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I am glad to be able to print in this issue of *Convivium* the two papers given by John Puddefoot at the weekend seminar organised by the Philosophical Society of the Oxford Extra-Mural Department. With John's permission, I have omitted the biographical section. Peter Hodgson's paper will appear in the March, 1986 issue. The Seminar was attended by about sixty people including a number of *Convivium* subscribers and everyone I spoke to thought it was a highly successful weekend. Dru Scott's book, *Everyman Revived*, was on sale, with the added attraction that buyers could have signed copies. This book will make an ideal Christmas present for anyone needing a gentle introduction to Polanyi. It combines a light touch with profound insights - Polanyi without tears - in fact! I understand from Dru Scott that the publisher's publicity has been poor, so I would urge readers of *Convivium* to try and get their local booksellers to stock it and also get their libraries to order it. It is published by The Book Guild, price £9.25, 25 High Street, Lewes, Sussex.

Dr. Andy Sanders has written to say that *Convivium* readers will be interested to know that Prof. John North has recently been appointed a member of the "Koninklyke Nederlandse Academie van Wetenschappenen" the Dutch equivalent of the Royal Society. I am sure we would all like to convey our warmest congratulations to Prof. North, who I think was a founder member of *Convivium*. An article by Dr. Sanders of Groningen University appeared in the latest issue of *Neues Zeitschrift fur Systematische Theologie und Religionswissenschaft* (27, 1985, pp 85/99), entitled Science and Religion as Cultural Systems. It is written mainly for a German public and contains an expository account of some well-known Polanyian ideas plus a little application in the field of cultural anthropology.

Mark Morelli, Editor of *Method*, the Journal of Lonergan Studies, a bi-annual journal of philosophy and theology, has written to suggest that readers of *Convivium* would find this a worthwhile addition to their libraries. He thinks that *Method* and *Convivium* are like-minded projects, "scholarly efforts to check the troubling drift of our age with openness and criticism." He draws our attention to two recent works which have explored the similarities between the projects of Polanyi and Lonergan: Joseph Kroger's "Polanyi and Lonergan on Scientific Method", (Philosophy Today No 21) and John Apczynski's "Doers of the Word: Towards a Foundation Theology based on the Thought of Michael Polanyi." (Scholastica Press, 1977) *Method* is available from Dept. of Philosophy, Loyola Marymount University, Loyola Boulevard, W. 80th St. Los Angeles, Ca., 90045, price $12 p.a.

Dr. Labia has written, drawing attention to an article by Jeffrey Gold, B.D.S., on Cartesian Dualism and the Current Crisis in Medicine, in the Journal of the Royal Society of Medicine, (Vol. 78, August 1985, pp 663/666). This discussion paper pleads for a philosophical approach and is
"pure Polanyi, if not written quite in his lucid style."

Some of you may remember Hugh Jones, who subscribed to Convivium for some years. He was Professor of Religion and Science at Mainz University and died in February, 1985, after battling with ill-health for some years.

I hope you will all look carefully at the list of subscribers at the back of Convivium and if, by any chance, you have not yet paid for 1985, may I suggest that you send your subscription for 1986 with your 1985 subscription. As you will see, the minimum subscription has had to go up to £5 for 1986, though I hope that students and those who for any reason are not at present salaried will continue to send what they can afford. We certainly don't want to lose anyone on financial grounds, but you will see from my financial 'Statement' that expenditure is currently greater than income.

I am hoping that I may have found a 'Guest Editor' for October, 1986, but as far as I know, I will still be sending out Convivium in March, 1986, and would remind you that News and Notes is only as interesting as you make it. Information about books, articles, conferences, and offers of reviews, articles and personal comment are all welcome. Convivium is a convivial enterprise or it is nothing. One of two things must happen sooner or later. Either Convivium will 'take off' and become the Review of Post-Critical Thought we need, with a circulation worthy of such a journal, or it will fold up. In March, we had 150 copies of Convivium printed instead of the usual 100, but I still have 39 unsold, so will only be printing 100 again this October.

News and Notes from Tradition and Discovery (Vol 12, No 2: Winter 1984/5, p29) William H. Poteat's Polanyian Meditations which has been shared as an unpublished manuscript but unavailable to few besides Poteat's students will be published next year by Duke University Press. James Strines reviewed Poteat's Polanyian Meditations in the Winter issue of our newsletter in 1982. This publication of Poteat's major work on post-critical thought will be a significant contribution which we will all want to read and to discuss.

Kenneth J. Shapiro author of "Validation in the Human Sciences", Tradition & Discovery, XII(No 1, Fall, 1984/85) has just published with Duke University Press his work, Bodily Reflective Modes: A phenomenological Method For Psychology. Joseph Lyons of the University of California at Davis says of Shapiro's book: "Here we have not only a new method for psychology but perhaps the first stage of a new breakthrough....Shapiro's project here...may be, at long last, a continuation of that first step that Merleau-Ponty took before his untimely death." Shapiro makes use of Polanyi's structure of tacit knowing in his project.

Bruno Manno reports on correspondence with Goutam Biswas of India who has published an article on Polanyi, "How is Knowledge of Man Possible? An
Enquiry Into Philosophical Anthropology", The Visva-Bharati Quarterly, 47 (Nos 3 & 4). The article by Biswas takes the position that philosophical knowledge of man as man has to be founded on knowledge of man as a whole and uses Polanyi's epistemology to show how this can be possible without the reductions of other approaches.

W.A. Gus Breytspraak of Ottawa University in Kansas City sent in a selection of On Becoming Carl Rogers by Howard Kirschenbaum (Dell Publishing Co., Delacorte Press, New York, 1979) that has on pp297-299 a personal account of Carl Roger's interactions personally with Michael Polanyi. The account seems misleading, however, by suggesting that Polanyi and Rogers did not share much in actual intellectual contact. It neglects the well known fact that Rogers and Polanyi share in a major conference and published their views in Man and the Science of Man in 1968. Richard Gelwick was present at some of the meetings between Rogers and Polanyi at the Center For Advanced Studies at Stanford and recalls that Rogers was more of a listener to Polanyi than a proposer of ideas, but Polanyi appreciated Roger's work for its daring refusal to reduce the study of human beings to the logic of positivist science.

Frederick Kirschenmann, a founder and supporter of the Polanyi Society, has written recently from Kirschenmann Family Farms, Windsor N. Dakota 53493. Since leaving the directorship of the Consortium For Higher Education Religion Studies in Gayton, Ohio that hosted the May conference of 1972 that led to our society and communications network, Fred and his wife Janet have been operating the Kirschenmann Farms. He is pleased with Fritjof Capra's TurningPoint, which, like The Tao of Physics, has many complementary ideas to Polanyi's views.

Walter R. Thorson, Prof. of Chemistry, University of Alberta, Edmonton, Canada T6G-2G2 has published several papers pertaining to the work of Owen Barfield and "Scientific Objectivity and the Word of God", Journal of the American Scientific Affiliation, June, 1984, pp. 88-097. He will be lecturing in Oxford this July at a joint meeting of the American and British Scientific Affiliations.

MICHAEL POLANYI - HIS AIDS & METHODS

Personal Knowledge begins with a vital statement of Polanyi's intentions. He observes that the Copernican revolution, popularly conceived as having displaced man from the centre of the universe by establishing heliocentrism, in fact did rather the opposite. It displaced man from the physical centre, but replaced that physical centrality with a rational centrality far superior to it. In place of domination by his senses man found the power of the mind to conceptualise systems with universal application, that is he transcended his physical limitations and discovered that
truth and reality lie within the compass of the human mind.

This startling reversal of the usual interpretation of Copernicus is the key to the whole book, for Polanyi sets about a revision of our understanding of knowledge based upon criteria of truth and reality which are not primarily based upon sense-perception. The scope, coherence, consistency, conceptual clarity, downward-compatibility, plausibility, promise, fruitfulness, range, openness and meaning of a theory assume an importance which outweighs mere evidence. Of course, he does not reject evidence, but he is not prepared to limit the attribution of truth and the status of reality only on the basis of lack of evidence or the existence of apparently contradictory evidence, for his own experience as a scientist had taught him that we see the world and interpret our results through theoretical filters which tend to make us see what we expect to see and interpret results as we wish them to be interpreted. In other words, the inertia of the established view, the tradition, tends to swamp new theories whether they are right or wrong.

What is the core of Polanyi's epistemology? It is not to re-establish belief as a necessary overlay to supplement the deficiencies of reason. John Locke conceived of belief in that way, "a persuasion of our own minds, short of knowledge, is the result that determines us in such truths" (A Third Letter on Toleration). Instead Polanyi wishes to invert the priorities accorded to reason and belief along the lines of Augustine's "unless you believe you will never understand". Our beliefs provide the basis for our reasoning, and through that reasoning we come to understand. Even if the system of beliefs which forms the basis of our reasoning is no more than the prevailing attitudes of our culture, they are nevertheless the basis of our knowing, and far from absolute or inevitable. Polanyi therefore commits himself to the priority of belief over knowledge, and to the culture-ladenness of that believing and knowing. In this way he seeks to overcome tendencies to destructive over-confidence in the finality of our present knowledge, and to ensure that we remain forever open to new possibilities which the future may bring.

Polanyi is misunderstood if his views on the inevitable circularity of knowing are not appreciated: all knowledge is based upon a system of self-authenticating beliefs open to meaning and newness which can demand their revision, but can never eliminate the need for them to take responsibility for themselves. "This invitation to dogmatism may appear shocking...but a dogmatic orthodoxy can be kept in check both internally and externally, while a creed inverted into a science is both blind and deceptive" (PK p 268). Fears that Polanyi's answer to critical philosophy reduces to a mixture of subjectivism and irrationalism are unfounded, but they arise because Polanyi charges straight down the barrels of his opponents' guns. His charge, in short, is that critical philosophy has professed itself to be presuppositionless and rigidly sceptical, whereas in
fact it has taken for granted a host of assumptions that it never ex-
licitly acknowledges. The practice of doubt "has been avowed and
emphatic, while its relaxation was marginal and acknowledged only in
passing" (PK p 270).

The program of doubt began with Descartes. He wrote in the fourth
discourse on method, "but as I wanted to concentrate solely on the search
for truth, I thought I ought to do just the opposite, and reject as being
absolutely false everything in which I could suppose even the slightest
reason for doubt, in order to see if there did not remain after that any-
thing in my beliefs which was entirely indubitable". Polanyi rejects this
method, not because he denies the importance of doubt - indeed, he en-
courages it in many cases where science is presented with supposedly new
discoveries - but because he identifies the primacy of doubt as the source
of our loss of meaning.

I am looking principally for the moment at the negative aspects of
Polanyi's thought, that is at what he seeks to reject. His principal tar-
get is excessive scepticism, which he sees as an almost universal fly-
bottle which philosophy has trapped the fly inside. Positively he aims to
free us to be ourselves as men and women, and for discovery of the richness
which surrounds us in the world.

His epistemology begins with man in his culture, as part of a
tradition, and endowed with an education. From such inescapable limita-
tions as ensue from this heritage our aim is to understand the universe,
and ourselves as part of it. "I must admit that I can fulfil my obliga-
tions to serve the truth only to the extent of my natural abilities as
developed by my education. No one can transcend his formative milieu very
far, and beyond this area he must rely on it uncritically" (KB p 133).

Awareness of our limitations motivated much of sceptical and critical
philosophy, but Polanyi argues that we have become obsessed with avoidance
of error to the extent that we demand unreal standards of perfection in
knowledge which cut us off from perception of real meaning, and invert our
knowing into doubting. Scepticism, rightly conceived as a means to avoid
error, tends to become an end in itself. Perfectionism leads to inversion.

The principal difference between personal knowledge and subjective
knowledge is that the centre of subjective knowledge is the self; it en-
tails no sense of responsibility to that which is known for acting upon it
or sharing it, because the dimensions of reality and universality are ab-
sent: what matters is not the way things are, but the way I am. Personal
knowledge by contrast is necessarily universal because it is knowledge
centred upon reality, and as such binding upon all whether they like it or
not, "For a claim to have made contact with reality necessarily legislates
both for myself and others with universal intent" (KB p 133). To put it at
its sharpest, and therefore most objectionable, personal knowledge is
intrinsically evangelistic and proselytising. The demand for universality
(one is reminded of Einstein's insistence upon the invariance of physical laws under changes in co-ordinate system) acts as both a motivation and a corrective: "In order to be satisfied, our intellectual passions must find response. This universal intent creates a tension: we suffer when a vision of reality to which we have committed ourselves is contumaciously ignored by others. For the general unbelief imperils our own convictions by evoking an echo in us. Our vision must conquer or die" (PK p. 150).

Therefore we have a criterion of demarcation by which to separate personal and subjective knowledge: is this a matter of life and death to you; does anything matter to you more than your self? That cannot be the case for instrumentalist, operationalist, or conventionalist epistemologies which rest in the final analysis upon my need to know.

The principal difference between personal knowledge and objective knowledge is not, therefore, to do with the negation of that sense of "objective" which means "real, true, out there, universal, and binding", but with the version which appends to these qualities, "and nothing to do with me", that is "and impersonal", "and not my responsibility". Polanyi insists that nothing can relieve us of responsibility for what we believe and know - even an appeal to the conditioning of our culture which we have unquestioningly accepted.

Early in Personal Knowledge he writes "The purpose of this book is to show that complete objectivity as usually attributed to the exact sciences is a delusion and is in fact a false ideal" (p. 18). The severity of this objectivism "has come to threaten the position of science itself... This self-contradiction stems from a misguided intellectual passion - a passion for achieving absolutely impersonal knowledge which, being unable to recognise any persons, presents us with a picture of the world in which we ourselves are absent" (p. 142). This absence of man from the world as science describes it, not markedly different from Democritus' "atoms and the void", is what really motivates Polanyi's whole programme of philosophical reform, for he sees the destructive self-contradiction of any human enquiry which pursues as an absolute science what is only a creed - cf. the quote above - namely the creed that everything is to be described in terms of physics, chemistry and sceptical reason. A form of misguided perfectionism leads to its own inversion. Man's servant, science, has been allowed to usurp for itself the role of judge of genuine meaning. Instead of using mechanics to understand the workings of the universe, science has devoted itself to showing that the workings of the universe are mechanical. Everything we know involves an appraisal, "and this personal coefficient, which shapes all factual knowledge, bridges in doing so the disjunction between subjectivity and objectivity" (PK p. 17) as man strives to fulfil his personal obligations to universal standards.

The question is, how does personal knowledge, having escaped the charge of subjectivism, and personalised objectivism, avoid falling into
the trap of relativism. There are five components to the answer:

1 - Through dwelling in a tradition from its subsidiaries to the focal, and establishing contact with reality through understanding;

2 - By distinguishing focal knowledge from clear conscious knowledge by means of the formal - non-formal distinction and the understanding/concept/word connection (and why this applies also to me - Ryle);

(we know more than we can ever tell)

3 - Words once uttered and formalizations once performed take on a life of their own (Isaiah 55:11) (we tell more than we can ever know);

4 - Intuition and commitment involve a personal cycle of detachment, examination, personal assessment, and recommitment/rejection;

5 - Circularity is inevitable; we can only ever inhabit one world at a time (cf. Merleau-Ponty's Phenomenology of Perception p 187 where he quotes T.E. Lawrence on Arab life); impersonal knowledge is an attempt to have it all ways by dreaming of being able to manipulate all systems of ideas from outside without being involved.

