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CONTENTS

Preface and Notes on Contributors.....3

Forum on Polanyi's "Rules of Rightness"

Rules of Rightness.....4
Michael Polanyi

Notes on Polanyi's 1954 Lecture, "Rules of Rightness".....14
Phil Mullins

"Rules of Rightness" and the Evolutionary Emergence of Purpose.....21
Walter Gulick

A Further Word on Likert-Scales Inspired by "Rules of Rightness".....27
Collin D. Barnes

Deciphering Humanity: What Polanyi and the Rosetta Stone
Can Teach Us About Being Human.....34
Andy Steiger

Interview

My Interest in Polanyi, His Links with Other Thinkers and His Problems:
An Interview with Richard T. Allen.....39
C.P. Goodman and Richard T. Allen

Book Review

Giles Scott-Smith and Charlotte Lerg eds. *Campaigning Culture and the Global Cold War: The Journals of the Congress for Cultural Freedom*.....46
Phil Mullins

Journal Information

Editorial Board and Submissions Guide.....2

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Submission Guidelines

Submissions: All manuscripts should be submitted as a Microsoft Word file attached to an email message. Articles should be no more than 6000 words in length (inclusive of keywords, abstract, notes, and references) and sent to Paul Lewis at lewis_pa@mercer.edu. All submissions will be sent out for blind peer review. Book reviews should be no more than 1000 words in length and sent to Jean Bocharova at jbocharova@msjc.edu.

Spelling: We recognize that the journal serves English-speaking writers around the world and so do not require anyone's "standard" English spelling. We do, however, require all writers to be consistent in whatever convention they follow.

Citations:

- Our preference is for Chicago's parenthetical/reference style in which citations are given in the text as (last name of author year, page number), combined with full bibilographical information at the end of the article. One exception is that Polanyi's major works may be cited parenthetically using the following abbreviations (with abbreviations italicized):

  CF *Contempt of Freedom*
  KB *Knowing and Being*
  LL *Logic of Liberty*
  M *Meaning*
  PK *Personal Knowledge*
  SEP *Society, Economics, and Philosophy*
  SFS *Science, Faith, and Society*
  SM *Study of Man*
  STSR *Scientific Thought and Social Reality*
  TD *Tacit Dimension*

  For example: Polanyi argues that …. (*TD*, 56). Full bibliographical information should still be supplied in the references section since many of us may work with different editions of his works.
- Endnotes should be used sparingly and be placed before the reference section.
- We do recognize that Polanyi's work connects with scholars who work in diverse disciplines that use different style guides. To the extent that our software allows, we will accept other styles (e.g., APA or MLA) so long as the author is consistent and careful in following it. The main point, of course, is to give the reader enough information to locate and engage your sources. Manuscripts that are not careful and consistent in style will be returned so that the author can make corrections, which may delay publication.

For more information see http://polanyisociety.org/Aims-and-Scope-9-12-18.htm and http://polanyisociety.org/TAD-Submissions&Review-9-12-18.htm

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PREFACE

This issue features a forum on a recently discovered 1954 lecture by Michael Polanyi titled, "Rules of Rightness." The forum begins with the lecture and is followed by four sets of comments. Phil Mullins puts the essay in its historical context. Walter Gulick connects the lecture to Polanyi's account of emergence in *Personal Knowledge*. Collin Barnes uses Polanyi's ideas from the lecture to further his criticism of social science's reliance on Likert Scales. Andy Steiger draws from Polanyi's ideas to suggest a richer understanding of what it means to be human.

In addition to the forum, Chris Goodman interviews Richard T. Allen, a British Polanyi scholar and leader of the British Personalist Forum that publishes the journal, *Appraisal*.

Finally, Phil Mullins reviews a book that chronicles the work of the Congress for Cultural Freedom in which Polanyi participated.

Do remember that the Polanyi Society (and *Tradition and Discovery*) need your support through dues and/or donations. At the risk of sounding like a commercial for public broadcasting, the mission of the Society depends on your continuing support as we move into an increasingly digitally focused world. You can donate to the Society at www.polanyisociety.org.

Paul Lewis
Managing Editor

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RULES OF RIGHTNESS

Michael Polanyi

Keywords: Michael Polanyi, formalism, personal, personhood, denotation, Boole, mind

ABSTRACT

This is a recently discovered 1954 Polanyi lecture that was part of a lost eight-part series in Chicago. It develops Polanyi's interest in unformalized personal participation in knowledge. The lecture discusses how normative "rules of rightness" work and Polanyi expands these ideas later in PK.

[**Editor's Note:** The following hitherto unpublished lecture, as well as a second lecture, by Michael Polanyi, was recently discovered by Alessio Tartaro on the re-organized website of The Karl Polanyi Archives at Concordia University, Montreal, Canada. With the help of the Archives staff, Phil Mullins retrieved copies of both lectures, "Rules of Rightness," and "Knowing Life." These lectures, delivered February 4 and 11, 1954, are the fifth and sixth lectures of an eight-part series at the University of Chicago. These two lectures were followed by the seventh lecture in this set, titled "Persons," that was earlier published in *Tradition and Discovery* 36:3. Michael Polanyi apparently either sent or gave his brother Karl copies of these lectures near the time that they were delivered. Other lectures in the series have not to date turned up at either the University of Chicago or the Karl Polanyi Archives. These typed manuscripts suggest the texts had not yet received some of the final touches that a published essay might have received but they are clear enough and are of significant interest. In a few places, there are typographical errors in the text and in brackets following are the likely words that were mistyped. American spelling is used.

In a March 8, 1954 letter to his older sister who attended the lectures, Polanyi described his 1954 Chicago lectures as "very useful to me for it led to a sharpening of my points and tightening of my argument" (quoted in Scott and Moleski, *Michael Polanyi: Scientist and Philosopher*, 225). "Rules of Rightness," like "Persons," should be considered a stage on the way toward the June 1958 publication of *Personal Knowledge: Towards a Post-Critical Philosophy*. Parts of the lecture re-appear in *Personal Knowledge* in more than one chapter. Nevertheless, as Polanyi's letter perhaps suggests, this lecture is of interest in itself because of the ways in which Polanyi knits elements together into a coherent discussion of "rules of rightness." The lecture's focused account of "rules of rightness" perhaps makes the rich implications of this Polanyian

philosophical idea clearer than *Personal Knowledge* where there is an unfolding discussion of a number of related themes in the four sections of Polanyi's magnum opus.

Tradition and Discovery appreciates the help of Ana Gomez, Coordinator of the Karl Polanyi Archives. This lecture is in Container 46- Folder 17 and is made available on the Polanyi Society website for non-commercial use by scholars and students.]

