of a respected “academic discipline.”²¹

Schrödinger’s little book posed such problems, but only implicitly: they were problems dealt with in chapter 5 of *Insight*. Neither Schrödinger nor *Insight* 5 had its end-list of puzzles, but I would have you note that the problems at the end of chapter 5 would have been, are to be, more twisted and challenging. However brilliant *Space-Time-Structure* is, and it is, it is methodologically opaque. So, I was quite shocked to read slowly through *Insight* 5: had I not spent a year on “Space and Time” and its structure? Yet it left me baffled, a positive *haute vulgarization* that weaved Schrödinger into a strange and higher context. Fifteen years later, I was to read the typescript of *Insight*, and felt like Salieri of the film *Amadeus*: there were few pauses or corrections. Who was this Mozart who swung way beyond Schrödinger, talking to himself in solitude, ending the symphonic effort with a paragraph that begins: “The answer is easily reached”? Might he not have cooled it a bit by saying, as he did in one sketching of the economics, “to discover such terms is lengthy and painful process of trial and error? *Experto crede.*”²²

So I weave back to my notes for those first year lectures on physics. But do we now not have a larger *haute vulgarized* context for concluding musings on humanity’s future that we can mesh it into the starting paragraph of *Insight*’s first chapter? “In the midst of that vast and profound stirring of human mind that we name the Renaissance, Descartes was convinced that too many people felt it beneath them to direct their efforts to apparently trifling problems.” Are the problems in my notes trifling problems? Do they not, rather, “form a natural bridge over which we may advance”²³ to chapter five of *Insight*, an examination of “the notions of space and time,” “a natural bridge over which we may advance from our examination of science to the examination of common sense”? Should not such exercising redeem us from our cultures deep commitment²⁴ to hold to unsound

²⁰ You will, of course, recall Lonergan’s musings on the problem of reading on *CWL* 2, 223.

²¹ *Method in Theology*, the final words of page 3.

²² *For a New Political Economy*, *CWL* 21, 12.

²³ I quote in this paragraph from the first paragraph of chapter five of *Insight*, *CWL* 3, 165.

²⁴ I am thinking here of Sorokin’s sound criticism of the twentieth century, and his identifications of sensate cultures.

sound bite meaning, romping along with the brutal eloquence and decisiveness of G6 and G10 and G20 and Gwhiz towards the neglect of apparently trivial things like the endless messing with local economies and ecologies? The effective ingesting of this question had best remain the key topic of the second seminar of 2015, “The Minders’ Reach for God.” But its actual historical effectiveness pivots on the emergence, in perhaps the end of this century, of the ethos of what I call the COPON principle.²⁵ So I wind round, in conclusion, to yet another first paragraph, the beginning of a chapter on “The Psychological Present of the Academic Community”:

If there is to be a massive shift in public minding and kindness and discourse in the next century, there must be a proportionate shift in the mind and heart of the academy and the arts at the end of this century, with consequent changes in operating schemes of recurrence from government to kindergarten.²⁶

²⁵ I have written about “Childout” principle in various places. See, e.g. [Cantower 41](#), “Functional Policy,” where it is listed third in the list of policies on page 13. The meaning of these policies belongs in the sixth functional specialty, and so is quite remote. COPON is a neat way of expressing the principle in a Communicable fashion at various levels: it brings the complex view of Lonergan on generalized empirical method – *A Third Collection*, top of page 141 - into the zones of dialogue.

²⁶ P. McShane, [Lonergan’s Challenge to the University and the Economy](#), page 1. First published in 1980, the online version is a photocopy of Lonergan’s copy, with his scribbles. So I wind round now, back to and through note 1 of this short text. The wind round for you is an ontic issue tied into the challenge of lines 18-33 of page 250 of *Method in Theology*: what I call *Lonergan’s 1833 Overture*. It is an overture, an opening, out of the groaning molecules of history to a fresh humble reaching of human care. But what might I say in conclusion that would nudge some few to seriousness about the climb out of our geopolitical mess? Might I enlarge on the character-challenge of the beginning of the *Magna Moralia* by refining the educational hopes of Schiller: “All improvement in the political sphere is to proceed from the ennobling of character”? (*On the Aesthetic Education of Man*, F. Unger, New York, 1983, 50) It seems best, rather, to home in on the simpler discomfiting challenge to philosophy and theology that is illustrated by my fourth chapter of *Lack in the Beingstalk* (Axial Publishing, 2008), titled “A Calculus of Variation.” It focuses on Husserl’s thesis on the topic, “A Contribution to the Theory of the Calculus of Variation” done under Weierstrass. (For details, see notes 10 and 11 on page 198, *Lack in the Beingstalk*.) Not too many phenomenologists work through that little opus, yet it is of significance in showing the later sad derailment of a serious thinker. The effort would help to expose the glib effete ignorance that is, in the main, twentieth century philosophy and theology. Husserl’s thesis is tough work, an unrealistic challenge for most Husserl scholars. So, round again to my little manageable nudges about elementary physics. Not too many Lonergan students are up to working through my little opus, a door to Husserl’s thesis, a start to reading *Insight*, and a path to an academic seriousness that would bring us slowly to see both the sickness of our kindergartens and the sloppiness of our governments, to “a profound disillusionment of modern man and to the focal point of his horror.” (*Insight*, CWL 3, 572), to, then, the beginnings of a new calculus of variation in a “third way, difficult and laborious.” (*Method in Theology*, 4)