Impersonal knowledge therefore tends to be manipulative and utilitarian because it seeks to know without being responsible for what is known. But the power of this manipulative ability comes face to face in the end with meaninglessness: "man himself is absent".

What of the charge that this is merely wish-fulfilment and arbitrary? In the end Polanyi tires of such questions, because he knows that they rest upon a prior, critical understanding, and are as such irrefutable. He cannot give concrete arguments which will satisfy such critics because his method is designed to alter the orientations which make such questions desirable. "While I shall continue to argue a series of points and adduce evidence for my proposed conclusions, I shall always wish it to be understood that in the last resort my statements affirm my personal beliefs, arrived at by the considerations given in the text in conjunction with other not specifiable motives of my own" (PK p 256). This must be complemented by his other observation "Heuristic passion seeks no personal possession. It sets out not to conquer, but to enrich the world" (PK p 150). Moreover, "Formal operations relying on one framework of interpretation cannot demonstrate a proposition to persons who rely upon another framework" (PK p151).

Polanyi has reinstated three things abhorrent to the critical philosopher, and as such to the modern mind: the priority of belief over reason; the necessity for the honesty of acknowledged dogma over against creeds posing as sciences; and finally the irreconcilability of logically incompatible positions held on the basis of personal authority. Critical philosophy relies, against all these, on what Richard Rorty has called the "transcendental pretence" that there is a non-circular, objective, self-evident system available devoid of assumptions and presuppositions, which unaided reason can make known to us.
Polanyi identified two principal areas needing reform if we are to be freed from doubt and self-denigration. Doubt must be overcome by a new epistemology; our self-denigration must be overcome by rehabilitating the concept of the personal. Both reforms required Polanyi to think out a positive set of intellectual concepts which would make them more intelligible.

Indwelling and Dual Control

Polanyi realised from his own researches that a scientist must think his way inside the structures he wishes to understand so that his mind can focus upon their real nature and allow itself to be shaped by what it finds. It was this notion which he called indwelling. We dwell in the objects of our enquiry in such a way that we are enabled to focus not upon the appearances, but upon the essences of what we find. Just as a dentist using a probe or a blind man a stick does not attend to the impressions that probe or stick makes upon his hand, but to the images conveyed by those impressions, so all knowing involves dwelling in the subjects of our enquiry in such a way that subsidiaries give rise to focal awareness. As soon as we transfer attention from the focal to the subsidiary (to the probe or stick itself) we cannot 'see' the focal any longer. A pianist who suddenly starts to think about his fingers and what they are doing will lose the shape and flow of the music; a driver who thinks about where the clutch and brake are will almost inevitably crash the gears. Reductionists play the game of referring us constantly to the subsidiaries: people are "nothing but" minerals; symphonies are "nothing but" sound waves; and so on. But in this insistence upon the subsidiary they inevitably destroy the very evidence which would refute them, and in so doing generate their own circularity: to withdraw from the indwelling in order to focus on the "nothing but" is to withdraw from access to the very thing which gives the subsidiaries their interest. A reductionist analysis of man is therefore self-contradictory, since it demonstrates that there is nothing of sufficient interest about anything to make the enquiry worthwhile.

Dual Control

Polanyi pointed out the ways in which we rely upon mechanisms of dual control. Organisms depend upon a low-level physics and chemistry for their existence, and the requirements and laws of physics and chemistry therefore impose constraints upon higher levels; but as living creatures they also influence their bodies by integrating together sensory stimuli in ways contingent upon their being living organisms, and as such they impose bopun-dary conditions upon their physics and chemistry, which guarantees that no account of those organisms solely in terms of the lower levels can ever suffice. To offer such an account is effectively to focus upon the subsidiaries to the destruction of their focal meaning.

At this point I touch upon a problem which could occupy us for an en-
tire weekend, namely the extent to which Polanyi did or did not regard some kind of purposive or teleological principles as necessary if we are fully to account for life and order. That may be something we should take up in discussion, but I am avoiding it, as I am the question of Polanyi’s religious beliefs, despite the fact that ordering principles, operational principles, and hierarchical levels of description are frequently referred to in Polanyi’s work.

Perfectionism and Inversion

Science, conceived in the tradition of critical philosophy, seemed one of the principal aggressors against such an integrated and integrating vision of the nature of man as Polanyi sought. Why was this? Was it simply to do with the scepticism that methodically undermined certainty? Or was there some connection with the abuse of scientific discoveries in terms of technology? How could the power science conferred upon man be matched by the wisdom to use that power? How could man develop the systems of value which would enable him to be made more human by science, rather than less?

The illusions we have about objectivity in science lead us to believe in unreal criteria of verification and falsification which can be described in terms of perfectionism. Polanyi could see that by believing in an unreal standard of scientific objectivity we would be led to demand levels and standards of certainty in all fields of enquiry which can never be satisfied. Consequently, a mixture of unsatisfiable demands and insatiable desires for knowledge would result in a desperate retreat into irrationalism. Perfectionism leads to inversion of the standards it seeks to perfect; by destroying the basis of rational beliefs we encourage irrational beliefs. What our culture needs therefore is a new concept of rationality.

Freedom and Tradition: Spontaneous Order

Polanyi’s writings overflow with appreciation of the beauty of life and truth. He is concerned for man, but for man as neither the pragmatist nor the idealist would see and have him be. The twin sons of critical philosophy as they developed out of the Enlightenment, capitalism and marxism, he sees as equally destructive of man’s nature. The stark either-or of individualist and socialist philosophies either does violence to our responsibilities to one another or to the uniqueness of our selves; man is neither an island nor an undifferentiated forest of identical trees. He is himself, but he is himself fully only when he realises that self-hood in community.

Here, then, is a political philosophy: the philosophy of the Free Society. To put it into philosophical categories, Polanyi rejected the dualism of the sensible and the intellectual, thought and action, fact and value; man is fulfilled neither by retreating into intellectualism, to the world of the mind, nor by abandoning his ability to think and dream and im-
mensing himself in materialism. In science progress is made through a living dialogue with nature, through a rich interplay of theory and experiment in which each constrains and inspires the other. In life we must strike a balance between necessity and possibility, between the demands of the world and the possibilities disclosed by the human spirit.

Polanyi sought the answer to these questions in a new theory of knowledge, although the word "theory" seems strangely inappropriate to anyone who has read his works, for Polanyi translates knowledge from the realm of theory (from the realm of the intellectual world) into the categories of the personal.

This connection between the knower and the known is far more than incidental, it goes to the centre of Polanyi's concerns. He saw that it was one of the bequests of the Enlightenment that we have no responsibility for what we know because facts are facts, and being impersonal and objective they therefore have no intrinsic connection with values, which are subjective and infinitely revisable. Polanyi could see that this dualism of fact and value was capable of tearing western civilisation apart by alienating man from his world. Science colludes with this alienation by presenting itself (more often than not) as dealing with objective facts which therefore exempt scientists from any responsibility for the consequences of their own researches. It was because he wished to overcome the separation of fact and value which results from such an epistemology that Polanyi did not like the term "Open Society" as used by Popper, for the notion of openness he finds in Popper is associated with the kind of intellectual freedom which throws off everything but unconstrained enquiry, and sees value and morality as arbitrary accretions we should ideally remove since they constrain us unreasonably. (Meaning chapter 12, for The Tacit Dimension pp 63-79).

In Personal Knowledge Polanyi puts forward as his principal aim "to achieve a frame of mind in which I may firmly hold what I believe to be true, even though I know that it might conceivably be false" (p 214). This is a scandalous intention from the perspective of critical philosophy, but Polanyi sees in the impersonal ideals of that philosophy a dehumanising force responsible for the alienation of Man from the world. To counteract it he insists that the contrasts we are familiar with between the categories of the objective and subjective, must be replaced with the relationship of the personal to the universal.

Circularity and Commitment

The principal offence of Polanyi's philosophical position arises from its self-confessed circularity:

I believe that in spite of the hazards involved, I am called upon to search for the truth and state my findings.... Any enquiry into our ultimate beliefs can be consistent only if it presupposes its own
conclusions. It must be intentionally circular. (Personal Knowledge p 299)

What are we to make of this? First, that there can be no logical bridges between mutually incompatible positions. The strength and the tyranny of any coherent position is that it must be self-authenticating, the ground of its tenability must be internal to itself. Now this also strikes us as scandalous, because besides being born-and-bred Cartesians we are all also probably atomists who believe consciously or unconsciously that there are ultimate foundations for all things which admit of no rivals and which supply inescapable and irrefutable criteria which will demonstrate their own truth and the falsehood of all rivals. We believe as a consequence of this that reason aided by empirical evidence is sufficient to sustain all true arguments and to refute all false ones. In other words, we do not believe in inescapable and ineradicable conflict between rival systems of thought.

[The offensiveness of Polanyi's position should now be clear. He rejects both Freudianism and Marxism while being aware that they rest upon the same kind of logic as his own position, namely a logic internal to themselves, but he rejects principally the pretense that they do not in fact depend upon such an internal process of self-justification, but rather appeal to a spurious "objectivity" often dressed up in pseudo-scientific claims about evidence. (PK p 288)]

Refutation of a rival system, or establishment of conversion from it, cannot be achieved piece-meal, because the system is sufficiently defended to refute objections one by one (cf. Meaning p 180). Polanyi's method is therefore intentionally circular because to pretend to have a logically conclusive refutation of rival positions is to commit the same objectivist sin as them. Instead one articulates an alternative world-view, just as Polanyi does himself. But doesn't this threaten to dissolve into subjectivism?

My previous suggestion, that for the sake of precision declaratory sentences should be formulated in the fiduciary mode, with the words 'I believe' prefixed to them, was a step in this direction, as it eliminated any formal distinction between statements of belief and statements of fact. But this reform, which would link every asserted sentence to its asserter, has yet to be supplemented in order to keep the sentence linked also to its other pole, that is, to the things to which it refers. For this purpose the fiduciary mode will have to be merged in the wider framework of commitment. (Personal Knowledge, p 299)

Polanyi is saying that when we say (as we all do from time to time) that an assertion "is not merely an opinion or belief of mine, but a fact" (where "fact" often has the connotation "scientific" fact), we are making a spurious and dishonest distinction which bears close resemblance to the
kind of thing Sartre called bad faith.

But Polanyi is not conflating belief with subjective opinion. Responsible beliefs constitute knowledge insofar as they are held with universal intent, that is as beliefs truly reflecting the nature of the universe and my obligation to be faithful to it, that is to a centre beyond myself. This bipolarity is not a dualism, for it recognises the inevitability of the contribution of the self while insisting upon the responsibility of the self to the other. Here there are echoes of Buber's I-Thou. Neither the subjectivist (who believes whatever he likes) nor the objectivist (who denies that he believes anything at all) are fully personal; we become full persons only when we accept the relational responsibilities intrinsic to our place in the universe, the bipolarity of the self and the other.

It is the act of commitment in its full structure that saves personal knowledge from being merely subjective. Intellectual commitment is a responsible decision, in submission to the compelling claims of what in good conscience I conceive to be true. It is an act of hope, striving to fulfil an obligation within a personal situation for which I am not responsible and which therefore determines my calling. This hope and this obligation are expressed in the universal intent of personal knowledge.

Conviviality and Dissent

One of the criteria my beliefs must satisfy is ratification by a community of similarly orientated persons. I am not free (as the subjectivist or solipsist is) to believe whatever I like regardless of my peers' views. It is rather an inevitable consequence of my commitment to the truth that I willingly subject my beliefs to scrutiny and modify or strengthen them accordingly. (Notice again the necessity that we admit when we are wrong.) A community of competent critics with whom dialogue is possible constitutes a convivium, and the fellowship they share is conviviality.

But here again a caveat must be added, for the place of the individual within a tradition is seldom as simple as this description of dialogue might seem to imply. Scientists of all people are aware that changes in outlook are necessary from time to time, and that those changes often result from the stubbornness of pioneering individuals who refuse to take the tradition too seriously. Obviously Copernicus, Galileo and Einstein are examples. Therefore the structure of the convivium must incorporate and acknowledge the reality of dissent. Again, the theme of conflict emerges.

Two strands of ideas develop from the reality of dissent: first, and most obviously, there is the possibility that the dissentient is mistaken and either does or does not realise and acknowledge his mistake; second there are the criteria whereby he decides whether or not he has been shown to be mistaken, which give rise to the paradox of self-set standards.

The dissentient may be so far ahead of his time, such a consummate
visionary that he is misunderstood by all who hear him and wrongly rejected from the community as a "heretic" (for there must come a time when the community tires of the argument and presents him with an ultimatum: "shut up or get out!). His ideas may be wrong, or they may depend upon a perception of the world shared by few or none of his contemporaries. Polanyi suffered the latter fate when long after his theory of the adsorption of gases had been accepted and his doctorate awarded there grew up a strong movement which did not accept it and demanded that his doctorate be rescinded. Happily he was in the end proved correct, but he learned from that experience how difficult it can be and how important it is for the visionary to stick to his guns unless he is himself convinced that he is mistaken. (In the case in question Polanyi published his theoretical ideas in 1916, but they were widely rejected until confirmed in the Wang-London experiments between 1927 and 1930.) Writing much later (in 1963) Polanyi confessed that he was himself infected with doubts, and survived professionally "only by the skin of my teeth". The prevailing system of ideas can on occasion act against acceptance of a new but perfectly correct theory.

The dissentient is not, however, his own master in these matters. He is fundamentally responsible not to himself but to the perceptions which have vested him with responsibility. Once we perceive we become responsible, and the task of advocating and articulating our vision falls to us whether we like it or not. Such is the obligation we have to the other. One is strongly reminded of the Old Testament prophets protesting to God that they would really rather not share in the vision imparted to them; life is much more comfortable without visions (contrary to popular opinion!) "Our vision must conquer or die." (PK p 150) But often the visionary himself is armed with far less concrete evidence than is demanded by science. He relies upon a feeling that something or other is important, upon a hunch or intuition which wells up from his experience offering little more than intimations of fruitfulness, promises of as-yet-unforeseen possibilities. "The freedom of the subjective person to do as he pleases is overruled by the freedom of the responsible person to do as he must" (PK p 309).

The Human Situation

Polanyi's epistemological critique can be summarised as an attempt to free man to be himself. In this it rejects reductionist analyses as well as behavioural analyses, in favour of a self-confessedly circular reliance upon human conscience as an irreducible reality to be taken seriously by any psychology or philosophy. I am responsible for myself in my culture and to the universe throughout my knowing and being. But as a creature born into a tradition with a language I am also incapable of escaping from the subsidiary realities of that cultural nexus, except by learning to
dwell in them in order to attain to focal awareness of reality and truth. The realisation and credibility of this programme therefore depends upon an adequate account of human development across the whole spectrum of language and learning, mind and body.

MICHAEL POLANYI - LANGUAGE AND EDUCATION; MIND AND BODY
Communication is a human enterprise which arises from our desire to impart and share our visions. Polanyi himself spent his life exploring the world with a breadth of interest and understanding that few have equalled in modern times. But this concern for exploration forced him to rethink the nature of knowledge and understanding as he realised that propositional or formal models for knowledge are inadequate, that formal accounts of knowing and coming to know are incapable of embracing the richness and diversity of those processes. His antipathy to formalism (by which I mean the attempt to describe all world-processes in terms of their formal relationships) is closely allied to his opposition to reductionism, and both arise from his conviction that the most important component of understanding is tacit, and as such unformalisable.