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I hope to have shown in my first four lectures that the bearing of a formalism on the facts of experience can be established only by the personal participation of the scientist. This participation has two interrelated aspects, namely its own skillfulness and the appraisal of an orderly pattern in nature. I have shown also that wherever skill is exercised or coherence is appraised, we establish a formal knowledge of a comprehensive whole in terms of our subsidiary awareness of the particulars. I have given a number of examples to show that this kind of personal knowledge is not specifiable in terms of its more impersonal particulars. Depersonalization paralyses the skill which is being practiced and destroys any meaning that is being appreciated.

However, this insistence on our personal participation in the art of knowing was not meant to give license to arbitrariness. Quite the contrary: I have represented such participation as an act of discovery, by which we submit to reality; as an effort to make sense of things as they are. Skillfulness and connoisseurship are thus seen to be exercised with universal intent.

At this point, there is an important piece missing in my picture of the exact sciences which I must supplement now, both for its own sake and because its analysis will turn out to be indispensable to the critique of biology to which it should presently lead on.

The most distinctive purpose of a scientific formalism representing experience lies in its power immensely to facilitate the process of thinking about the experience in question. Take the example of a geographic map. A rough map of England can be drawn by marking on a sheet of paper the geographical positions of the 200 largest English towns, the Cartesian co-ordinates of each mark being chosen in a constant proportion to the longitude and latitude of each town, and each mark having the name of the corresponding town printed below it. From such a map we can read off a great deal of information which we did not explicitly possess before. We can recognize from it at a glance the itineraries by which we can get about from any town to another. We may say that our original input of 400 positional data (200 longitudes and 200 latitudes) has yielded by the process of mapping 200 x 200/2 = 20,000 itineraries. The formation derived from mapping will actually be much ampler since each itinerary will comprise on the average some fifty places. This would amount to something like a million items, representing 2500 times the input. When such vast powers are generated by so crude an instrument as our map would be, we realize the immense scope of intellectual achievement to be gained by formal representation.

This power is not due to the act of denotation in itself. A catalogue of the 200 main towns of England listing their longitudes and latitudes would be comparatively useless for the purpose of finding one's way from one place to another. It could be probably done by the aid of an electronic computer, but the answers could certainly not be simply read off from the list. In order to be intellectually revealing, denotations must form a record which is more easily handled than the original facts which it represents. There are many cases like the map in which a mere inspection of the records yields a new understanding of the facts. The operational room of the Air Force Command where the changing situation of the air battles over England were

continuously pictured on a large table by assistants collecting the flow of incoming reports, offered to the Supreme Commander a representation of these reports which he could grasp far better than the aggregate of the original reports. Similarly, the mere plotting of a series of measurements on paper in the form of a graph may reveal functional relationships, quite unsuspected from our knowledge of the original figures. This manner of grasping a state of affairs by a mere inspection of its symbolic representation amounts to an informal operation on the symbols.

In other instances, new light can be derived only by a formal operation carried out on the denoting symbols. Such operations lie largely in the province of formalized languages and particularly mathematics. Numbers representing the result of counting or measuring things can be used for representing one state of affairs from which we may compute other numbers giving us further new information about the same state of affairs (or some other predictable state of affairs). If, e.g., we are told that Paul is one year less than twice the age of Peter, while the difference between their ages is four, we can find the ages of each by first setting out the situation symbolically; age of Paul x, age of Peter y; $x = 2y-1$ and $x - y = 4$ and then operating on these symbols so as to solve the two equations. The result $x = 9$, $y = 5$ is then re-translated into Paul is aged 9 and Peter is aged 5.

The intellectual powers of formal symbolic operations are great. We must acknowledge that it is only by virtue of such operations that we are able to carry out any course of strict reasoning, and that all our discursive thought is but a looser form of such reasoning. No wonder that a critical philosophy (guided by the idea) of impersonal thought has seized on the chance for advancing towards its goal by completely reducing this central agency of human intelligence to the performance of certain formal rules. The hope of achieving this was recently enhanced by the construction of highly effective computers, in the first place for military purposes. Anti-aircraft guns were equipped with predictors automatically governed by the gunner's initial readings. Once the sights were set on a plane, the machines computed the course of the swiftly moving target and of the projectile ready to be sent out, operating the gun so as to assure a hit. Such high intellectual performances achieved without any intervention of man clearly offered new prospects to philosophers for pursuing the ideal of completely detached thought.

But the most effective attempt to realize this program originated earlier from the movement toward a formalization of logic, initiated by Boole in 1846 and followed up by the attempt of Hilbert in 1900 to set out completely the axioms and procedures of mathematics thus bringing the entire range of mathematics, both present and future, within the scope of an explicitly stated set of strictly impersonal operations. It is this process of formalization, as taught by modern textbooks of symbolic logic of which I now propose to define the inherent limitations.

The process of formalization is threefold. (1) it designates undefined terms (2) it specifies unproven asserted formulae (axioms) and (3) it prescribes the handling of such formulae for the purpose of writing down new asserted formulae (proofs). Throughout this process there prevails the desire of eliminating what are called 'psychological' elements. The undefined terms are said not to signify anything, but to be complete in themselves as marks on paper; unproven asserted formulae are to replace and eliminate statements believed to be self-evident; operations constituting 'formal proof' are similarly intended to replace 'merely psychological' proof.

I know that the axiomatization of mathematics pursued on these lines has great achievements to its credit. Yet I must say nevertheless that there is something absurd in the ultimate aim of this undertaking. Why use the utmost ingenuity and the most rigorous care to prove the theorems of logic or mathematics,

while the premises of these inferences are to be cheerfully accepted—without any grounds given for doing so—as "unproven asserted formulas"? Such a proceeding is very much like that of the clown who solemnly sets up in the middle of the arena two gateposts with a securely locked gate between them and then pulls out a large bunch of keys from which he finally selects one which fits the lock of the gate, then passes through the gate and carefully locks it after himself—while all the while the whole arena lies open on either side of the gate posts where he could go round them quite unhindered. A fully axiomatized deductive system is like a carefully locked gate in the midst of an infinite empty area.

But I must try to put this criticism in more technical terms. I regard the attempt at a complete formalization of a deductive system as unperformable for the following reasons: (1) No undefined term can be introduced without an explanation, given in ordinary speech and amplified by some examples of its use. The acceptance of a mark on paper as a symbol implies that (a) we believe that we can identify the mark in various instances of it and (b) that we know its proper symbolic use. In both these beliefs we may be mistaken and they constitute therefore commitments of our own. (2) In agreeing to regard an aggregate of symbols as a formula we accept it as something that can be asserted. This implies that we believe that such an aggregate says something about something. We expect to recognize things which satisfy a formula as distinct from other things which fail to do so. Since the process by which our axioms will be satisfied is necessarily left unformalized, our countenancing of this process constitutes an act of commitment on our part. (3) The handling of symbols according to mechanical rules cannot be said to be proof unless it carries the conviction that whatever satisfies the axioms from which the operation starts will also satisfy the theorems arrived at. 'Proof', to use Professor Ryle's terms, is a success-word. No handling of symbols to which we refuse to award the success of having convinced us that an implication has been demonstrated can be said to be a proof. And again, this award is an unformalized process which constitutes a commitment.