The Tacit Dimension
The concepts of indwelling and tacit knowing are inseparable. Dwelling in subsidiaries to attain to a focal awareness of their meaning relies upon our capacity to perform tacit integrations of those subsidiaries, a process that involves a mixture of conscious and unconscious effort and skill. As such (and as with so much of Polanyi’s work) the concept of tacit knowing is self-embracing for tacit knowing is itself a skill that we must learn and refine (however much of it is inherited).

As a child learns to play a musical instrument it moves from fumbling incompetence, from being "all fingers and thumbs", towards a fluency which not only permits but demands that the fingers be left to themselves. When sight-reading a piece of music the pianist is not in general thinking "third finger on C, fourth on E"; that only becomes necessary (it is important to recognise its necessity) when a piece requires unusual dexterity that stretches existing technique. A piece within one’s own compass will take shape under the control of our vision of the meaning of the music as conveyed to us by indwelling and tacit integration.

Illustrations like this helped Polanyi to see and to show why formalism is inadequate to explain understanding. The meaning does not lie in the notes as written down, and the interpretation which separates the mediocre from the great is not attributable only to technique. Technique is a necessary but not sufficient condition for great playing (in exactly the way that physics and chemistry are necessary but not sufficient conditions for life). The control which the perception of meaning enables a great pianist to exercise is an example of the higher levels controlling
the lower, as in dual control. But the offensiveness of this control is that it is not - and logically cannot be - accountable solely in terms of lower levels. Admittedly we attempt to account for subsequent genius or aberration.

For non-pianists a more accessible illustration can be found in the simple and everyday practice of language, where we all manage to generate new sentences and to understand unforeseen ones without difficulty, pausing only when we encounter an unfamiliar word or concept. The fact is that nobody uses language by memorising prefabricated sentences, and even if they did they would still need further understanding to enable them to use them appropriately. We speak of people understanding a language when they can use it freely and appropriately as judged by their peers. But we also know that nobody can take his understanding out of his head and present it to us, either as a "brain dump" of every sentence he has ever encountered containing a particular word, or as a definition (since definition is circular). Therefore the command of language is a skill relying upon tacit components and unformalisable concepts. There are more than shades of Wittgenstein here: we tell whether someone understands a word (has a concept) by the way he uses it. But the use is only a clue to the meaning, not itself the meaning, for the sentence gives expression to what might be called one "section" through our understanding, as if we sliced through a tree-trunk and showed somebody the rings. The inevitable inadequacy of words to convey all that we mean by them (even to ourselves) led Polanyi to coin the phrase we know more than we can tell. 'Know' is being used here not of formal knowledge, but of the knowledge which goes beyond what can be formalised, the skills and understanding which enable us to give shape to language at all.

Three questions immediately arise: how do we acquire these skills; how do we supplement them when they prove inadequate; and why do we sometimes fail to acquire them? Polanyi refers us to the interaction of mother and child, master and apprentice, of the deep relationships by which learning can occur almost without effort as we acquire skills through participation and imitation. There is significantly very little formal intellectual activity in either of these processes: the child learns regardless of its wider intelligence, and it does so in a way which bears a closer resemblance to play than to formal schooling; the apprentice watches and copies, learning by imitation and experience rather than by formal teaching (indeed in many of the crafts the master would have been illiterate, as was Stradivarius).

Tacit knowledge relies upon absorbing experiences in more than formal ways. I was unfortunate enough to do an O-level in French without visiting France; the only contact with French as a living language came from an as-
sistant who preferred to speak English. When I eventually visited France I was literally amazed that people really spoke as I had been taught and more particularly that France was so different from England, in other words than not only the language as syntax and vocabulary is different, but the language as an expression of French life (further confirmation of Wittgenstein's famous dictum that if a lion could speak we could not understand him). What makes French French is not its formal structure, the things schoolchildren struggle with, but the world-orientation which gives life to that syntax. To teach a language in isolation from the culture in which it arose almost inevitably forces us back upon rules for the manipulation of words, for the reality which gives shape to the language and from which it derives its coherence is unknown.

Similar problems beset the mathematician, but we cannot take our pupils to visit the place which gives mathematical forms their meaning. So often we are left with the impression that someone either can or cannot do mathematics (and that that is all there is to it) because we are devoid of the means to open the subject up from different angles which may make more sense to him. I sometimes joke with colleagues that the trouble with physics and chemistry is that they require so much equipment, whereas all you need for mathematics is your mind; but the joke is on me and other mathematics teachers, because what we desperately need in mathematics are pieces of apparatus, computer programs and real-world situations to give depth and breadth to a subject which many find intimidating because they lack the concepts necessary to give it life and shape.

The differences between language acquired naturally as we grow, and the abstraction of mathematics depending upon concepts gathered from an apparently unreal world, set the limits of the spectrum of subsidiaries which we must participate in if we are to move beyond their limitations to the rich meanings to which they refer. This is especially true of our tradition and culture, a problem Polanyi specifically addresses with respect to the universality and truth of knowledge. Between the extremes of our natural acquisition of the ability to discern the meanings referred to in language, and our corresponding difficulty in acquiring those meanings in mathematics, we therefore arrive at the crucial educational problem of how we acquire those meanings through the subsidiaries of our culture. Polanyi revised his estimate of the importance of commitment late in his life because he understood more clearly that a great deal of our indwelling is inescapable; we simply cannot remove ourselves from our tradition, and therefore it is unnecessary to commit ourselves to it (see the introduction to The Tacit Dimension).

The inescapability of our tradition and education makes the establishment of an appropriate tradition and education vital for the proposal that control should be decentralised and order spontaneous, for unless a tradition espouses a philosophy which is conducive to the development of
responsible individuals the Free Society cannot thrive.

The free enquiry of the scientific community provides the model for Polanyi's picture of the Free Society, and it leads to consideration of the development of the individual.

In "The Unaccountable Element in Science" Polanyi uses the story of the discovery of the planets Uranus and Neptune to illustrate the general thesis that we see what we know or, to put it more precisely, that we see what we are prepared to see by antecedent concepts and theories. "Before its discovery as a planet by Sir William Herschel in 1781, Uranus had been recorded as a fixed star at least seventeen times: seventeen times its motion had gone unnoticed. What is more, it would be idle to reproach these astronomers for succumbing to this...attitude to the unprecedented... In fact, if astronomers had gone on testing every new star on the possibility of its being a very slowly moving planet, they might well have wasted all their time in obtaining an immense mass of meaningless observations" (KB p 114). This is a particular example of the theory-ladenness of our perception, and it points very clearly to the importance of approaching the world with adequate theories and expectations.

The most important thing a scientist sees is a problem, which he perceives as important because of the intuitive powers of the mind, themselves trained in former results and their authority. Often we must simply play our hunches, for the true premises of today's ideas will only be apparent tomorrow, "as when the morning traveller turns and views his wild night-stumblings carved into a hill" (Graves, Recalling War). The knowledge of a true problem is a paradigm of all knowing because it involves an appreciation of worth and meaning and promise. Aristarchus of Samos thus revealed his true insight when he asked whether the earth perhaps moved, despite the fact that a real understanding of the answer did not develop until Newton centuries later, an example of the general truth that good problems and theories yield fruit and find confirmation long after they are propounded.

Education

Whereas we tend to educate people about discoveries (which is of course necessary if they are to build on the tradition they inherit) it is far more important to educate them to be discoverers. The transition from one to the other involves a process in which what is known becomes subsidiary (in a conscious sense, "forgotten"), and what can be known becomes focal. It is its elimination of the legitimacy of this transition which Polanyi most opposes in critical philosophy: "man himself is absent".

It is important to realise that the discoveries we make need not be original; there is nothing wrong in reinventing the wheel. What matters is that we discover something and as such also discover what it is to be a discoverer. Somehow this ideal is never realised, for we manage to place such pressures upon our education - such utilitarian pressures - that we
find ourselves forced into rote learning and teaching: in this situation do this and this and this.

Oddly enough, it is in mathematics that this kind of teaching seems to be least successful. As a supposedly formal discipline we might think that we ought to be able to teach mathematics by rote if anything can be taught by rote. Nothing could be further from the truth, and to someone who has understood Polanyi's distinction between formal and tacit knowledge nothing could be less surprising.

Critical philosophy has ignored the personal nature of knowing by engendering an illegitimate insistence upon the capacity of formal expressions to embody truth. It must be acknowledged that Polanyi seems to have been unaware of the echoes his ideas find in the work of Wittgenstein at this point, but he develops a vocabulary enabling him to speak about that which Wittgenstein denied we could speak because Polanyi, untrained in philosophy, was not hampered by an excessive concern with language itself. His concept of tacit knowing enabled him to overcome the problems of what can be said with language by indicating how language achieves communication through the mechanism of indwelling, and focal and subsidiary awareness.

He finds even in Kant this awareness of the inadequacy of language:

No image could ever be adequate to the concept of a triangle in general. It would never attain that universality of the concept which renders it valid of all triangles,... The schema of the triangle can exist nowhere but in thought... The concept 'dog' signifies a rule according to which my imagination can delineate the figure of a four-footed animal in a general manner, without limitation to any single determinate figure such as experience, or any possible image that I can represent in concreto, actually presents. (Kant: Critique of Pure Reason A141)

Knowledge of the meaning of the word "triangle" does not consist in knowledge of particular triangles, but in an incommunicable concept whose mastery we demonstrate in our usage (notice again the independent echoes in Polanyi and Wittgenstein). A pupil may glean some marks my memorising proofs of theorems, but he will be quite unable to adapt that rote learning to even tiny alterations of circumstances because he does not understand what he is doing.

Contrast the case with ordinary language, which employs just the same kind of relationship between unformalised knowledge and its formal expression, yet without any of the anxiety or fumbling associated with mathematics in particular, and most other subjects in general. How can we account for this? Polanyi's answer lies in his distinction between formal learning and indwelling. When a child learns a language from its parents and older children it is under no pressure; the motivation is natural; the time is unlimited; the medium is safe and multi-dimensional. The child dwells in the whole world of meanings and nuances associated with language,
just as an apprentice dwells in the day-to-day craftsmanship of his master. What communicates itself is not simply the formal terms, but the commitment of the unconscious teacher to the importance of what is being taught. Neither the mother nor the master needs to say "this is important"; what is important about it cannot be said; it can only be shown (more echoes of Wittgenstein). And therefore the child, pupil and apprentice learn by example: this is important to the teacher/mother/master, and so I will regard it as important for me because I dwell in a fundamental relationship of trust with the teacher/mother/master.

This is perhaps the aspect of education which is least well served. We imagine, because we are all rationalists at heart, that anything important can be put into words - truth is propositional, to put it another way - whereas what matters to each of us about the things we value almost certainly cannot be put into words; in fact we usually stumble and feel embarrassed or foolish when asked to account for our enthusiasms.

An aspect of Polanyi's thought that is implicit can be discerned at this point. As we have noted, he believes in tradition and authority; but he also believes in the integration of knower and known in a personal relationship. It follows that we cannot separate authority from the person in authority; in other words, one of the reasons why I will trust the tradition is that I trust those who have been responsible for forming and handing on the tradition. But there is a view of authority in critical philosophy which is, just as depersonalised as its view of knowledge. It arises from critical philosophy that a person is an authority by virtue of his office, for just as a fact is a fact, so an office is an office. The worthiness of the person concerned does not enter into it. But someone who has no authority cannot be invested with authority by placing him in his office; all that happens is that the standing of the office is diminished by his unworthy tenure.

I have recently returned to mathematics after an absence of over ten years, and what has struck me most forcefully is how little of the conceptual world I have forgotten, and how much of its formal expression. I find that I have to work relatively simple problems out from first principles because I have forgotten the short-cuts. But pupils are impatient with such processes, which they regard as signs of incompetence. For them what matters is not how a problem is approached, but that it is solved. And yet today, a decade after graduation, I find that my inability to solve a problem troubles me only insofar as it betrays a deficiency in my understanding; the problem is not "how do I solve this problem?" but "what is it that is preventing me from solving it?"

Of course, we need both technique and understanding if we are to be genuinely creative; the most wonderful symphony remains only an idea if I have no means to write it down. And the realisation of the indispensability of the formal was what drove much of modern linguistic philosophy to
disparage the so-called inexpressible thought. Frege regarded the idea of an inexpressible thought as absurd; a thought for him consisted in its expression. Polanyi is less scrupulous about the boundaries between philosophy and psychology, since the presuppositions and processes of thinking interest him as much as thoughts as the products of thinking. He recognises the need to operate to free the fly from the fly-bottle, but he insists that a complete philosophy must also give an account of why releasing the fly is regarded as a good thing to do; philosophy is therapeutic, but it is not only or even principally therapeutic: we deal with our mistakes in order to free ourselves to philosophise better; we do not do philosophy in order to free ourselves from our mistakes. And that in a sense summarises Polanyi's whole approach. Critical philosophy, he feels, became so obsessed with eliminating error that it eliminated also any reason for regarding error as regrettable; it made a wilderness, and called it peace. He knew that we are hampered in life by the distortions of perception which arise from representation-dependent knowledge, but he also knew that there is no escape from this flawedness; we must simply make the best of it. But we can do more than this because we can dwell in even the flawed subsidiaries in such a way that we can still partially focus upon their unflawed meaning; and in that focussing we find ourselves addressed not out of ourselves, or for our own sake, but from a centre which lies beyond us and demands that we act responsibly towards it for its own sake. The ultimate criterion of truth is not therefore whether we feel that we have eliminated the possibility of error (that may leave us with no more than a sterile tautology), but whether we feel that as it is in itself. Such knowledge embraces our being and involves our entire person, which is why it is appropriate to call it "personal knowledge".

**Other Minds**

By denying the legitimacy of the split between the intellectual and the physical Polanyi also rejected a view of man in which the activity of the mind can be conceived independently from the actions of the body. When we encounter our fellow man and women we dwell in their words and actions (as well as what we now call their "body language", and he calls their "physiognomy") and we find that these apparently fragmentary subsidiaries lead us to some degree of focal awareness of what constitutes their particular individual orientation toward the world. In other words, we come to understand something of their minds. The body seen focally is one thing, but the body dwelt in as a subsidiary tells us of another thing, that thing being the mind. *(Meaning p 46ff)*

Polanyi's thoughts on the mind-body problem arise from his notion of ontological stratification, which he elaborates using the concept of dual control in conjunction with an examination of the nature of a machine. His ideas fit none of the three prevailing philosophies of mind very well
monism, dualism and interactionism).

It is useful to remind ourselves of his analysis of machines. From the point of view of physics and chemistry machines never fail. Yet manifestly they do fail as we experience them. Therefore we perceive in them something which is not merely physics and chemistry (however much we seek retrospectively to deny it). This is their design, which imposes upon the physics and chemistry necessary for them to function an arbitrary order (as far as the physics and chemistry are concerned). This order or design is comprehensible only within a framework which recognises purpose as a legitimate category of explanation, since it is meaningless to say that something fails unless we conceive of it fulfilling some purpose. Dual control is only present where there is this sense of arbitrary order, that is order not accountable solely in terms of the lower level, which represents "a discontinuity between machines and living things on the one hand and inanimate nature on the other" (KB p 230). Physics and chemistry do not take risks, for their nature guarantees that they cannot fail; it was the objective of critical philosophy to reduce knowledge to this same state, an impersonal and riskless process incapable of error.

Because science either denies that there is design, or does not regard it as part of science to describe it, it is (a) blind to lessons which might be learned by allowing the design in nature to teach us its secrets; (b) limited to the low-level descriptions of reality which cannot express the kinds of meaning that we all take for granted. In this respect science and the adolescent pupil are equally the victims of the idea that they know what they need to know in order to be certain or to succeed. But by circumscribing what would convince them or is of use to them in advance they severely limit the possibilities open to them.