Thus at a number of points a formal system of symbols and operations can be said to function as a deductive system only by virtue of unformalized supplements to which we accede by personal commitment. Symbols must be identifiable and their meaning known, axioms must be understood to assert something, proofs must be acknowledged to demonstrate something. This identifying, knowing, understanding, acknowledging, are unformalized operations on which the operation of a formal system depends. We may call them the semantic functions of the formal system, which are performed by a person with the aid of the formal system, when the person commits himself to its use.

Formalization can be extended to hitherto unformalized semantic operations, but only if the resulting formal system can in its turn rely on hitherto unformalized semantic supplements. The legitimate purpose of formalization lies in the reduction of informal functions to what we believe to be more limited and obvious informal operations; but it is nonsensical to aim at the elimination of informality. Such an attempt is logically on par with the policy of the Hungarian Minister of Transport, who decided to eliminate the swaying of the last carriages of trains by issuing an order that the last carriages are to be detached from all trains.

But this endeavor has further forms, carrying wider implications, to which I have yet to attend. The performance of complex symbolic operations by a relatively detached formal process, is physically embodied in the operations of automatic computers. Other intelligent behavior has been successfully imitated by mechanical models and it has been argued effectively that all intelligent manifestations could be matched by the workings of some suitably constructed machinery. This raises the question whether, in such a case, machines should not be accredited with possessing intelligence and having a mind of their own.

The problem is more serious than it might appear at first sight, for the science of neurology is based on the very assumption that the nervous system—being no more than a machine functioning according to the essentially known laws of physics and chemistry determines or at least represents all the manifestations which we normally attribute to the mind of man. Moreover, the study of psychology, in pursuing the ideal of scientific detachment, has shown a consistent tendency towards reducing its subject matter to explicitly formulated relationships between measurable variables, which as such can always be represented as the performances of a mechanical artefact. It is therefore of real importance, to ascertain whether there is any essential difference between machine and mind, and if so, what this difference consists in.

From what I have said about the limits of formalization, the difference between machine and mind should be found in the unformalized semantic operations by which formal systems must be supplemented in order to perform any intelligent act. These are the actions of an intelligence using the formal system, that is of an intelligent mind which understands and correctly operates this system. Mind, *thus defined as the agent directing an irreducible residue of unformalized operations, is inherently unformalizable and therefore not capable of being represented by any artefact.* By the same token its functions are not capable of representations by any neural model and neurology cannot ever account for these functions in terms of any specifiable system of physico-chemical processes. The existence of an irreducible unformalized residue is thus seen to imply a conception of the mind essentially undetermined by any specifiable material mechanism.

Since a machine on the other hand must be conceived as determined by a specific material mechanism, we have here a fundamental difference between mind and machines, and equally between the mind and any neurological mechanism underlying mental functions.

We may say more particularly, that a formalized deductive system is an instrument, which as such requires for its logical completion a mind using it as its instrument in a manner not fully determined by the mechanism of the instrument, while the mind of the person using the instrument requires no corresponding logical completion. For obviously a person can carry out computations by the aid of a machine or without it, but a computing machine cannot be said to function except within a tripartite system:

I II III
mind---→machine---→things to which mind informally refers.

It is true that some use of articulation is present in almost every conspicuous mental process, but the intelligence of animals shows that articulation is not strictly indispensable for the exercise of intelligence. We have actually met already in previous lectures an ample range of informal intellectual performances of a very high quality, exercised by scientists.

By a variation of our tripartite system we may now recognize the logical limitations of an exact experimental psychology. Replacing 'machine' by a mind ('mind 2') we have,

I II III
mind (1)---→mind (2)---→things to which mind (1) informally refers.

Insofar as mind (2) can be replaced by a machine it functions as an instrument of mind (1). If for example the psychologist had discovered a mechanism which completely accounts for the performance of mind (2) in solving a certain type of problem or drawing a certain kind of inferences, mind (1) could use mind (2) as an instrument for solving this kind of problem or for drawing this kind of inference, much as it would use a computing machine for such a purpose. In doing so mind (1) would have to exercise unformalized powers

which cannot be represented by a machine and which are lacking in the mechanical model of mind (2). These unformalized functions include the capacity for understanding a meaning and for reaching convictions by an act of responsible judgment. By virtue of these powers of mind (1) the mechanical picture of mind (2) has a meaning for mind (1) which results from an intellectual judgment of its own, even while it represents mind (2) as lacking any similar powers.

This inconsistency between the powers which the observing mind is confidently exercising in the very act of denying them to another mind under its observation, can be excused if the observer is concerned only with the automatic responses of his subject. When a physiologist records the reflexes of a person he is rightly claiming for himself powers of judgment which are absent in the faculties he is examining in another person. The situation may be similar when a psychiatrist examines a patient having an epileptic seizure; and to the extent to which mental illness deprives those suffering from them of control over their thoughts, a psychiatrist will observe the underlying pathological mechanism from the superior position assumed by mind (1) towards mind (2).

But when two persons envisage each other as equals each must credit the other with the powers he claims for himself. They must reciprocally acknowledge each other as centers of unformalized mental activities. And each must accredit the other with a striving to fulfill intellectual standards acknowledged by itself, which is logically indispensable to its rational control of unformalizable mental capacities.

This responsible core of personhood cannot be observed in terms of specifiable variables and is therefore absent from any explanatory model of a person embodying relations between such variables. It is only by conversing with this responsible core of a fellow person that we can come to know it personally. Only by repudiating the logically untenable deal of completely formalized thinking, can be we gain the conception of a mind capable of convivial interaction with other minds.

More generally, the attempt at knowing man impersonally necessarily leads to a conception of man altogether lacking the capacity of knowing. Such a man could only go through the motions of mental activity but not have any genuine intelligence. Only by actively participating in the intelligent personhood of others can I recognize them as persons; and the recognition of such personhood cannot therefore be consistently upheld unless I acknowledge and accredit my own participation as contributing to it.

This conclusion is a slight digression on which I could not fail to engage in analyzing the limits of formalization. For the personal supplementation required by a computing machine in order that it may function as an instrument of thought coincides with the deficiencies which make a computing machine fall short of representing the responsibly thinking mind. This argument leads up for the first time to the unspecifiability of a living function and a living being. The formalization of thinking and of thinking man amounts to their identification with such of their particulars as can be depicted by a formalism or a machine, and it is this which was shown to be unperformable. Formalization or mechanization is of course only one among many possible exhaustive specifications of a responsible person which destroy its responsible personhood. There are psychological and physiological representations which lead to the same result. But I must not pursue this theme any further here, before having answered more fully my original question concerning the possibilities of depersonalized thought.