Knowledge of low-levels of reality permits us to say something about what is or is not possible at higher levels, but it does not and logically cannot permit us to describe those higher levels because - this is the same argument that says physics and chemistry cannot fail - the higher levels exist only contingently; all possibilities are not realised, and it is impossible to know (on the basis of the lower levels) which possibilities will be or are realised. The only way to overcome these difficulties is to speak of the higher levels in terms arising from them, that is by studying the higher levels themselves.

When a neurophysiologist examines a brain he dwells in his own body in order to look at another one. There are two insuperable limitations to his enquiry: he cannot stop dwelling in his own brain and body (this is the only example of inescapable indwelling I can think of); neither can he know the other brain as its owner knows it. (The suggestion that he might be examining his own brain is intriguing, but I shall not pursue it here.) It seems therefore that this essential indwelling puts Polanyi firmly in the double aspect camp of mind theories, although to my knowledge he never
explicitly adopts any clear-cut view. I can only know you and your brain from outside looking in; and I do so using my own brain from inside looking out. (These are my expressions, not Polanyi's.)

The asymmetry of our life together arises from this double orientation: I am uniquely my body in its world-orientation; everyone else's world-orientation is known to me only second-hand. But there is, it seems, no clear causal connection between the stimuli incident upon me and my response (contra Behaviourism). Therefore the centre of understanding which is "me" cannot be forced to understand, or to create, or to believe, or even to behave as someone "out there" would wish except insofar as I am inescapably shaped by my tradition and culture. Polanyi's aim is to elucidate a philosophy which is conducive to the generation of centres of understanding orientated towards the meaning of the universe and their own place in the scheme of things, and which frees us from scepticism and rationalism, objectivism and subjectivism to be what we are, integrative centres capable of reaching out with our minds to embrace all things.

In the end his argument is clear, firm and gentle: I cannot persuade you on your terms that your scepticism and rationalism is wrong without myself slipping into scepticism and rationalism; but I will not join you in a world-view which denies the reality and importance of the meaning which I discern through my tradition out there in the universe. Because I cannot force you to change your mind I am content only to disagree, conscious that this will seem to you a fatal weakness in my position. But the alternative is a belief in false foundations which elevate a creed into a science. Your rationalism can beat me into slavery; my person can only call you into freedom.

Critical philosophy is riddled with inconsistencies principally because it pretends not to be self-authenticating and circular whereas, like all systems of thought, it is. Being blind to its own tyranny, it becomes enslaved by its own inexorable logic, and is sucked into an endless whirlpool of doubt from which nothing but irrationalism or some powerfully and perhaps personally articulated alternative can redeem it. As Kierkegaard put it it is the Philosophical Fragments, the New must break in upon the old in the Moment when all things are changed. For Polanyi, the New is the Other, and the sense of openness and responsibility which it inspires and demands. That sense of responsibility is genuine love, for in true love it is the other and not the self which becomes the centre; the other becomes the beloved for whom we over-ride all objections to attain to our vision and to remain true to it. Hence the basis of argument is removed from its unwitting centre within itself and transferred into the world not conceived as objective and distinct, but encountered as personal and alive. For Polanyi, the scientist is as obligated to the inanimate things of the universe, to know and represent them truly, as he is to the living, personal things, for he has no right to intrude upon or violate
their existence for his own sake, but only out of a deep desire to understand them better and with a respect for them as he finds them. If we rediscovered that sense of relatedness technology would not rape the world, nor industry pollute it, because the values that would inform our desiring would change the shape of what we did into a pattern more conducive to our shared and inter-dependent existence. But before we can discover or implement so great a plan we must understand that the ends which oppression serves are false ends, and the certainties which scepticism affords are sterile tautologies; in other words, we must rediscover a vision for the nature and ends of human life which has always been obscure.

The individual exists as a body with a certain orientation towards the world; as that body with its orientation toward the world he regards himself as a mind dwelling in a body so fully that, unlike all other indwelling, this indwelling cannot be eschewed. I cannot go outside my body or my culture or my world to stand pure and unspotted upon a transcendent platform and view the world through a microscope or telescope unblurred by cultural and theoretical constructs and values. But I can make choices about which influences I will subject myself to, and I can fight for certain visions of the Free Society which I believe to be conducive to the growth and development of rounded and mature human beings able to have visions and to dream dreams without fearing the possibility of error, and without the threat of the secret police coming to fetch them at the dead of night. Above all I can hold fast to the conviction that the most valuable thing we have is the ability to lift our eyes from the path beneath our feet to gaze upon the world around us and the heavens above, to believe that if we seek real understanding, understanding will reveal to us the truth, and that the truth will make us free.

John Puddefoot

THE UNSPECIFIABLE ELEMENT IN ACCOUNTING

Following my reading of Richard Gelwick's appeal for Polanyi's philosophy to be applied to more concrete issues and problems (as reported in Convivium 20, Mar. 1985) I came across an article by Colin Lyas, 'Philosophers and Accountants', (Philosophy, Jan. 1984) which reviews issues about the status of accounting as raised by publications from two contrasting approaches: R.R. Sterling's Towards a Science of Accounting and E. Stamp's 'Why Can Accounting not become a Science like Physics', (Abacus 17, 1981) and Corporate Reporting: Its Future Evolution (CICA, Toronto, 1980). These publications explicitly raise philosophical issues about accounting and Stamp is quoted as saying that accountancy needs a conceptual framework which rests upon secure philosophical foundations.
Readers of Convivium will be particularly interested in certain of those issues and will see them as crying out for a Polanyian treatment, which Stamp and Lyas appear implicitly to have begun. I shall therefore confine my brief remarks to those issues, and in fact Lyas himself concentrates upon them.

It is the element of judgment and decision, over and above or prior to calculation, which raises most controversy. Sterling, it would seem, thinks that this would render accountancy 'subjective' and so he would make it a science and not an art, in a positivistic understanding of science. Stamp, in contrast, sees the element of judgment and decision as ineliminable and thus the problem as that of finding standards whereby it can be assessed. Lyas endorses Stamp's general approach and explicitly refers to Sterling's as assuming a positivistic view of science, while himself referring to Feyerabend's Science in a Free Society and Against Method as providing an anti-positivist account. He also refers to disputes about art and aesthetic taste as 'subjective' or 'objective', and reports Sterling as requiring 'tests' and not 'tastes' and Stamp as giving away too much in this respect. Sterling requires an 'objective' method for finally settling disputes, as he thinks there is in science.

Yet, apparently, he provides only one alleged law for accountancy, that the realisable value of a car at the end of the year is 60% of what it was the previous year. Lyas rightly points out that (i) if the car is sold, the hypothesis is not needed, and, if it is, then the hypothesis is that very type of counter-factual conditional with which verificationalist accounts of science cannot cope; (ii) that promulgation of the hypothesis could affect the decisions of buyers and sellers and so the value of the item mentioned in it (a theme of reflexivity with which Stamp is generally concerned); (iii) that the formulators of the hypothesis had to judge that not everyone will sell and that demand will remain constant; and (iv) that it is an estimate and a judgment after all. All this good Polanyian stuff, though Polanyi is never mentioned. Likewise Lyas disappoints Sterling's hope that science settles controversies finally.

Stamp's remarks upon the reflexivity of accounting - that it creates the values which it reports, at least in some cases, and affects economic reality - can, according to Lyas, be given one very interesting interpretation: that there is a region in which realities are not independent of judgments about them, and thus a region with which positivist and realist accounts of science cannot cope, and, presumably, in view of the trichotomy quoted, only conventionalist accounts can. Yet a Polanyian realism, as in The Study of Man and the chapter 'Knowing Life' in Personal Knowledge might well be able to accommodate such phenomena, especially the impact of the study of man back upon human life.

Finally Stamp's general approach as reported and mostly endorsed by Lyas seems to be soundly Polanyian: it accepts what common sense and the
actual practice of accountancy tell us, that accounting is possible; and
then it attempts to rebut arguments against that. Specifically, Stamp and
Lyas appeal to an analogy with law in which there is judgment and decision
but not therefore 'subjectivity'. Likewise, adds Lyas, the law 'creates'
reality as in deciding whether a flying boat is an aeroplane or a ship and
so subject to one body of law and not another. Also the law has three
levels which could apply to accountancy: individual judgments guided by
general standards which build up into a body of case law; scrutiny of such
judgments by enforcers of standards for the profession (appeal courts); and
then the whole practice itself which evolves along with the society in
which it exists. Such an account is very close to Polanyi's account of
natural science, its standards and forms of authority. There is plenty of
scope here for a detailed treatment of these issues along Polanyian lines.
Is there a reader with experience of accounting and willing to undertake
it?

Richard Allen

ENLIGHTENMENT AND ALIENATION by Colin Gunton - REVIEW ARTICLE

Colin Gunton, Enlightenment and Alienation: An Essay towards a Trinitarian
Theology. Contemporary Christian Studies Ed. Paul Avis, Marshall
Morgan and Scott, 1985, 166 pp.

There is a surprising suggestion in the title of Gunton’s book, which
focuses the issues with which he deals. Why should a movement known as the
Enlightenment have alienating effects - a movement inspiring confidence in
the mind’s ability to know the world and committed to the release of the
individual from the tyranny of external authority and for the freedom of
true autonomy? Gunton’s concern is primarily theological but he covers a
great deal of ground and uses a wide variety of philosophical tools in
achieving his purpose, which is to show that we need to take the Christian
doctrine of the Trinity seriously as a key to understanding the nature of
reality. His basic criticism of the Enlightenment is its failure to under­
stand the nature of reality and hence its failure to make men feel 'at
home' in the world. To have true autonomy means to be governed by the law
of one’s own being. The opposite of autonomy is heteronomy, which means
to be determined by alien causes, to have a foreign pattern imposed on
one’s life. Heteronomy and alienation go together. The Enlightenment en­
courages a cast of mind that sees reality as incurably diverse and lacking
in inherent intelligibility. The problem which thinkers of the Enlighten­
ment wrestled with was - How can we know the world and the way things
really are? Descartes had talked of innate ideas. Locke saw the mind as a
blank page on which the world wrote mechanically. Hume destroyed the link
between the mind and the world altogether and left Kant, the great architect of Enlightenment thinking, to find a new way of explaining our experience of the world's rationality. Kant's idea was that we can only know the world and experience its rationality by letting the mind impose its own forms. He treated rationality, not as a quality of the world, but as a quality of the mind, which supplies a framework of space, time and causality through which we see the world as through a pair of spectacles.

What we believe about reality affects the way we see ourselves and order our lives and the account we give of freedom. In place of Augustine's teaching that one must believe in order to understand, the Enlightenment adopted the motto Aude sapere - 'have courage to use your own reason' - and thereby tore apart belief and knowledge. The Enlightenment's programme was to make men truly autonomous and everything that threatened the individual person as a source of authority had to go. This appeared to include God, whose popular image was omnipotent power, a very heteronomous idea. Atheism is at least in part a reaction against this false view of a tyrannical deity. The exclusion of God began when Kant denied inherent rationality to the world and found the locus of meaning in the human mind. This allowed man to play God and it was a short step to dispensing with God altogether.

Kant's view of autonomy also affected the Enlightenment's idea of man as a moral agent. Kant taught that man is what he wills. Man's rational will is a law to itself and imposes a structure of action upon the world, irrespective of the way the world happens to be. To be truly autonomous, the moral agent has to create his own universal moral laws. Gunton suggests that the Existentialist movement has something in common with the Enlightenment in being a reaction against the alienation of heteronomy and he shows that Sartre, like Kant, identifies the self with the will. Autonomy of such a kind is, however, radically alienating. The Christian view of freedom is that it is God's gift and that only when it is received as such can men enjoy the world and God and feel unalienated.

In general, Gunton's book is an attack on the view of mind which gives excessive weight to its action in imposing form and meaning and too little to its function in reception and discernment. As he points out, the mind is structured to receive as well as to impose meaning; it has a passive as well as an active role in exploring the unknown and relies on the inherent rationality of the world, which it trusts will disclose itself to the mind that is open and receptive. The book is divided into three parts, in the first of which he deals with the Enlightenment's failure to interpret our relationship to reality correctly and discusses pointers provided by certain noises raised in dissent against its exaggerated view of mind's active role. There is Berkeley, who argues that we can, through God's agency, perceive the way things really are and that we do not impose our own rationality on a meaningless collection of data. There is Coleridge,
who argues that the imagination is the highest form of rationality, with a capacity to be creative that is nothing less than divine, and there is Polanyi, whose great contribution is to show that matter is not foreign to us because we indwell it and are continuous with it and that therefore we need not see our reason as discontinuous with reality. Gunton finds the essence of Polanyi's critical realism in his understanding of the way passive reception and active understanding operate together in dialectical interaction. He sees the dispute between the Enlightenment and Polanyi as essentially about which metaphor should be used to depict the way things are. For the Enlightenment, mind is related to the world by clear ideas and relations, but for Polanyi, it is related through indwelling and the imagery he uses to greatest effect is that of the blind man's stick. In its commerce with the world, the mind functions like the stick, probing and groping until the human person has a picture of the environment which corresponds more or less to the structures of reality. Underlying this 'probe' imagery is the sense of touch, which links the knower and his world by direct contact, and allows us to think of the mind, like the stick, as an extension of the body. The imagery of clear ideas is related to sight rather than to touch and does not give the same encouragement to feel that we are part of the world we see or to be sure that what we perceive at a distance is the way things really are. By the metaphor of indwelling, Polanyi relocates the relationship of mind and matter. As the blind man indwells his stick, metaphorically speaking, and treats it as an extension of the body, so our minds make contact with the world and function as an extension of the body. In this way, says Gunton, Polanyi shows us that the mind "is at once active and passive, engaging in dialogue with the world, just as the blind man both seeks and receives through his stick information about what is there." (p 41) Gunton draws attention to Polanyi's insistence that we come to terms with "the fiduciary rootedness of all rationality," (P.K. pp 296f) "All our rational enterprises entail risk and personal commitment." (Gunton p 41)

The whole of the first half of Gunton's book is, as he says, "an argument from faith to understanding, from a belief in a God who has made himself known as triune - as the one who identifies himself to us in Jesus - to the outline of a possible way of interpreting our relation to the reality we perceive day by day." (p 52) It was the problem of the relationship of God and the world, of the One and the many, that drove Coleridge in a trinitarian direction. He sought, says Gunton, "with the help of the Christian understanding of God, a world that was neither blankly one nor so diverse that only mind could provide a unity." (p 136) Gunton follows the direction of Coleridge's thought and develops the thesis that we can only counteract the distorted view taught by Christendom and the Enlightenment of what it means to be godlike if we see God as triune - that is if we see him in the very suffering and humanity of Jesus.
To see reality as a unity means first of all to be able to recognise that there is no vast gulf between God and the world, between matter and spirit, and between the arts and the sciences. To try and live in a dichotomous world is to destroy the unity of human beings and to turn the real world into a fragmented and meaningless chaos. This brings the temptation it brought to Kant to see the mind as the creator of its own meaning and to usurp for ourselves predicates that belong to God. What is needed, says Gunton, is not a transfer of predicates from God to man but their revision in the light of God's trinity. In Part II, Gunton looks at the problem of moral action and considers alternatives to the Enlightenment's tendency to see the person as naked will. True moral activity is an activity of mind and imagination as well as of will. This comes out in Gunton's discussion of Iris Murdoch's *The Sovereignty of Good*. "Reality will show us what we ought to do.", writes Gunton, summing up her thesis. (p 75) But for this, we have to see reality justly and lovingly, not just accurately. Freedom and obedience converge as the law of our being when we see what is there with understanding. This is the answer to heteronomy and alienation - to allow the will to be moved in response to a vision of reality. This way of understanding autonomy is exemplified in the life of Jesus, whose authentic humanity was both the gift of God and the law of his being. Only in the I-Thou context of personal relationship is the paradox of law and love resolved. When I love what I see, my action is ordered by the law of my being. My freedom has to be properly grounded in reality and in God.