Resuming therefore my logical analysis of deductive systems and computing machines, I shall now generalize its conclusions to all systems of rules and all kinds of machines. I want to take as my clue the fact that both rules [and?] the operational principles of machines are normative, in the sense that within their own framework they can only function rightly.

In respect to rules this is quite obvious. They presuppose an intention which will be satisfied by their observance. Some rules like those of logic or ethics convey intentions which are widely held, while others may be merely personal commands, like the notice board 'No Trespassers'. Certain rules may be unacceptable to us, or considered invalid, but they still continue to express someone's convictions of what is right, and to operate that person's appraisal of relevant occurrences. All the operations of a system of rules are necessarily believed to be right by someone upholding the system of rules.

I want to show that machines—not only computers, but all kinds of machines—have a similar normative character, and I wish to seize then upon the curious fact, which is not quite so easily apparent in the functioning of rules like those of logic or ethics, that the actual operations of all these normative systems are due to the causal interaction of particulars having themselves no normative intent. Let me cast this observation into a more concrete form, specializing for the moment on machines.

Take mechanical devices like clocks, sewing machines, typewriters and jet engines, and call all such artifacts 'machines'. I can identify any such things as a machine only if I believe that it works, which includes the assumptions of a purpose which it achieves in working; and no purpose can be said to exist unless I either share it or consider it to prevail in some other person. Self-propelled machines have movable parts constituting an internal context of their own, but nevertheless the context of the machine must be taken to include its purpose together with the person who entertains the purpose.

When a machine is in good working order it presents an instance for the operational principle which would characterize it in a patent. The principle of a machine describes its various parts and how each of its parts fulfills its function by acting upon each other as a means for achieving the purpose of the machine. The law of patents acknowledges the invention of a new machine as taking place when its principle is first clearly formulated or when it is first put into practice.

The same machine can be constructed from the most varied materials and in so [many] different shapes and sizes that only a close analysis will identify these machines as embodiments of the same principle. A patent which attempts to cover all conceivable embodiments of a mechanical principle will avoid therefore mentioning the physical or chemical particulars of any actually constructed machine except insofar as these particulars are essential to the operation of the principle. Just as the rules of algebra will operate for any set of numbers for which the algebraic constants of the equation may stand, so the operational principle of a machine is valid for any particulars which are covered by its general terms and such a principle must be stated, therefore, like the rules of algebra, at the highest possible level of abstraction.

The normative intention implied in the conception of a machine is manifested by the fact that it does not cover any instances of failure; or perhaps even more obviously in the fact that it sets off by contrast the conception of a machine that is out of order. When a boiler bursts, a train derails or a crankshaft snaps, these things behave against the rules laid down for them within the conception of the machine. Clearly, while this conception accredits certain events as orderly performances, it condemns others as failures.

A patent defining a machine in terms of its operative principles tells you how the machine should function; but it can say nothings about the possible failure, for these consist in departures from the principles of operation by which the patent defines the machine. However, failures do occur nevertheless and a scientifically trained engineer may be able to tell us why. He might observe strains under which the material of the machine will break down, or corrosive effects which whittle away its substance. So it would look as if the patent gave merely an imperfect knowledge of a machine, which has to be supplemented by the scientist who comprehends both the correct functioning and the failures of a machine.

But this is not so. The most exhaustive physical and chemical investigations cannot replace the understanding of a machine as conveyed by a correct statement of its operational principles. A physical and chemical analysis can be carried out only on a particular sample of the machine. It would reveal therefore much that is irrelevant to the operation of the machine, while it would not in itself establish anything that is essential to its operation.

This may sound strange, but suppose you are faced with a piece of machinery the purpose of which is quite unknown to you so that you have no idea how it operates. It would be quite useless to make an exact physical and chemical map of such an object. You could predict from such data all possible configurations which the problematical object may take up in the future in a wide variety of hypothetical circumstances. But this would not in itself tell you whether such predicted events should be regarded as the proper operation of your machine or as a disastrous break-down of it. Not until you have guessed what the thing is for and the manner in which it is supposed to achieve its purpose, can your physical and chemical data be of any use to you. It is not the material detail, but its putative character which constitutes a machine. A machine is a personal fact which cannot be specified in the comparatively depersonalized terms of physical and chemical data.

Should we wish to make use of physical or chemical observations in order to deepen our understanding of a machine—for example of a clock—we must have previously guessed or at least surmised that the clock was a time-keeping instrument and have some intimation of the functions performed by its various parts, as of the weights which drive it, the pendulum which controls its speed by rhythmically releasing the escape and the hands which indicate the passage of time. We could then go on to verify these operational elements and gain a more precise insight into them by the aid of physical and chemical observations, suggested by this context. This should subsequently enable us to improve on the operational principle of the clock and perhaps transform it from a household timekeeper into an instrument of precision for the use of astronomers. While on the other hand no physical or chemical observation of clocks will be of any use to a clockmaker unless such observation has a value in the light of the operational principles of a clock; by telling us how the working of some type of clock is made possible, or else is hampered, or is caused to fail altogether.

Some physical and chemical characteristics of a machine, such as its weight, size and shape or its fragility, its susceptibility to corrosion or to damage by sunlight, will be of interest in themselves on certain occasions, for example to a carter undertaking the transport of the machine. But this is about as much as the scientific study of a machine can achieve when pursued in itself, without reference to the principles by which the machine performs its purpose.

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These illustrations should suffice to make it clear that the operational principles of machines resemble [a] system [of] rules, like those of logic or ethics, by the fact that they set up formal standards of rightness. As in logic or ethics, these rules must be assumed to be accredited by some person who accepts their operation in respect to the things to which the rules refer.

Machines, like any other embodiments of rules of rightness accepted by one person, may be altogether repudiated by other persons. I may say of a machine that it cannot work. I say for example that the wheel of perpetual motion described by the Marquis of Worcester in 1663 could not be kept circling around by the succeeding descents of the weight attached to its rim and therefore it could not and cannot work. I can analyze such a machine in terms of its alleged operational principles and show that these contradict the law

of conservation of energy which I believe to be true. A criticism of this kind does not deny that the machine is defined by certain principle of rightness, but merely denies that these are right. It is a critique of rightness, not very different from that which we could exercise in criticizing logic, ethics or law, except for the fact that it often relies on natural science which may expose certain of its operational principles as unperformable.

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We may now sum up conclusions and cast them in a new form. I started off by showing that logical operations, in order to be effective, must be supplemented by a person relying on them in respect to something to which they refer. They must function as the middle piece in a tripartite system with a person at one end carrying out through them certain unformalized operations at the other end. The formal rules mediate the personal appraisal of its user, guiding him in carrying out computations or logical proofs, in behaving correctly or judging others correctly, be it in respect of their behavior, or of some computations or logical proofs which they put forward. It has appeared that all machines have to be considered as "middle pieces" in a similar sense. They function in accordance with principles—similar to those of logic or law—which are rules of rightness and these principles serve as guides for the appraisals of the events occurring in the machine or caused by the machines outside themselves.

And we can now generalize in respect to this whole group of formal instruments what has already been adumbrated for the case of the machine. Rules of rightness can never account for failure, and there is a difference therefore between the terms in which we account for anything that is in accordance with them and anything that is not. Anything that is thought to be in accordance with logic is accounted for in terms of logical reasons. Anything that is believed to be in accordance with the law is accounted for in terms of legal reasons. Ethical behavior is justified in terms of moral reasons. This corresponds to the fact that the proper functioning of a machine, as well as its design and the nature of its several parts are all accounted for in terms of reasons derived from the purpose and operative principles of the machine.

Not so if something goes wrong. An error is a process of inference which (though it can be defined as a deviation from logic) cannot be accounted for by logical reasons, but can only be understood psychologically, by reference to some disturbing causes. A judicial error cannot be accounted for in terms of the law, but only as a result of such causes as personal bias or other extraneous facts. This is on the par with the way we account for the breakdown of a machine, namely by the physical or chemical properties of its parts.

And again, the inverse is true as well. It would be meaningless to enquire into the causes of a mathematical theorem. Psychology cannot account for the rightness of logical inferences, nor for the rightness of the law. Any more than physical or chemical observations can account in themselves for the operational principles of a machine.

We can now go further and formulate the following general principles. Any system of causes which accounts both for failures and successes, as defined by a system of rightness, necessarily ignores the difference between what is right and wrong according to that system of rightness. Any causal account of the process of thought, whether given in terms of a mechanical model, or neuro-physiological mechanism, or a psychological analysis, is lacking the grounds for accrediting a process of logical inference. If any such account of human thought claimed to be exhaustive, it would deny by implication the very existence of any right process of inferences. The same holds for the analysis of ethical judgments or of processes of law in terms of psychological or other causes. Such a system of causation contains no grounds for constructing

the conception of right behavior or correct judgment, and if it claimed to be exhaustive, the system would imply the denial of any such rightness.

Pan-psychologism, like pan-mechanism, or for that matter pan-sociologism or pan-historicism would spell logical, moral and legal nihilism. Once more we are faced here with a kind of unspecifiability. Rules of rightness and things which function according to rules of rightness exist only by virtue of someone's personal commitment to their principles of operation and valuation. Any attempt to specify them in terms of more depersonalized particulars, not charged with this personal commitment, necessarily denies the whole system of beliefs accredited by this commitment. The case is analogous to the kind of paralysis and destruction of meaning due to a dismemberment of a logically unspecifiable whole, except that in the present case we are dealing with formal rules of rightness and with machines operating according to formal rules, which implies that our personal participation in these wholes consists in the acceptance of certain rules of procedure and appreciation. It is the rightness of the behavior following these rules which then turns out to be logically unspecifiable in terms of the observed particulars of such behavior.

It has been said many times, since Hume, that we can never infer what ought to be the case from a knowledge of what is the case. The acceptance of personal knowledge would affiliate Hume's theorem to the general fact of logical unspecifiability and would accordingly regard the incommensurability of the 'is' and the 'ought' as arising not between two utterly different categories of judgment, but merely between two different degrees of personal participation in the act of our knowing. The division would no longer imperil the validity of the ought, but would on the contrary lend support to it by acknowledging its kinship with the validity of the is.

No longer is then the great and perilous issue of man's moral nature allowed to hinge on a slight grammatical distinction, but it is seen standing instead in a much larger perspective. Being affiliated to the unspecifiability of personal knowledge in all its variants, it is connected with such essential characteristics of our universe as the unspecifiability of mind in terms of matter, which I demonstrated earlier in my analysis of mechanisms and neurological systems as thinking machines.

But this is not to say that the realm of natural causation is irrelevant to the conduct of logical thought or to the fulfillment of ethical and legal imperatives. Just as the operational principles defining a machine must take into account the physical and chemical properties of matter in order to be embodied effectively in actual pieces of machinery, so in like matter all rules of rightness accepted by us can become operative only within a given set of physical, psychological, social or historical conditions. To the responsible person committed to a system of such rules, the totality of these conditions represents the terms in which the problem of right thought and right conduct is set to him. This given bodily and cultural situation for which he bears no responsibility, demands of him that he shall fulfill his responsibility within this particular situation. The circumstances of this situation offer him his opportunity for acting rightly, as it also limits his possibilities for doing so and lays temptations in his way for falling short of what he could do.

Thought or action guided by reason cannot arise except within a body and a mind actuated by causes. They are the indispensable conditions of man's calling. But when natural causes are assumed to determine the outcome of thought or action, they deny the very conception of human reason. The distinction is decisive, and underlies the conception of commitment to which these lectures should introduce us.

NOTES ON POLANYI'S 1954 LECTURE "RULES OF RIGHTNESS"

Phil Mullins

Keywords: Michael Polanyi, rules of rightness, formalism and its limits, participative knowing

ABSTRACT

This short essay provides some historical notes helpful for understanding what Polanyi first called "rules of rightness" in his 1954 University of Chicago series of lecturess.

Introduction

"Rules of Rightness" is the fifth of an eight-lecture series given at the University of Chicago on Polanyi's first trip to the United States after being denied entry for several years during the McCarthy era. His first lectures at the University of Chicago, set up by Edward Shils and given when Polanyi was Alexander White Visiting Professor in the spring term of 1950, drew on the material in *The Logic of Liberty* (Mullins 2019, 93-100). But the 1954 series came a few years after Polanyi's 1951 and 1952 Gifford Lectures, two sets of ten lectures jointly titled "Commitment: In Quest of a Post-Critical Philosophy." The 1954 set of lectures seems to be an effort to consolidate and extend elements of Polanyi's constructive philosophy articulated in his Gifford Lectures.[1]

Somehow these 1954 lectures were lost or perhaps copies never were given to the University of Chicago. I have found no information about the series in the Michael Polanyi Papers (hereafter MPP). But, as the Editor's Note accompanying the text of "Rules of Rightness" in this issue of *TAD* confirms (cited in parenthese hereafter), three of these lectures, including "Rules of Rightness," have recently turned up in the Karl Polanyi Archives.

There is no lecture titled "Rules of Rightness" in Polanyi's 1951 Series I or his 1952 Series II Gifford Lectures, and this particular phrase apparently was not used at all in the Gifford Lectures. As far as I can determine, the term does not appear in other Polanyi writing before this 1954 Chicago series. But the connections between the "Rules of Rightness" lecture and some of the Gifford Lectures are nevertheless close, and much of the material in this lecture and in particular Gifford Lectures reappears in *PK*.