Polanyi's significance for Gunton's discussion of moral freedom lies in his wish to demonstrate the place of moral passions in science. He stands over against the individualism of the Enlightenment with his notion of 'conviviality', a term he uses to describe the essence of society, which "is not a collection of isolated, God-like individuals, but a community of beings whose very existence reflects, for good or ill, the ways in which they are related to each other." (Gunton p 85) Moral inversion, another term used by Polanyi, is, according to Gunton, "what takes place when a cluture becomes cynical about moral thinking" and "consists in the appeal to moral passions on behalf of something that is claimed to be not moral but to have the certainty supposed to inhere in science." (p 79) "Moral inversion comes about when the development of political and moral ideas is held to be simply the result of historical processes... (and leads to) the practice and passionate defence of the intrinsically immoral." (pp 78-79) It is "the phenomenon by which absolute individualism creates its opposite, a system in which authoritarianism falsifies patterns of conviviality and community by creating areas of alienation." (p 85) "Polanyi's chief example of moral inversion is Marxism, but he makes it quite clear that it is a danger to which we are all subject, for 'it enables the modern mind, tortured by self-doubt, to indulge its moral passions in terms which also satisfy its passion for ruthless objectivity.'" (Gunton, p 80 including
quote from P.K. p 228.) Moral inversion describes a state of social and political alienation which corresponds to Iris Murdock's alienation of the individual. Once again, Gunton sees in the notion of God as triune, the means of grounding our understanding of the true nature of human society. The triune God is not a bare unity but a unity within an interrelatedness of 'persons' and it is God as Spirit who makes corporate community possible, where the individual is neither swallowed up in the whole nor remains in atomic isolation, so that the world becomes a reflection of the individual self. We find, says Gunton, in God's trinity a way of seeing our freedom properly grounded in reality, because the origin and rationale of all things is found "neither in ourselves nor in an undifferentiated and heteronomous unity." (p 88). Because of the way things are, we are part of a free humanity and human life is to be conceived "not as the play of impersonal and mechanistic forces...but as a community where the law of our being is worked out, however stumblingly and inadequately." (p 107).

In Part III, Gunton shows how the same paradox of alienation is found in the study of the Bible and biblical criticism at a time when more people can read the Bible for themselves in their own language than at any time in history. The problem is still that of the relationship between the one and the many and the question we have to ask is, whether there is an entity called the Bible, or whether it is just a chaos of texts. Does the Bible have an inherent and given unity of content or is its canonical shaping merely the result of human minds imposing their own form upon a collection of texts that lack inherent coherence? In order to deal with this question, Gunton looks at David Strauss's contribution to biblical criticism and brings the debate up to date with a discussion of Brevard Child's work on canonical criticism, with its conclusion that a study of the content of Scripture suggests that the 'canon' reflects an intrinsic unity. Gunton suggests that David Strauss's nineteenth century account of myth in the bible reflects a Kantian cast of mind which holds that the mind imposes its own rational forms on the data of perception. Strauss believes that the primitive mind imposes its own scheme on reality in order to make sense of its experience and does this in terms of pictures or myths, where the modern mind would apply concepts. This reduces the difference between the primitive and the modern mind to a difference of what counts as suitable language in which to speak of whatever reality lies behind the language. Such an approach introduces thoroughgoing cultural relativism into biblical criticism, which infinitely complicates the task of hermeneutics.

Gunton believes that the work of the nineteenth century biblical critics has been too much influenced by the critical ideology of the Enlightenment and that biblical criticism suffers from the mind imposing its own alien rationality on the text at the expense of fulfilling its more passive and receptive role. In Polanyian language, there has been insufficient 'indwelling' and too much focal attention to subsidiaries. The
canonical approach to biblical studies represents a protest against this neglect of the canonical shaping of the biblical literature. Gunton sees the issue focused in words written by Ronald Clements in defence of a theological hermeneutic of the bible - "At a literary level the canon itself serves to bind together various local traditions, to link together experiences from different ages, and to lay down a unifying pattern of insights to show that it is the same God that is being described and referred to here". (pp 137-138, quoting Clements O.T. Theology, 1978. Gunton's italics). What is focused in the word 'canon' is a unity that can be discerned and is not imposed by the mind, which leads Gunton to ask whether we can discern a unity of theological form in the Bible without imposing extrinsic dogmatic categories. What happens, he inquires, if, like Luther, we allow our minds to judge the content of the Bible by some criterion such as 'the gospel' or 'Christology' and find ourselves setting up a 'canon within the canon'? Is this not a kind of reductionism? In the end, Gunton suggests, nothing less than the doctrine of the Trinity allows us to come to terms with the relation between the variety of types of theology and literature in the Bible and to see them as held together within a unifying 'canon', just as Coleridge came to terms with the relation between a multiple world and the unifying God through the doctrine of the Trinity. In other words, we are being asked by Gunton to consider whether the question of the unity of Scripture does not take us to the very threshold of the doctrine of the Trinity. If the doctrine of the Trinity suggests a way of seeing the Bible the way it is, this, in turn, gives support to its derivation from Scripture. There is here, as with all knowledge, a circularity which requires the use of dialectical method and Gunton recognises this when he suggests that "a particular way of understanding God is both ultimately derived from Scripture and can then be turned back, as it were, to cast further light on that from which it came."(p 141)

"The conception of God as triune", writes Gunton, "is meant to express a view of one God who is various in his being and is therefore able to be seen as relating himself to the world in a variety of ways. The open and personal reality of the God of the many facets of biblical speech, from creation and wisdom through to grace and promise, can come to speech if we conceive God in his Fatherhood, Sonship and Spiritness." (p 141). This notion of God as triune involves affirming his involvement in the rationality of this world and prevents us from turning him into an authority figure who imposes his demands in a heteronomous manner. Gunton offers this doctrine of the Trinity, not as a 'solution to problems', but as a direction in which to look when we face problems of unity and diversity. All theology is a process of faith moving towards understanding and, in this book, Gunton's working hypothesis is that, to find God's reality being opened up for us in what happened with Israel and Jesus suggests that we can profitably treat the triunity of God as a key to understanding the nature
of all reality - not least that of human beings in their relationship with the world and with each other.

Many people, in writing a book of only a hundred and fifty-five pages, might be tempted not to embark on an additional discussion about the nature of language, but Gunton pursues this question relentlessly, with a sure instinct that it constitutes an important link in the total chain of argument. His discussion of language brings us to the heart of the difference between the Enlightenment's view of meaning and the views of such thinkers as Coleridge and Polanyi. Because the Enlightenment denies to the world an inherent meaning and sees the mind as responsible for imposing its own meaning in true Kantian fashion on the world, this not only alienates man from reality but also has the effect of alienating the meaning of words from the meaning of the world. The implications of this for theology are intolerable. In Part I of his book, Gunton claims that our words are enabled to fit the real world because its Creator has conferred rationality upon it. The Enlightenment, by contrast, demands for its ideas only clarity and distinctness and it rejects thereby "the very way by which an openness of the world as it is to our words might be conceived." (p 145) If we cannot see the transparent rationality of the world, we have to make "an alienating choice: 'knowledge is either personal, relevant, and untrue or impersonal, irrelevant and true'." (p 146, quoting from an essay by Helmut Kuhn in Intellect and Hope, Essays in the Thought of Michael Polanyi, p 132). Polanyi's theory of personal knowledge, with its central metaphor of indwelling delivers us from having to make this alienating choice. Because of indwelling, there is continuity between us, our bodies and the world, which frees us from having to see our reason as discontinuous with reality. This, in turn, as Gunton shows, allows us to see our words as having inherent rationality and capacity to tell the truth. "On a Polanyian account the world's rationality is prior to ours, and our words gain their meaning from the world. This is the opposite of a Kantian account, as Kuhn well realises." (p 147) Gunton then applies this understanding to our reading of the biblical texts. If the meaning of the text's words derives in some way from the meaning of the world, we can expect to find something in them that is meaningful to us. The way God comes to speech cannot evade the challenge of humanity and diversity, but he can still come to speech with an authority expressed through human words. And, "(a)s he comes to speech, the words exercise authority, not an imposed heteronomous authority, but as and in so far as they enable us to speak the truth in our own words." (p 152).

This is not an easy book to read. The discussion ranges widely and at times Gunton seems to be keeping more balls in the air than most people can juggle with at a time. The reason for this is probably that the book is not intended to do more than sketch proposals for a larger work in which the many aspects of this study can be more fully developed. But it is undoubtedly a splendid appetizer and Gunton can be forgiven if, at times, his
arguments seem rather too condensed. What is certain is that he is tackling a subject of the greatest importance, not only for theologians and biblical critics, but also for the many more whose interests range from philosophy and ethics to literature and linguistics. In my view, this book is both true to the orthodox traditions of Christianity and thoroughly radical.

Joan O. Crewdson, Oxford, August 1985

RORTY AND THE SCOPE OF NON-JUSTIFICATORY PHILOSOPHY - II
(A Discussion based on Philosophy and the Mirror of Nature, Princeton U.P. 1979)

In Part II of this article I turn to Rorty's positive positions, which an edifying philosophy is supposed not to have. He terms his own positions 'epistemological behaviourism' (Chap. IV:2). This holds that knowledge is not the having of an essence but of a right, by current standards, to believe (389); that epistemic authority is what society lets us say and that through is what is 'good for us to believe' rather than 'contact with reality' (175); that 'acquaintance with meanings/sensory appearances' should not be put between the impact of the environment of people and their reports of it, and that such notions should not be used to explain the reliability of those reports (176). It is not another version of epistemology but the thesis that epistemology is to be replaced by the history and sociology of science (266) (i.e. an account of what scientists have done and now do, not of what they should in future do) and by the study of disciplinary matrices as empirical facts by 'cultural anthropology' (385).

I shall now consider his use of epistemological behaviourism in relation to mind, or 'the mental'. Rightly or wrongly, Rorty sees debates about the nature of mind (which he claims were invented by Descartes) as narrowing down to the question of the reality of 'raw feels' or pains and to claims about incorrigible knowledge of them in one's own case (97). He holds that behaviourism, such as Ryle's, cannot cope with them (96). Instead of saying that a certain type of behaviour is a necessary and sufficient condition for ascribing 'raw feels' and that this is a fact about our language, Ryle should have said that incorrigible knowledge is a practice of justification adopted by our peers. Ryle tried to show that there are no incorrigible reports, for our language does license inference to incorrigibly reported 'raw feels' (99-101). What is really at error is the widely made assumption that 'whenever we make an incorrigible report on a state of ourselves, there must be a property which we are presented with which induces us to make such reports' (97). 'Raw feels' are as real as anything else and we do have a superior way of knowing about our own. But
they are not a special sort of entity or processes in a private and non-material realm (107). Our 'privileged access' is really the fact that there is no better way of finding out if someone is in pain than by asking him and that nothing can overrule his sincere report. Pre-linguistic knowledge of pain is like that of a record-changer 'knowing' that the spindle is empty, or of a plant knowing the direction of the sun, or amoeba the temperature of water. It is a matter of manifested behavioural discrimination (cf. 182). Linguistic knowledge of pain is not the putting of a linguistic garb over the non-linguistic, for that would make us forever sceptical about what incommunicable qualities others feel (109-110). Skepticism about other minds arises from the assumption that knowledge is accurate representation (mind as mirror, knowing as mirroring) and that we can be certain only about our own representations - the veil of ideas. Epistemology is the philosophical genre whose aim is to reunite subject and object thus sundered (113).

Rorty offers 'Persons without Minds' (Chap. II) and 'Materialism without Mind-Body Identity' (Chap. II:6), instead of dualism (and thus scepticism) or other non-dualisms. The argument for dualism is:

1. Some statements about our own sensations are true.
2. Sensations are mental event.
3. Neural processes are physical events.
4. 'Mental' and 'physical' are incompatible predicates.
5. No sensation of pain is a neural event.
6. There are some non-physical events.

Ryleans and some followers of Wittgenstein, assuming that mentality means privileged access, deny (2). Pansychists deny (3). 'Reductive' materialists (Smart and Armstrong) challenge (4) and 'eliminative' materialists (Feyerabend and Quine) deny (1) (116-7). But Rorty, taking incorrigibility as the key issue, would substitute for (4) the statement that 'nothing can be both corrigibly and incorrigibly reported', which he would deny. For 'raw feels' can be corrigibly reported by those who know neurology and incorrigibly reported (in their own cases) by those who don't. The 'mental' is simply one way of talking about what is physical, the practice of making sincere and thus unchallenged reports about one's 'raw feels' (121-2). Our uniqueness is the ability to say unique and obscure things, and not to speak to oneself alone. With a cerebroscope all thoughts could be monitored but not therefore understood (123 - cf. 355: predicting noises is not predicting their meanings). We need to be aware of different meanings of 'physical' and that the failure of science to explain something physically, in one sense, does not entail a need to explain it non-physically. It is vain to expect philosophy to provide a permanent ontological framework for every possible scientific event and all cultural developments (124-5).

But what, I suggest, philosophy can do is articulate the ontological framework presupposed by or embodied in our current knowledge, scientific
and otherwise. This is what Rorty himself does by redefining the 'mental' as one way of talking about the physical, with the implication that all reality is physical. But his epistemological behaviourism prevents him from explicitly developing an ontology, just as it results in his denial of an ontological basis in the individual for rights and duties (177), of ontological divides between noises and meanings, and neurons and people (355) and of knowledge, awareness of concepts descending on the child at the age of four when he can talk (187). In each case, he holds, there are only different ways of speaking in which we engage or new relationships we establish in which each remains internally unchanged. Likewise he regards it as certain that all speech, thought and theory will be completely predictable in purely naturalistic terms, but it is only a trivial consequence of what we mean by 'decide' or 'invent' that no one will be able to predict his own before deciding or inventing them (387). His position is like that of Wittgenstein: "This language game is played". But that proves too much. It validates astrology as well as astronomy, magic as well as medicine. Linguistic analysis has never answered the question of whose language game, talk and concepts it is. I presume that Rorty would not regard astrology and magic as merely incommensurable with natural science, that he would not want to keep the conversation open to those ways of talking and that he has some general principles of reality which he could articulate and specify in an explicit ontology.

Readers of Convivium are likely by now to see a crying need for an ontology of levels, not 'divides'. Rorty's contention that all is physical but that there are several senses of 'physical' evades the question of whether all is physical on the same level or whether everything does not exist side by side but on different levels. The meaning of a sentence is not another but 'immaterial' property over and above how it looks. It determines its place in a context of events in a language-game (25). But what is language apart from the physical noises and marks? One cannot distinguish language from meaningless noises and marks by reference to language-games. One needs a definite reference to minds and intentionality which that remark was intended to eliminate. Rorty denies any perplexing ontological gap between atomic micro-structure and functional macro-structure, for any functional state, graspable only in a larger context, is 'immaterial' only in the trivial sense of 'not immediately evident to all who look' (26). He is not aware of the switch of attention from looking at micro-structure to looking from it and to its function. Likewise with the already quoted examples of noises and their meanings, neurons and feelings and people, and the behaviour of a person and the workings of his mind. Without an ontology of levels, and the specific ontology of the tacit integration of levels, Rorty's language equivocates between a flat materialism and an inchoate conception of levels of reality. I would also mention again his equation of pre-linguistic knowledge with the movements of a record-changer.
when the spindle is empty, of planets to the sun, and amoeba to or away from warmer or cooler water (110, 182). In Whitehead, such an identification or use of the same language would be taken panpsychically, but with Rorty I think that, taken at its face value, it must be read in the converse direction. Certainly, he states that things and people are not two distinct entities (351). Let us note that, as in Polanyi, an ontology of levels can avoid that imperialism of the one method, whether the latest or not, which Rorty wrongly identifies with systematic philosophy (366).

I come now to his conception of knowledge: the right by current standards to believe (389) what society lets us say (175); primarily that, supported by justifications, a relation between persons and propositions, not knowledge of, a relation between persons and objects (141). But again, whose standards and which society? For it is not just a matter of incommensurability but of flat contradiction - science versus magic, religion versus atheism, behaviourism versus recognition of the mind. Moreover, there is no place here for honest dissent from consensus, especially as moral rights are only ways in which others speak and behave towards us and are not grounded in what we are. Again, I presume, Rorty holds some beliefs, allowed by the current standards of some groups as occultists, to be false and so has implicit principles for judging them which he could articulate and specify to at least some extent. Epistemological behaviourism treats beliefs just as facts, to be described by history and sociology or cultural anthropology (266, 385). But belief is self-transcending, not a mere fact, a reaching out to a reality which it grasps or distorts. On the one hand, against 'justificatory' philosophy, he sees the impossibility of trying to stand outside what one believes and to assess its correspondence with reality; but, on the other, he would have beliefs treated as mere facts and so outside the commitment situation. Yet Polanyi has shown that we can do this, neither in our own case nor another's. For in the former there is our own commitment to an independent reality which anchors our beliefs and in the latter there is the other's equal commitment which we have to assess and endorse or reject. A history of science is necessarily a critical study, showing how theories have been confirmed, perhaps with modifications, or disproved, and how valid scientific standards have arisen. It is not just a story of what scientists have happened to do: for one thing, it must first recognise genuine and fraudulent scientists. Finally, knowledge of, on the contrary, is prior to knowledge that, which articulates only a part of the former. For 'We know more than we can tell' (Tacit Dimension, p 4).

Let me conclude by saying that Rorty's book contains a wealth of material, many interesting suggestions (especially about the historical origins and developments of 'justificatory' philosophy) and many close arguments. Ultimately, I think, it is not coherent with itself, particularly with regard to its own procedure and what it states about edify-
ing and systematic philosophy. In its own terms it is systematically anti-justificatory, but that is a possibility which it implicitly denies. I think it would be more effectively anti-justificatory if it were more systematic and systematic upon Polanyian lines.

Richard Allen

BOOK REVIEWS


It goes without saying that Robin Hodgkin's work on education has been influenced by the insights of Michael Polanyi. This book is, however, an expressly practical application of those insights. It is designed to be read by young teachers and students at teacher-training college and to provide them with a working model by which to understand the process of learning. It also gives a detailed prospect of what the curriculum should look like by the year 2000.

Hodgkin starts with the question: Why, when the first years of life are so full of adventure and discovery, are the middle-teens distinguished by uninspiring teaching and unmotivated learning? Part of the answer, he argues, is the system of competitive examinations. The student should not be seen as a blank slate to be inscribed or a jug to be filled but as a Robinson Cruso washed ashore, shaping and being shaped by his environment.

If we can free ourselves from the tendency to think of children instrumentally, as controllable extensions of ourselves or as passive victims of the system, and think instead that they are, in essence, autonomous, self-motivating explorers, makers and co-operators, then we begin to free them and us for education. (p 63)

It is here that Hodgkin introduces Polanyi's ideas of the tacit, of apprenticeship and of competence: in addition to explicit instruction, the infant or pupil will pick up from its mother or teacher or environment, during play, tacit knowledge. Armed thus with a store of implicit 'tradition', the learner can then progress to new challenges, to 'frontier' experiences. (The concept of the individual's and society's 'frontier' is Hodgkin's own contribution - compare his Reconnaissance on an Educational Frontier (1970) - and bears some resemblance to Jasper's Grenzensituationen to which he refers the reader, but in his opinion it is a faithful extension of Polanyi's thought.) Another highly-charged Polanyian term he employs is 'competence'. This describes the use made of tacit knowledge in order to make sense of the challenge and to push back the frontier.
A teacher and a learner are, together, trying to discover and create order out of various contrived and unexpected elements which might otherwise be disordered. (p. 85)

Following and slightly modifying the educationalist Bruner, Hodgkin believes that such discovery and creation of order take place on five levels, the interpersonal, the enactive, the iconic (or pictorial), the musical and the 'language-like' (notational and linguistic). He proposes an educational system which will encourage a basic competence in all five modes and the experience of 'success' for all children up to the age of 13 in at least one of them. This can only be achieved by reversing the present educational prejudice which favours those operations controlled by the brain's left hemisphere - language and precision skills - above the right - pictorial, tactile, musical and social skills. For young people aged between 13 and 18 he replaces school with a varied menu: six months' orientation for the modern world in a residential college, two years in some service capacity such as the armed forces, health or welfare, and some years in a specially created 'junior job'. Training would be on a day release/evening class basis and of a technical nature. University entry would thus be delayed until one's 'twenties, dependent on having earned enough educational coupons and on the student's paying a quarter of the fees to impress on him the value of what he will acquire.

Hodgkin is an educational moderate. He steers a middle course between progressive and teacher-centred approaches, between the claims of nature and those of nurture, between brain and hand (and, for that matter, between left and right brain!), and between an order immanent in the universe and an order brought to the universe by the rationality of man. This does not, however, mean that he lacks passion. On several occasions he blasts the examination system for having destroyed the lives of so many. Of television he pleads,

We need to cut through the common cant which defers TV as essentially an ally, as a 'most promising educational aid', etc., and to recognize it for what it generally is - a kind of technological valium with addictive tendencies. (p. 174)

Although his concrete proposals for 'Education 2000' differ in subject matter from the preceding chapters of psychology, physiology and anthropology, it would be a mistake to dismiss them as the theory's optional extra. The theory, Hodgkin reminds us, largely arose out of the practical suggestions. He himself describes them as 'controversial', and one could argue against them, for example, the resistance of the workforce to the introduction of what is essentially cheap labour, the real possibility of exploitation of the young by employers, parental resistance, the economic impracticality of job creation on such a scale and the scheme's apparent neglect of the problem of unemployment, now a fact of life for the technically developed countries for which the proposals are designed. But some of these dif-
difficulties could not have been foreseen when the basis for this chapter was laid in 1977, and in any case nit-picking misses the point. Here we have an attempt to put the adolescent in the role of the castaway, in a position where his frontiers will be stretched both physically and existentially; to remove from him the necessity of being force-fed testable facts, and to give him instead a sense of purpose in working for others.

While Hodgkin identifies a major problem of current middle-teen education as lack of motivation, he does not acknowledge the possibility that an adolescent's rebellion against authority could simply be a way of finding his feet in an adult world, and would therefore manifest itself against Hodgkin's new junior jobs and colleges as it has against not only the present school system but even such schemes as YOP and YTS. Like an infant, the adolescent is questioning and questing: he is committed because he is seeking something worth his commitment. Hodgkin himself says of infants, 'I do not know a better word than "belief" for that initial, energized attitude of commitment and curiosity in children' (p. 5). This attitude of commitment in fact characterizes one's whole life. But few will admit it. Education along Polanyian lines will bring home to all the point that, even when adults, they should not be ashamed of having the 'faith' of infants and adolescents.

This remarkable book is full of commonsense and most teachers will find something in it which rings true to their experience. It is also impressively argued and intentionally provocative. It deserves to achieve its aim of opening up a new way of thinking about education.

D.V.N. Bagchi


This short work comprises four lectures given between 1977 and 1984. Its unifying theme is the fundamental influence of Christian thought on Western culture in general and on science in particular. Professor Torrance identifies a number of similarities between theology and science. The Greek Christian doctrine of creation 'out of nothing' is equated with the model of an open-ended universe, which has replaced the Newtonian model of a closed, self-explanatory universe, and the 'mind of Christ' is likened to the mental honesty required of the scientist in order to attune him to the truth of what he studies.

By far the greater part of the book, however, reflects the common quest of theologians and scientists for the 'order' which they know underlies the universe but which cannot ultimately be proved from the universe. In this quest both theology and science accord man a pivotal
role, for he possesses in himself something of that same rationality which
imbues the universe and makes it intelligible; he straddles the apparent
chasm between fact and meaning and even believes meaning to be more impor-
tant than 'objective' description, as we can see from the convenient fic-
tion of gluons in sub-atomic physics. In the final chapter Professor Tor-
rance broadens his scope to discuss the role of the university. It must be
open-minded, he argues, free from all modish constraints except obedience
to the truth wherever it is to be found. Its greatest challenge in today's
fragmented culture is to unify all knowledge. And it is here that the
relations between science and theology explored in the earlier chapters
prove their worth: as a means of unifying the disciplines of the university
and therefore society as a whole.

There are many similarities here with the author's Divine and Contingent
Order (1981) and Transformation and Convergence in the Frame of Know-
ledge (1984 - reviewed in Convivium 19), not least in the use he makes of
Polanyi's insights. This is quite deliberate and Professor Torrance
succeeds in his double aim of carrying further some of the lines of inquiry
of his earlier works and of providing a relatively easy-to-read introduc-
tion to the more intricate discussions contained in them.

D.V.N. Bagchi

Drusilla Scott, Everyman Revived: The Common Sense of Michael Polanyi (The
Book Guild), 215 pp. £9.25.

Readers of Convivium presumably do not need to be convinced of the
importance of Michael Polanyi, but they need this book - if only to give to
their friends. It is a marvellously lucid and well organized exposition of
Polanyi's thought and one cannot imagine a more useful book to put into the
hands of an intelligent person wanting to know why Polanyi is important.

I suspect that there might even be readers of Convivium who, like me,
are disciples of Polanyi and yet have to confess that there are passages in
Personal Knowledge which require more knowledge of mathematics, logic and
physics than they possess. Lady Scott, it seems to me, conveys all the es-
sential elements of Polanyi's thinking, yet without requiring this kind of
technical expertise.

The book takes the theme of Everyman as the central thread and shows
how, in one field after another, Polanyi's work liberates Everyman from the
dehumanising effects of a misunderstood and misapplied 'scientific method',
enabling him to recover his authentic humanity. Most strikingly the book
demonstrates the direct relevance of Polanyi's thinking not merely to our
intellectual problems but to the burning social and political issues of our
society.

Lady Scott was a friend of Polanyi for fifteen years and was asked by
him to help to make his ideas more widely understood and accepted. This delightful and absorbing book is a splendid discharge of that commission. Buy it, read it, and give it to your sceptical friends.

Lessie Newbigin


This is an important, brief, meaty book. For once, Polanyi's ideas on tacit knowledge have been treated seriously, as they apply to practical, curricular, class-room problems. The book will be of interest to many who are not science teachers.

The basic question which the authors face with courage and suspicion is: why hasn't scientific education worked better, especially in view of the high hopes and the massive amounts of time and money that we have invested in it during the past twenty five years? The problem is stated clearly and it is set in a brief and valuable history of science teaching. This includes a fascinating survey of the Nuffield, and similar, curricular initiatives taken in Britain. Even so, the book leaves one with the sense that the real problems are only beginning to be touched.

Many traps, such as 'motivation' and 'objectives', are skilfully avoided. The authors are properly critical of the popular, 'instrumentalist' view of a teacher as one who 'fills up' or conditions a learner. They prefer, quite rightly, to see students as 'essentially active in the learning process in which they are continually enquiring, testing, speculating and building up their own personal constructs [sic] of knowledge. It is only by personalising such knowledge that it becomes valid, meaningful and useful.' This is all well said.

There remains, however, an interesting residue of 'instrumentality' in the authors' approach. This shows itself when they state on p. 43 that 'primarily a scientist works as a problem solver; so should our students.' I think this veils a deeper reality - the primacy of problem spotting and what might be termed 'the problem relishing' potential of young people. This, I suspect, is a gift to be nourished largely at the pre-secondary and to some extent at the pre-school stages of development. The authors have, perhaps, been forced to package their arguments too tightly, but for one reason or another we are presented here with a rather limited view of what tacit knowledge is.

So some big problems slip through: the variety of early home learning, how to enrich and yet to contain mechanical and reductive understanding of the world, the great importance of training in visual perception and graphic activity. It would be good if this book turns out to be the first step in a journey.

Robin Hodgkin
Editors note: Owing to lack of space the first two sections of this article dealing with Chomsky's ideas is omitted.

POLANYI'S REFLECTIONS ON CHOMSKY

1

At what points do the linguistic theories of Michael Polanyi and Noam Chomsky intersect? .... Polanyi's reflections on Chomsky do not constitute a simple endorsement. This paper will examine the ways in which he interprets and sometimes modifies Chomsky's views of mentalism, linguistic creativity, and language acquisition as he considers them from the vantage point of his own theory....

3

In "Sense-Giving" Polanyi indicates his rapport with the orientation of Chomsky's work:

...a distinct tendency to break with strict empiricism and to revive the classical conception of language, which recognizes the mental character of meaning, has been expressed recently by Noam Chomsky, and my present study supports this by showing that speech has the fundamental structure of all meaningful uses of consciousness in animals and men. (195)

Immediately, one notices a divergence from Chomsky's conclusion that language is not only species-specific but so highly specialized that it bears no resemblance to animal behavior. This seemingly minor disagreement points to more significant differences, in both approach and substance, that will become evident in the course of discussion. The most important one to note here is the difference in purpose. Whereas Aristotle examines issues from a methodological standpoint that stresses their role in linguistic theory, "Sense-Giving" examines them from an epistemological point of view that is concerned with the process of using language meaningfully.

Specifically, Polanyi's purpose is to show that although the acts of endowing our speech with meaning and making sense of what we hear are informal, they "possess a characteristic pattern that I shall call the structure of tacit knowing (182). Hence, when he begins his essay with a discussion of the "triad of tacit knowledge," he does so for theoretical, not methodological, reasons. The concept of the triad—with (1) subsidiary particulars that make it possible for (2) a knower to grasp (3) a focal entity—is central to the epistemology he develops in Personal Knowledge; knowing is a conscious personal act which originates in the knower's reliance on particulars that function like clues. Even explicit knowledge
can be understood only through tacit inference; one may have rules and, again, rules for applying rules, but ultimately the interpretation must rest on tacitly understood principles that provide the existential foundation for knowing anything at all.