Speaking macroscopically, it is thus important to bind together the last several Series II Gifford Lectures, the fifth, sixth, and seventh 1954 lectures, and the final three chapters of *PK*, Part IV of the book that Polanyi titles "Knowing and Being" (*PK*, 325). Perhaps the best way to intimately link this material is to

comment briefly on the sweep of Polanyi's argument in his final *PK* section, which is the dénouement. Here Polanyi brings together the discussion of "knowing" and "being." The discussion moves from the more general problem of knowing to the matter of knowing living beings, the evolution of living beings, and the calling of living human beings. Polanyi notes in his opening sentences that he will "outline some views on the nature of living beings, including man," if one accepts "my commitment to personal knowledge" (*PK*, 327). Chapter 11 ("The Logic of Achievement") is interested in achievement as a mark of centered life, and this chapter has an important section (2) titled "Rules of Rightness" (*PK*, 328-331) in which some parts of the preceding 1954 lecture reappear. Chapter 12 ("Knowing Life") has the same title as the lecture following the 1954 "Rules of Rightness" lecture and treats most of the same issues. The final chapter of *PK* ("The Rise of Man") brings together some of the elements in chapter 11—including the important discussion of "rules of rightness"—and chapter 12 in a discussion of evolution and anthropogenesis seen in the context of emergence.[2]

Participation and Polanyi's Earlier Work

Polanyi's interest in focusing his 1954 series of lectures on articulating his constructive philosophy is suggested at the beginning of his "Rules of Rightness" lecture. He affirms in his opening remarks that his preceding four lectures have been concerned with "the bearing of a formalism on the facts of experience," and this bearing can only be established "by the personal participation of the scientist" ("Rules," 5). In the series, Polanyi aims, more generally, to link participation to the kind of submission to reality that is integral to discovery rather than "to give license to arbitrariness" ("Rules," 5). "Rules of Rightness" thus enlarges the account of the personal and is part of Polanyi's effort (which also includes "Knowing Life" and "Persons") to flesh out the participation of the knower in the known.

Near the beginning of this 1954 "Rules of Rightness" lecture, Polanyi notes that in his earlier lectures' discussions "there is an important piece missing in my picture of the exact sciences" and he needs now to supply this missing piece because it will be "indispensable to the critique of biology" ("Rules," 5) that is upcoming. Later in his lecture, it becomes clear that this missing piece is concerned with the way operational principles are normative and thus "within their own framework they can only function rightly" ("Rules," 9). Polanyi points out that rules may be unacceptable to another person or may be considered invalid, but "they still continue to express someone's convictions of what is right, and to operate that person's appraisal of relevant occurrences. All the operations of a system of rules are necessarily believed to be right by someone upholding the system of rules" ("Rules," 10). Rules imply the commitment of some person in Polanyi's participatory account. However, before Polanyi gets to the matter of discussing in more detail the normative nature of a system of rules (such as those operating in a machine), he spends significant time in this lecture discussing the importance of formalisms and the participative aspect of knowing in the case of formalisms.

This 1954 lecture's extended discussion of the nature of participation in formalizations and the limits of formalization includes comments on the earlier failed movement to completely formalize mathematics as well as Polanyi's own ideas about computers and mind. He points out that textbooks on symbolic logic pursue this process of strict formalization, but he wants to "define the inherent limitations" ("Rules," 6) of this approach.[3] In October 1949, Polanyi took part in the "Mind and the Computing Machine" seminar at the University of Manchester. In addition to Polanyi, this seminar included Alan Turing, Max Newman, Maurice Bartlett, and Bernhard Neumann (all mathematicians), philosophers Dorothy Emmet and Wolfe Mays, neurologists Geoffrey Jefferson and J. Z. Young, and others (see Mays 2000, Blum 2010. and *PK*,

261-264). In the archival MPP, there is a copy of "Can the mind be represented by a machine?" which is subtitled "Notes for discussion on 27 October 1949" (Box 32, Folder 6, MPP), but this document is dated 13 September 1949. These are Polanyi's notes prepared before the seminar, and they outline what apparently was the perspective Polanyi articulated in the discussion. Polanyi later wrote and published in 1951 "The Hypothesis of Cybernetics," a three-page comment that was part of a broader discussion of cybernetics by several philosophers in the *British Journal for the Philosophy of Science* (Polanyi 1951, 312-315). The published article recycles the ideas in his earlier notes and argues that machines (including computers, understood as formalized deductive systems) cannot satisfactorily represent a human mind. Further, he argues that it is "logically fallacious to speak of a complete elimination…[of] 'unformalised' elements of deductive systems" (Polanyi 1951, 312). Polanyi discusses the importance of the function of "unformalised supplements" provided by a human being using a deductive system, designating these the "'semantic operations' of the formalized system" (313). This earlier discussion makes clear Polanyi's affirmation of the inevitable participation of the knower in the known and seems to underlie views articulated in the "Rules of Rightness" lecture.

Polanyi also identifies participation (in "Rules of Rightness") with the scientist's skillfulness and ability to appraise orderly patterns in nature. The exercise of skill and the appraisal of coherence establish "a formal knowledge of a comprehensive whole in terms of our subsidiary awareness of particulars" ("Rules," 2). And scientific formalisms expand the human facility to think. For instance, a geographic map makes certain facts (e.g., longitude and latitude data on towns) easy to handle. As Polanyi notes, "a mere inspection of the records [on the map] yields a new understanding of the facts" (2). He also shows how formal operations on denoting symbols (as in solving a simple algebra problem) immensely increase human intellectual powers. Polanyi very much appreciated the way in which formalization works in the human world to create and progressively expand components of articulate culture (see also *PK*, 203-209).

The sixth 1952 Series II Gifford Lecture "Skills and Connoisseurship" also earlier emphasized how skills and connoisseurship are central to scientific practice and are intimately personal in nature. This lecture also thus seems to underlie "Rules of Rightness" and is, as well, background for the later *PK* "Skills" chapter, but the Gifford Lecture is a longer discussion that Polanyi also published independently in the year this lecture was delivered (Polanyi 1952). In the published version (much of which is incorporated in *PK*, 49-57), Polanyi identifies the "domain of skills and connoisseurships" as concerned with "inarticulate performances" and says that accrediting such performances "cannot refer…to any correspondence between a fixed formal framework and the actual instances of our experiences but must seek its justification largely or entirely within a personal act of our own mind." Human commitment is "inherent in the structure of these performances." This "necessarily makes us both participate in their achievement and acknowledge their results" (Polanyi 1952, 381). Polanyi has much to say about the nature of rules and rules of art in this and the following Gifford Lecture ("Two Kinds of Awareness," 12-16). The discussion of "inarticulate performances" in this Gifford Lecture sounds much like and complements ideas about the importance of unformalized elements involved in using a formalized deductive system and the limitations of a strictly empirical psychology in the 1954 "Rules of Rightness" lecture.

The seventh lecture in Gifford Series II, "Two Kinds of Awareness," is also, in somewhat different ways, an important predecessor of the 1954 lecture series and Polanyi's ideas about "rules of rightness." Here Polanyi first presents his ideas about subsidiary and focal awareness and their operation. Both Polanyi and Marjorie Grene later identified this lecture as a steppingstone leading to Polanyi's more mature philosophical

ideas. In his Gifford Lecture, Polanyi recasts some Gestalt ideas about parts and wholes, and he works out his own account of the personal recognition of patterns and purposes. He does this in a way that emphasizes indwelling, unspecifiability, and integration and thus focuses on the participative, commitmental nature of knowing.

Perhaps the most important predecessor for the 1954 "Rules of Rightness" lecture's focus on participation is Gifford Series II, Lecture Eight, "Living Beings." Here (see pp. 3-8 but note this is a revised lecture dated January 1953) Polanyi discusses differences between "molar" and "molecular" perspectives and analyzes the case of machines (a case analogous to that of living beings but "an example which reveals the essential points, without bringing in the mysteries of life" [4]). He suggests that one can identify a machine "only if I believe that it works, which includes the assumption of a purpose which it achieves in working, and no purpose can be said to exist unless I either share it or consider it to be reasonable for some other person" (4). Polanyi notes that "when a machine is in good working order it presents an instance for the operational principle which would characterise it in a patent" (4). The discussion of patents and of physical and chemical analysis of a machine is akin to what Polanyi presents later in his "Rules of Rightness" lecture. Polanyi acknowledges the "pronounced incommensurabilities between the molar and the molecular aspects of a subject" not only in the case of the machine but also in "such human artifices as printed words, maps, arithmetical computations or a game of chess" (5). In sum, Polanyi's reflections on molar and molecular perspectives in this Gifford Lecture provide an anti-reductionist account that lies in the background of the 1954 "Rules of Rightness" lecture's formulation of ideas. Some paragraphs in Polanyi's 1954 "Rules of Rightness" lecture echo (and perhaps come directly) from the Gifford Lectures and particularly "Living Beings."

Systems of Rules, Causality and Reasons, "Is" and "Ought"

In his "Rules of Rightness" lecture, following the discussion of the participative dimension of formalization, Polanyi turns to the matter of generalizing his conclusions "to all systems of rules and all kinds of machines" ("Rules," 9). As noted above, he focuses on showing that all kinds of machines have a normative character in their operational principles, which "within their own framework can only function rightly" ("Rules," 9). More generally (i.e., not only in the case of operational principles of machines), rules presuppose human knowledge and intentions, and knowledge and intentions are closely aligned with having beliefs and commitments, which is integral to being a person. Polanyi seems simply to accept that some kinds of rules are widely recognized within human communities and some are not. And he does not digress on matters concerned with the genuine diversity of communities of interpretation. By the time Polanyi delivered this 1954 series of lectures, he had for several years studied what might, in shorthand, be dubbed science and the problem of cultural diversity (pluralism). In the late forties, Polanyi read cultural anthropology and was in a Manchester discussion group that focused on the work of Evans Pritchard (see discussion in Jacobs and Mullins 2017). He discusses the case of the Azande in the eighth Gifford Lecture, Series I, "The Doubting of Implicit Beliefs," and his work on the Azande (and other anthropological studies) is referenced not only in the Gifford Lectures but also in other essays (e.g., Polanyi 1950). But his Series I Gifford Lecture is really focused on the stability of beliefs in a community, and this focus seems to be a further extension of ideas Polanyi worked on in the forties about the intimate relation of believing, belonging, and understanding (Polanyi 1947/2020).[4] Nevertheless, it is worth noting that science and the matter of cultural diversity are

not discussed in the "Rules of Rightness" lecture. In some ways, the analysis of "rules of rightness" seems to be another Polanyi philosophical move to address and explain the coherence of interpretative communities.

Polanyi's discussion focuses primarily on the case of the machine, and this, of course, also is a topic treated in *PK*, chapter 11, "The Logic of Achievement," where there is a section focused specifically on "rules of rightness" (*PK*, 328-331). As I noted, in Gifford Series II, Lecture Eight, "Living Beings," Polanyi discusses differences between "molar" and "molecular" perspectives and analyzes the case of machines.[5] He identifies machines as a case analogous to that of living beings but "an example which reveals the essential points, without bringing in all the mysteries of life" (4). It is, of course, unclear precisely what "mysteries of life" Polanyi is alluding to. However, in this Gifford Lecture's discussion, he straightforwardly acknowledges that the methods of the exact sciences have yielded great insights recently in biochemistry and biophysics. But Polanyi nevertheless puts his primary philosophical question this way: "The question can only be how the methods of exact science are to be applied to such complex subjects and where exactly lie the limits beyond which they cannot be taken" (4). Mechanical devices, for Polanyi, are clearly a class of artifacts fundamentally different from living beings, although they in part closely resemble living beings and can anchor (i.e., make plausible) an argument by analogy. Polanyi's discussion of the limits of formalization simply draws a line between machine and mind insofar as mind relies on unformalized semantic operations to perform intelligent acts. Formal systems always must be supplemented by the unformalized semantic operations of a person. Polanyi identifies mind as "the agent directing an irreducible residue of unformalized operations," saying that it is "inherently unformalizable" and therefore cannot be "represented by any artefact" ("Rules," 8). Somewhat later in this lecture, Polanyi discusses "the unspecifiability of a living function and a living being" ("Rules," 9). He clearly contends that machines "must be conceived as determined by a specific material mechanism," and this is "a fundamental difference between mind and machines" ("Rules," 8).

Machines, according to Polanyi, are members of a larger "group of formal instruments" ("Rules," 12). And for this entire group, the "rules of rightness" for any member cannot account for failure, but these rules do set forth a specific context (or framework) for understanding what is in accordance with that context. Polanyi apparently thinks that, in many cases such as that of machines, this context or framework can be made at least partially explicit. Thus, we speak of mechanical or engineering principles, "logical reasons," "legal reasons," and "moral reasons" ("Rules," 12). Failures of a machine and errors in inference in terms of the particular framework must be linked to causes with an impact at a lower level of control than "rules of rightness." Thus, psychology does not account for the rightness of logical inferences, but it might provide an account for the causes bearing on the processes of a particular person who is attempting (but failing) to draw logical inferences. In his "Rules of Rightness" lecture, Polanyi does distinguish "causes" and "reasons," but he does so more clearly in his *PK* discussion with the title "Causes and Reasons" (331-332) that immediately follows the "Rules and Rightness" section in chapter 11 (*PK*, 328-331). Here Polanyi says clearly that "reasons for doing something can only be given within the context of rules of rightness" (*PK*, 332).