One can recognize an initial distinction between Chomsky's and Polanyi's views of tacit knowledge by considering the way in which Polanyi articulates his concept in *The Tacit Dimension* (chap. 1), where he differentiates four "aspects" that reveal diverse relationships between subsidiary particulars and the focal object: the functional (or pragmatic) in which the subsidiary clues, of which we may be only vaguely aware, are necessary to comprehend the focal object; the phenomenal (or transitive) in which the subsidiaries do not completely recede beyond our awareness as we grasp the bond between either a whole and its parts or the reverse; the semantic (or heuristic) in which we discover meaning as the subsidiaries confer significance on that to which they vectorially point; and the ontological (or intuitive) that enables the knower to understand the (possibly future) implications of a complex entity. Although Polanyi's concept is thus more specific than Chomsky's, an even greater distinction can be found in its pattern of relationships, where either informal or formal knowledge can become tacit if it is used subsidiarily. Most important, Polanyi's tacit knowing represents an active principle, not a passive one; it operates in the discovery, as well as the recognition, of knowledge.

In "Sense-Giving" Polanyi counterbalances Chomsky's emphasis on formal analysis by demonstrating the pivotal role of tacit knowing at all levels of language study and use: "There could be no phonology if we could not control and use meaningfully a complex pattern of vocal actions without any explicit knowledge of what we are doing when relying on these grounds for our utterances of words" (184-85). Similarly, in the case of grammar, we compose meaningful sentences by conducting delicate integrations without necessarily being able to give a detailed account of syntactic patterns. And beyond the level of the sentence, we perform still more intricate integrations in what Polanyi calls the communicative "trig of triads" as we write prose consisting of graphemes that combine to mean a word, which combines with other words to form a sentence, which, in turn, combines with other sentences to produce discourse. The triads embedded in triads increase substantially in number and complexity when one moves beyond these elementary examples to a simple case of ordinary communication. To make the dimensions of the problem immediate, Polanyi presents an "exemplum," an anecdotal account of the manifold tacit processes, known as "encoding" and "decoding" in some linguistic circles, are called by Polanyi "sense-giving" and "sense-reading" to emphasize that they bear on meaning and that they require personal judgments by the speaker-hearer.

Having illustrated that tacit knowing applies generally to the use of language, Polanyi turns to a special case, "the more elementary fact that a
word can mean anything at all" (192). He observes that "The brilliant ad-
vances of modern linguistics have cast no new light on the strange fact
that language means something" (192), a failure which he traces to the
tenets of extreme empiricism, behaviorism, and positivism that, on
methodological grounds, exclude consideration of mental processes. Polanyi
cites the unsatisfactory attempts by Charles Morris and Willard V.O. Quine
to explain meaning by conventionalism, or the habitual association of
sounds and objects. One wishes that he also had commented on Chomsky's use
of an explicit procedure to "interpret" sentences. The omission is espe-
cially noticeable because of Polanyi's insistence that the formalization of
meaning relies on the practice of unformalized meaning. Indeed, he argues
that even denotation, the simple naming of an object, is an art like that
of connoisseurship (Personal Knowledge 81). And the repeated use of a
word, which establishes meaning, requires a series of judgments as a person
identifies different situations on the basis of some particular feature; he
must distinguish, for example, what variations are irrelevant, what vari-
ations are normal changes, and what variations discredit a feature al-
together (80).

Polanyi's stress on the pervasiveness of tacit knowing leads one to
ask what role is left for explicit knowledge in the use of language. He
poses the question himself in "Sense-Giving," where he answers rather
tersely with an illustration drawn from his "exemplum": the traveler's ac-
tual experience consists of subsidiary and focal elements, both of which
remain tacit; in his letter, the focal awareness of his experience becomes
subsidiary to the communication, which is explicit; the recipient under-
stands the meaning of the letter by tacitly integrating the explicit lan-
guage (195). Elsewhere, however, he places more emphasis on the benefits
that may accrue from the dialectic nature of the relationship between tacit
and explicit knowledge. In "The Logic of Tacit Inference" he describes the
integration of particulars as an interiorization that bestows meaning, and
the focusing on those particulars as an exteriorization that effaces the
meaning of a comprehensive entity; but "when the two are applied
alternately, they can jointly develop meaning" (148).

In The Tacit Dimension he shows, moreover, that the application of
the complementary processes of analysis and integration may result in a
modified meaning that is deeper than the original because the detailing of
particulars provides a surer knowledge of them in the subsequent
integration. Sometimes it may even be possible to state explicitly the
relations between particulars: "When such explicit integration is
feasible," says Polanyi, "it goes far beyond the range of tacit
integration... The formal rules of prosody may deepen our understanding of
so delicate a thing as a poem" (19-20). Although in "Sense-Giving" he does
not draw the obvious analogy between formal rules of prosody and formal
rules of grammar, summarily places it within a tacit framework, and then
directs his attention exclusively to Chomsky's views of language acquisition and linguistic creativity.

One must acknowledge Polanyi's context, as well as that of Chomsky, to understand the import of the following passage:

Of the grounds on which language learned, Chomsky writes: 'The language-acquisition device is only one component of the total system of intellectual structures that can be applied to problem solving and concept formation; in other words, the faculté de langage is only one of the faculties of the mind' [Aspects 56]. But he goes no further in defining these faculties. My view is that the use of language is a tacit performance; the meaning of language arises, as many other kinds of meaning do, in tacitly integrating hitherto meaningless acts into a bearing on a focus that thereby becomes their meaning. ("Sense-Giving" 196)

Chomsky, of course, does not intend the language-acquisition device as a model for language learning; he deduces it as a convenient structure, within his theory, to account for the "invention" of an internal grammatical system. Without commenting on the nature of the language-acquisition device, Polanyi turns to the way in which the faculty of language might function, a point on which Chomsky remains silent, except to say (immediately after the remarks that Polanyi quotes) that it can be expected to result in a specialized approach to language problems. Polanyi offers an alternative view: "I would trace back the roots of this faculty to primordial achievements of living things" (196). After citing experiments that demonstrate the ability of animals to perform meaningful integrations akin to those required in using language, he concedes that human beings and animals achieve qualitatively different results in communication: "We must acknowledge the fact that speech is the application of complex rules of phonetics and grammar and must show how the theory of tacit knowing accounts for the acquisition and practise of such rules" (197).

Unlike Chomsky, he posits that tacit knowledge of a grammatical system develops gradually, along with parallel achievements, as the child explores the nature of what he encounters; among the things he encounters is a language whose structure is represented by the rules of generative grammar. These rules, according to Polanyi, the child acquires subsidiarily through the dynamics of tacit knowing that actualizes discovery: "the questing imagination vaguely anticipating experiences not yet grounded in subsidiary particulars evokes these subsidiaries and thus implements the experience the imagination has sought to achieve" (199-200, italics in text). He adds that the questing imagination is guided by intuition, an informed insight which makes discoveries within a coherent framework (203).

In Personal Knowledge he presents examples of primitive heuristic acts, analogous to those of the questing imagination, which occur at the level of inarticulate intelligence; whether animals master a trick, respond
to signs, or contrive a simple plan, one can distinguish a moment of discovery from the routine acts of displaying or applying knowledge that has been acquired (71-76). These elementary feats have a highly sophisticated counterpart in the realm of articulate intelligence. Polanyi says of the scientist, "Having chosen a problem, he thrusts his imagination forward in search of clues and the material he thus digs up—whether by speculation or experiment—is integrated by intuition into new surmises, and so the inquiry goes on to the end" ("Sense-Giving" 201-202). Language learning proceeds in similar fashion, by a sequence of advances "from the first babbled morpheme used as a word sentence, and from the child's response to similar sounds used by adults, to the eventual mastery of literary language and culture" (205). This sequence of linguistic advances, unlimited in number, is thus motivated by the imagination-cum-intuition that Polanyi finds at work in all problem solving—from the rat who must invent a new path through the maze after being mutilated by K.S. Lashley to Lashley himself, who invented the problem and interpreted the rat's solution (196).

Although the dynamics of tacit knowing provides a coherent explanation of language learning, it does not seem to apply to a problem raised by Chomsky and quoted by Polanyi: "The real problem is that of developing a hypothesis about initial structure that is sufficiently rich to account for the acquisition of language yet not so rich as to be inconsistent with the known diversity of language" [Aspects 58] ("Sense-Giving" 204). Chomsky makes it clear earlier in the passage that he means a hypothesis about innate initial structure, a hypothesis he considers necessary because "the striking uniformity of the resulting grammars, and their independence of intelligence, motivation, and emotional state" suggest that many intricate patterns could not be learned unless the child possessed prior knowledge about the character of language (58). Polanyi's response sounds odd:

The dynamics of tacit knowing has made this problem more manageable. We are no longer faced with the question how people who learn to speak a language can identify, remember and apply a set of complex rules known only to linguists. They do not identify these rules, let alone memorize and explicitly apply them, and do not need to do so. According to the dynamics of tacit knowing, the rules are acquired subsidiarily, without focal knowledge of them. ("Sense-Giving" 204)

Chomsky's problem is how much innate knowledge to include in the language-acquisition device that enables the child to "invent" grammar, not how to explain the learner's ability to master the rules of grammar. Polanyi's reply appears to conflate the speaker's competence and the rules of generative grammar, an oddity that can be construed either as a mistaken reading occasioned by Chomsky's ambiguity in using "generative grammar" to refer to both, or (more likely) as a tacit rejection of Chomsky's innateness principle.

When Polanyi turns to the issue of linguistic creativity, a similar
Another great problem is "...the fundamental fact about the normal use of language, namely the speaker's ability to produce and understand instantly new sentences that are not similar to those previously heard in any physically defined sense...nor obtainable from them by any sort of "generalization" known to psychology or philosophy" [Aspects 57-58]. ("Sense-Giving" 196)

Although Polanyi's opening phrase conveys the impression that Chomsky regards the explanation of creativity as a problem, this cannot be what he means. In the sentences preceding the quotation, Chomsky claims that it is empirical linguistics that cannot account for the phenomenon of novel sentences, whereas explicitly formulating the "creative aspect" of language now lies within the power of generative grammar. It must be remembered, of course, that Chomsky interprets creativity as simple productivity, a restriction he accepts in order to construct a formal grammar which, by definition, precludes the judgment of the speaker-hearer. In such a theory, "rule-governed creativity" rather than "rule-changing creativity" is the desideratum (Current Issues in Linguistic Theory 22). Even though Chomsky considers the issue closed, Polanyi seems to use the phrase "Another great problem" to re-open it because he has consistently investigated language not as a theoretical art but as a practical one.

In Personal Knowledge he indicates the consequences of practicing this art: "Our choice of language is a matter of truth or error, of right or wrong—of life or death" (113). A proper choice, furthermore, cannot be made passively from a thesaurus; it requires passionate intellection as one encounters novel experiences and creates linguistic patterns that modify both language and thought. Polanyi draws a distinction between assimilating experience within an interpretative framework and adapting that framework to encompass new experience: "The first represents the ideal of using language impersonally, according to strict rules; the second relies on a personal intervention of the speaker, for changing the rules of language to fit new occasions. The first is a routine performance, the second a heuristic act" (105). In "Sense-Giving" he attributes the impetus for this rule-changing creativity to the striving imagination, which evokes the subsidiary particulars that make possible new tacit integration (200-201). Thus, language learning and the creative use of language spring from the same source: the dynamic powers of imagination and intuition that function as prime movers in the structure of tacit knowing.

Because Polanyi maintains, contra Chomsky, that language is rooted in cognitive powers that human beings share with the higher animals, he concludes "Sense-Giving" by addressing what he calls the "ancient question" of why animals can neither invent language nor learn to use it (206). Quite simply, animals have a limited capacity for dealing with abstractions. An
ape, for instance, may learn to ride a bicycle because all of the clues necessary for doing so are immediately present; on the other hand, a child learning a language must grope in a speculative way to discover abstract particulars that lie beyond his immediate situation (206). Polanyi makes a similar distinction in Personal Knowledge when he says, "To speak is to contrive signs, observe their fitness, and interpret their alternative relations; though the animal possesses each of these three faculties, he cannot combine them" (82). Human beings are able not only to combine them but to use the combination in the yet more abstract task of applying the two operational principles that control linguistic representation and the manipulation of symbols (78). In "Sense-Giving" he draws the inference that "man's unique linguistic powers appear to be due simply to his higher intelligence" (206).

One must add a curious postscript to Polanyi's conclusion. In Aspects Chomsky does not pay much attention to the question of why animals cannot master language; he concentrates on the argument the la faculte' de langage results from a neural development found only in the human species. Later, however, he turns to the issue again. In Language and Mind (publ. 1968; based on the 1967 Beckman Lectures) one finds statements that sound like a dissenting antiphonal response to those in "Sense-Giving": "As far as we know, possession of human language is associated with a specific type of mental organization, not simply a higher degree of intelligence. There seems to be no substance to the view that human language is simply a more complex instance of something to be found elsewhere in the animal world" (62). Moreover, in challenging the view that attributes the acquisition of language to intelligence rather than biology, Chomsky invokes Polanyi's image of the clever but linguistically-impoveryished ape by contending that "even at low levels of intelligence, at pathological levels, we find a command of language that is totally unattainable by an ape that may, in other respects, surpass a human imbecile in problem-solving ability and other adaptive behavior". This "rejoinder," with its counter-echoes of language and substance, calls attention to one of the several ways in which Polanyi's thought diverges from that of Chomsky. We must now consider how the divergences noted in this paper qualify Polanyi's stated support for Chomsky's work.

Although Polanyi and Chomsky share the premise that language is a mental activity, their theories present different explanations that stem from basically different questions. Chomsky asks, in effect, how the mind can construct (or invent) the exquisite design revealed by analysis of linguistic structure; Polanyi asks how the mind of someone can use the intricate design of linguistic structure to convey meaning. Chomsky answers his question in Aspects by postulating the existence of a biological mechanism
with innate linguistic properties; Polanyi responds in "Sense-Giving" by showing that the acquisition of linguistic structure, as well as the creative use of language, is a personal achievement made possible by tacit knowing combined with individual intelligence.

Polanyi's essay, however, does more than provide an alternative to Chomsky's hypothesis; it offers an epistemological grounding for the formal rules of generative grammar which, in Aspects, appear to exist autonomously. Although purportedly they make explicit the tacit knowledge of internalized grammar, their function remains a mystery because current generative theory excludes the problem of how language is used. "Sense-Giving" confers significance on the rules by incorporating them into a theory of meaning that acknowledges the dialectic relationship between tacit and explicit linguistic features in human discourse. Polanyi's reflections on Chomsky thereby demonstrate that formal linguistics has much to gain by taking into account its enabling tacit coefficient.

REFERENCES

Sara Leopold

POLANYI AND JUNGIAN PSYCHOLOGY

James H. Hall is a Dallas psychiatrist, who has written on the relationship of Polanyi's epistemology to Jungian psychology. He has two books on Jungian psychology, Jungian Dream Interpretation: A Handbook of Theory and Practice and Clinical Uses of Dream: Jungian Interpretation and Enactments and a paper, "Polanyi and Jungian Psychology: Dream-ego and Waking-Ego," all commenting on the relationship of Polanyi's thought to Jungian psychology.

Hall notes several reasons for his interest in Polanyi:

(1) Polanyi is one of the major theoreticians of science who, like Jung, attempts to bridge the tension between inner subjective experience and outer social and scientific forms;

(2) Polanyi, like Jung, has relevance for the conceptualisation of religious experience, as attested by an increasing number of theological dissertations discussing his work; and

(3) although Polanyi himself did not apply his concept of focal and
tacit knowing to the imagery of dreams, he raised no objection to that pos-
sible extension of his language into the intrapsychic field of subjective
experience. Hall further notes that "a fourth reason for my concern with
Polanyi's work is the possibility it offers of applying Jungian dream
theory in such a way that the specificity and grain of the dream image is
preserved without reduction, while a form is provided for relating the
structure of complexes, as revealed in dreams, to our central clinical
focus of understanding the structure and fluctuations of the waking ego."

From these declarations of intent, it may be observed that Hall sees
the nature of the relationship between Polanyi's work and that of Jung as a
parallel, possibly as a corroboration because of certain similarities which
he notes. Secondly from the use of technical language and jargon, we note
that Hall is writing for those already initiated into the language of Jun-
gian psychology. This is certainly appropriate in the Journal of Analyti-
cal Psychology, analytical psychology being the name applied to Jungian
psychology.

The parallel with Jung which Hall sees in Polanyi is in Polanyi's
concept of focal and tacit structure. The obvious parallel between focal/
tacit knowing and psychoanalysis is the parallel with conscious/unconscious
knowing. Polanyi did not make reference to the unconscious and neither does
Hall draw on this parallel. Instead he notes the nature of the way in which
"perception of a comprehensive entity involves the tacit reliance upon
cues, in a subsidiary way, in order to attend to the entity perceived." It
is the "intrinsic satisfaction in the discovery of more comprehensive
entities" in which Hall sees a parallel between the creative activities of
a scientist and the "movements of analysis in discovering for the analysand
more comprehensive ways of understanding the process of individuation."

This is perhaps as good a definition as one could hope for of the
purpose of analysis, assuming one understands what is meant by individua-
tion. Yet in an age so positivistic that the validity of any psychological
insight is called into question, perhaps more justification is required
than to proclaim knowledge as a belief stated with universal intent. This
is an important point in Polanyi's epistemology. Polanyi attempted to show
that even the most would-be objective sciences involve an element of per-
sonal commitment of the knowers to the things known. Many have been too
ready to accept that Polanyi lets you believe anything you want or even
that he justifies any beliefs that people might want to choose.

More important than simply adhering to a particular belief is the at-
tempt to convince others in the convivial order of the essential correct-
ness of the knowledge we hold. Perhaps nowhere is this message more impor-
tant than for the various schools of psychoanalysis, holding many points in
common but distinguished historically by unique sets of beliefs organized
around particular individuals. Because of the extreme doubt by so many
nurtured in a positivistic culture, it seems there is a particular burden
upon such students of the mind to state not only their beliefs but also the grounds upon which understands are held to be true. There are inevitably many ambiguities in the attempts to study something so complex as a person's unconscious, but the conclusions on which psychological therapists are practiced are based on careful observations of individuals in particular cultural settings, and there is much to be gained from an ongoing review of what is ultimately convincing and believable.

Perhaps it is unfair of me to hold Hall to this task since he writes for those already convinced by the analytical psychological outlook. But having just returned from a sabbatical in Oxford, I am particularly struck by the extent to which life in American universities is characterized by extreme forms of specialization, which leads to a deference to experts in narrow areas of knowledge. In Oxford and elsewhere in Europe I found it much more common for colleagues in my "specialty" and outsiders as well to be much more confident and willing to challenge expertise and to assume that there was a common intellectual framework in which ideas could be debated and in which assent could be given to claims to knowledge.

Hall in some rather interesting disclosures reflects this dilemma for modernity and in particular American modernity. He talks in some detail about his own experience in training and how he increasingly became more interested in Jung's work. He tells us that Polanyi had read his discussion of tacit knowing and "told me that it was an accurate reflection of his thought. However, he did not wish to comment on the application of his concepts to dreams." He reminds us that Polanyi had been a classmate of both Franz Alexander, later a Freudian psychoanalyst, and Jolande Jacobi, the distinguished Jungian, but he himself had not studied either Jungian or Freudian theory. He might have gone on to add that Polanyi was quite dubious about psychoanalysis, seeing in it a kind of dogmatism justified in a scientific-appearing language of mechanical forces. The basis of the claims of knowledge of psychoanalysis has received a great deal of thought over the decades much of it stimulated by Polanyi himself. We in the modern age seem to vacillate between a respect for the kind of personal anecdote Hall relates and the expectation of a detached third personal account.

Another of Polanyi's central points seems to be particularly relevant for psychological insight. That is Polanyi's attempt to demonstrate the impossibility of value neutrality. The knower must inevitably be committed to the things known and must acknowledge those commitments. In this sense Polanyi believes that psychologically the highest level accessible to man is his moral sense. Hall has difficulties with this and I have difficulties with his difficulties. Hall notes that "with some reservations, such agreement is possible, if the term 'moral' is taken in a very personalistic way, realizing that an individual, in being moral to his own deeper nature, may at times find himself at variance with conventional morality or with other parts of himself." Yet morality like knowledge,
while it has a personal component, the "from" in the from-to vector, cannot be just personalistic without some grounding in a community of others. The morality of the sociopath can be personalistic, but the moral person has commitments that go beyond himself.

I suspect that Hall's concern here is with the ways in which "conventional morality" are often used in less than an ideal sense to enforce some sort of social conformity or even just the wishes of the parents in controlling children. Psychotherapies of various sorts are often accused of promoting a self-interested hedonism, of encouraging people to become selfish. In Freud's day (and in Jung's) the patients who came for help were often overly inhibited, especially sexually, and their treatment consisted in loosening the bonds of inhibition so they could be more morally discriminating in their actions. Though in this day and age many therapists do encourage all sorts of indulgences—it must be acknowledged—morality ultimately must be more than personalistic. The kind of patient we are much more likely to see today are much more likely to be lost for want of a stable moral identity than to be inhibited in their impulses. Here the task of the therapy/analysis is to regain a sense of self by re-establishing contact with not only one's unconscious impulses, but also with other people. Thus Polanyi's point that psychologically the highest level accessible to man is his moral sense has particular reverence for the various psychotherapeutic schools, for it is through understanding of oneself that this higher moral sense may be achieved.

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4. Ibid., p. 239.
5. Clinical Uses of Dreams, p. 163.
6. Ibid., p. 179.
7. Ibid.

Allen R. Dyer

BOOK REVIEW
Jeffrey Kane, Beyond Empiricism: Michael Polanyi Reconsidered (New York: Peter Lang, 1984), American Studies, Series XIV, No. 6.

This book by Jeffrey Kane, currently on the faculty of Adelphi University, is an essay on Polanyi's epistemology.
No small part of the popularity of Michael Polanyi's work comes from the fact that his epistemology furnishes the critics of positivistic theories of knowledge with powerful ammunition by an authentic card-carrying scientist. For such an authority to assert that scientific theory ultimately is grounded in personal rather than impersonal cognition is a formidable asset in the debate. This is a startling theory, as Polanyi well realized when he wrote:

To say that the discovery of objective truth in science consists in the apprehension of a rationality which commands our respect and arouses our contemplative admiration, that such discovery, while using the experience of our senses as clues, transcends this experience by embracing the vision of reality beyond the impressions of our senses, a vision which speaks for itself in guiding us to an ever deeper understanding of reality—such an account of scientific procedure would be generally shrugged aside as outdated Platonism, a piece of mystery-mongering unworthy of an enlightened age. Yet it is precisely on this conception of objectivity that I wish to insist... (Personal Knowledge: Towards a Post-Critical Philosophy, New York: Harper & Row, 1964, pp. 5-6).

Kane argues at length and for the most part cogently that scientific thinking as described by the positivists would render the discoveries of Copernicus and Einstein logical as well as psychological miracles. To avoid resort to miracles, Polanyi opts for the ontological reality of a rational order in the universe with which the scientist appraises problems and their solutions. Thus metaphysics becomes a presupposition of physics rather than its antithesis.

In Chapter I, Kane explicates Polanyi's metaphysics, and in Chapter 2 argues that this metaphysics rules out the "possibility of a completely logical or empirical determined process of scientific discovery or assessment." Chapter 3 focuses on the problem of "indwelling" and the tacit components of knowledge. A model of scientific inquiry is outlined in Chapter 4, and the final chapter explores the implications of the model for scientific and educational enterprises.

On the way, Kane deals with Karl Popper's attempt to rescue the fallibility of empirical generalizations by induction from flights to irrationality by relying on falsification of theories rather than on their verification. Falsification, however, is not free from the logical risks of all empirical generalizations. To prove an hypothesis false, the reported failure of the hypothesis' predictions must be true, but such reports also are grounded in fallible observations. Kane finds Popper's ploy to make scientific knowing wholly explicit unsuccessful.

For newcomers to Polanyi's work the explications Kane provides (with very generous quotations for the original texts) should be helpful, and one might suppose, persuasive. Two major themes are treated in detail. (1) The
"a-critical" presuppositional immersion in the rational order in nature and its fecundity for future disclosures, and (2) the theory of tacit knowledge as an explanation of how personal knowledge functions.

Of the two, the latter, it seems to me, is the operative one. Without the distinction between focal and subsidiary knowing, the appeal to "heuristic visions" becomes vulnerable to the charge of romanticism and idealistic atmospherics, whether it be of the poetic, religious, or metaphysical variety. To explain tacit knowing necessitated Polanyi's forays into psychology.

"My main task," he says, "will be to survey the non-strict rules of inference—in other words, the informal logic—on which science rests. This non-strict logic will be seen to rest to some extent on psychological observations not hitherto accepted as the foundations of scientific inference." ("Logic and Psychology," American Psychologist, 23, 1, January 1968, p. 27.)

This psychological evidence permits the extension of tacit knowing as a factor in a wide variety of human behavior and thought, for example, elucidating the role of the "convivial pursuit of scientific truth" by the scientific community. Scientists, however innovative and creative, nevertheless think, imagine, reason, and speculate with concepts and images derived from their formal schooling and by which, as Thomas Kuhn pointed out, newcomers are inducted into the guild. This fund of concepts becomes the subsidiary resources for the focal problems of the scientific practitioner. The space Kane devotes to this topic is well deserved.

In Chapter 3 Kane discusses Polanyi's treatment of the mind-body problem and finds it self-contradictory. Polanyi states that his theory of knowledge retains the dualism of mind and body, but Kane argues that Polanyi's concept of emergence contradicts it (p. 135). Kane asks (p. 135): Are ordering principles ontologically independent laws? Are they unique instances of physio-chemical mechanisms or are they as distinct as the meaning of the words on this page are from the ink which transcribes them? Is there a 'far side' of reality that merges with the physical in man's thinking? Do mind and body constitute more than a rhetorical dualism?

Kane concludes that for Polanyi it turns out to be no more than that and leaves no room for a knower independent of physical and chemical processes (138).

The durability of the mind-body problem is a tribute to philosophers' genius for so stating the problem that it can neither be solved nor left unsolved. To be sure, meaning and ink differ radically, if only the chemical composition of ink is considered. But ink marks are symbols that have referents which they denote, among which are meanings.

Perhaps the ontology of mind that Polanyi sought can be found in the separability of symbols from their referents. Our cortical apparatus does
not prevent us from thinking and imagining what does not yet exist as an actual entity, e.g. tomorrow's sunrise or a disembodied soul. Conceptions of what might be and ought to be are independent of actuality, albeit their realization may not be. It may sound paradoxical to say that the reality of mind is witnessed as much, if not more, by the possibility of falsehood as by its grasp of truth.

Mind, therefore, is not bound by the law of matter, because symbols are not so bound, albeit they can be used by a symbol using knower so as to formulate the behavior of matter. Polanyi's insistence on including cortical functions as subsidiary clues does fudge the distinction because cortical functions are either symbols or they are not. It is this power of ontological detachment from the physical actuality that makes it possible to construct problems and theories for their solution; indeed to presuppose a rational order.

Whether or not this ancient problem can stand another flogging, it does not impair the heuristic value of Polanyi's epistemology. As Kane notes, the structure of the theory sheds light on some important problems as to how knowledge is acquired and used.

As far as education, especially formal schooling, is concerned, the tacit-formal apparatus illuminates some of its most important puzzles as no other theory does. For example, the standard efforts to justify liberal education elicit more respect than belief both in and out of the academy. This is so because its defenders try to show that the context of these liberal disciplines function by the resurrection of school studies in daily life situations, and in doing so inform and enoble conduct.

The familiar counterexamples to such claims underline the importance of the problem and what a Polanyi analysis does to enlighten it. For the truth of the matter is that unless school learnings are reinforced in daily life by their use in a vocation (e.g. as academic philosophers, historians or scientists and literatures do), they are soon forgotten. Yet the difference in the associative and interpretive resources of those who did and those who did not study these disciplines is easily discernible. As Polanyi might put it, for the non-professional these studies provide a residue of conceptual and imagic structures that subsidiarily make sense out of life situations as they push their way into the focus of our attention. We think and perceive with these structures that remain long after the details by which they were mastered are forgotten. The subject matters were focal when studied; they become subsidiary in post-school life.

Moreover, the focal-subsidiary distinction enables us to make a case for aesthetic education. If the aesthetic experience entails perceiving images of human import, then the "educated" perception and construal of images as embodied in the arts is fundamental in the formation of mind. Educationally this is important because advocates of the liberal studies or the studies prescribed for general education confront an awkward chasm be-
tween the sciences and the arts. The exception is literature which has occupied a dominant place in the classic curriculum, but even literature is rarely taught as a performing art, but rather as an item in the history of culture. Similarly, when the other performing arts are included in general education requirements, they are also likely to be taught in terms of their history.

In part this situation arises because ordinary citizens make no pretense of becoming proficient in any of the performing arts, hobby painters and closet poets to the contrary notwithstanding. Beyond sketchy instruction in music and drawing in the elementary grades, formal schooling does not include the arts in the required roster, and colleges as a rule do not require them for admission.

Nevertheless, if the culture, in any important sense, is driven by images embodied in language and ritual they do become an important ingredient in the subsidiary store with which the citizen confronts the world. The associative and interpretive uses of schooling are affected by these gaps in formal education.

It may be said that just as God did not make man and leave it to Aristotle to make him logical, so human beings formed and responded to images in the several sensory modalities long before professional artists taught them to do so. Yet just as the study of science reflects commonsense theories and explanations, so does the work of the artist refine and clarify the human import of everyday images.

I do not fault Kane for not exploring this area in depth. He does refer to Polanyi’s discussion of the imagination, but the role images in all phases of cognition, including the scientific, is of more than incidental importance in the “heuristic vision” of intellectual possibility. The haste of philosophers to get to logical and scientific thought is understandable, but not excusable inasmuch as such aesthetic categories as balance, rhythm, organic unity are the subsidiary resources of so much of our thought and action.

H.S. Broudy

OUR FINANCES - A STATEMENT

Perhaps the time has come to give readers of Convivium some information about our finances, since we seem to be heading for trouble. In November, 1984, our bank balance was £284.45. Income for the twelve months from November 1984 was £271.65. (Subscriptions £140, Donations, £62, Bank Interest £8.15.) Total estimated expenditure for two issues of Convivium plus postage and stationary for this year will be around £540. (Printing and postage for the March 1985 issue was about £280, but I will only print
100 copies of No 21, as we have 39 copies left of No 20.) I expect to have about £35 left in the bank when the October bills have been paid. If I am right, this means that expenditure will have exceeded income by about £250 this year and we will be bankrupted by next March's bills. We could save money by reverting to the old system of making contributors submit manuscripts ready for photocopying, but this would inevitably result in uneven and untidy presentation. No doubt raising the subscription to £5 p.a. will help, but what we really need is a marked increase in membership. If every subscriber who has anything to do with a library or university could persuade the librarian to take out a subscription, this would be a help. I believe that the American Polanyi Society have their Newsletter, Tradition and Discovery, almost self-supporting from library subscriptions alone.

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