Finally, it is worth noting that Polanyi ends his "Rules of Rightness" lecture by pointing to the broader implications of his participative account. He notes that the chasm between "is" and "ought" that has been given much credence since Hume is not warranted. One should regard

> the incommensurability of the "is" and "ought" as arising not between two utterly different categories of judgement, but merely between two different degrees of personal participation

> in the act of knowing. The division would no longer imperil the validity of the ought, but would on the contrary lend support to it by acknowledging its kinship with the validity of the is ("Rules," 13).

This is a rather bold challenge to much in mainstream Anglo-American philosophy. I wish that Polanyi had later come back to this challenge and further elaborated it, but as far as I know Polanyi makes such a direct challenge only in this "Rules of Rightness" lecture.

ENDNOTES

[1]I find it helpful to distinguish (however roughly) Polanyi's critical philosophizing from his constructive philosophizing but acknowledge that the two are often woven together. While the former is aimed at sharply critiquing major affirmations of mainstream modern philosophical thought (i.e., the so-called critical tradition which prizes elements such as objectivism, doubt, extreme empiricism, and lack of respect for belief and tradition), Polanyi's constructive philosophizing (sometimes called "post-critical philosophy" and the "fiduciary" program) is built on a Gestalt epistemology (with distinctions between subsidiary and focal awareness and tacit and explicit knowledge) focusing on integration, personal commitment, and the way committed, inquiring persons are always embedded in dynamic interpretative communities. See the brief discussion of Polanyi's "fiduciary program" in Mullins 2016, 3-6.

[2]This final chapter of *PK* was apparently significantly revised in response to Oldham's criticism (which Grene claimed to share) that the initial draft simply did not bring together matters satisfactorily. See the discussion in Mullins 1997.

[3]Later he wrote about the "The Logic of Tacit Inference" (Polanyi 1966).

[4]The independently published version of this Series I Gifford Lecture is titled "The Stability of Beliefs" (Polanyi 1952). This was an essay about which Karl Popper and Polanyi wrangled (see the extended discussion in Jacobs and Mullins 2012). This controversy and publication precede the 1954 Chicago lecture series that includes the "Rules of Rightness" lecture.

[5]For Polanyi, molar recognition is a kind of participation of the knower in the known. Polanyi later frequently characterized his effort to turn important Gestalt ideas into an account of knowing as an approach that emphasized participation (*PK*, x, xiii, 65, 379; *SM*, 26, 28-29, 32, 62). Molar recognition involves dwelling in subsidiaries (i.e., making them function in the special way parts of the body function when we use them to attend to what is of interest) and grasping their conjoint bearing in the meaning of a whole (i.e., integrating relevant subsidiaries). Polanyi argued that the predominant approach of much science was reductionistic insofar as it smuggled in but denied the importance of the molar and focused instead on least parts (usually fundamental elements recognized by physics and chemistry) that were assumed strictly to determine a whole. While this reductionism was not always harmful, it is grounded in Cartesian presuppositions that implicitly accept as a starting point a res cogitans/res extensa bifurcation. It fundamentally separates mind and world and sets up an inside/outside problematic; it fails to acknowledge the knower's participation in grasping the known. This reductionism has inclined science (and broader culture that has been influenced by scientistic accounts of science) to favor a single-level ontology and predominantly materialistic explanations.

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"RULES OF RIGHTNESS" AND THE EVOLUTIONARY EMERGENCE OF PURPOSE

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Keywords: Michael Polanyi, rules of rightness, emergence, animal intelligence, contrivances, purpose, evolution, dualism

ABSTRACT

Michael Polanyi's essay "Rules of Rightness" argues that for living beings, both machine-like embodied processes and informal purposeful operations are guided by standards of proper functioning. This article traces the origins of rules of rightness back to the concomitant rise of life and purpose in the universe. Thereby the deterministic control of all things by the laws of physics and chemistry is broken. Powered by an independent active principle and guided by three inarticulate modes of learning, life takes on increasingly complex expressions of purpose in evolutionary history. Along the way, purposeful informal operations make use of and often create contrivances that further the explosive telic growth of life.

Introduction

Part IV of Michael Polanyi's *Personal Knowledge* offers a complex philosophical rendering of how the distinctive features of life emerged from the previously meaningless world of matter/energy governed by the purposeless but dynamic causal laws of physics and chemistry. Polanyi's 1954 lecture/essay, "Rules of Rightness," attends to a key aspect of this emergence, although this may not be obvious in the essay's opening discussion of formalisms. Polanyi's point is that all formalisms, whether machines, rules of logic, mathematical formulas, or self-made theories, etc., rely on informal judgments if such formalisms are to be applied and function adequately. As he wrote in *Personal Knowledge*, "The legitimate purpose of formalization lies in the reduction of the tacit coefficient to more limited and obvious informal operations; but it is nonsensical to aim at the total elimination of our personal participation" (259). That is, informal commitments and decisions rest on purposes and affiliated reasons not subject to the deterministic control of the laws of physics and chemistry.

The above claims are well-rehearsed views asserted by Polanyi. But what he does not describe in "Rules of Rightness" is the shape of the career of the informal ability that plays such an important role in the lecture. What is its relationship to purpose in the emergence and development of living beings?

Polanyi suggests that the dynamic informal operations he refers to in "Rules of Rightness" are a deeply rooted, embodied feature of life. He traces them back to "the inarticulate levels of intelligence of the animal and the infant. …Pursuing the roots of this tacit intelligence even further, we recognize an active principle which controls and sustains it. As far down the scale of life as the worms and even perhaps the amoeba, we meet a general alertness of animals" (*PK*, 132). This alertness seems not directed to preexisting goals so much as it is attuned to understand the environment in which it is placed and "achieve intellectual control over the situations confronting it. Here at last, in the logical structure of such exploring—and of visual perception—we found prefigured that combination of the active shaping of knowledge with its acceptance as a token of reality" (*PK*, 132).

Polanyi offers no theory as to how life originated. More significant for our inquiry is not the "how" of origination but rather the "what" of properties and processes the simplest forms of life rely on to enable future growth. This would seem to require speculation since it is extremely unlikely that any concrete evidence might remain. So let us ask this: What must the simplest archaea and prokaryotes, as putatively the earliest forms of life, do in order to survive? Archaea can consume such basic elements and compounds as hydrogen, sulphur, ammonia, and iron, producing in the process the energy to survive as well as producing other basic compounds as waste. How is their existence, then, different from the deposition of crystals around a fumarole? The archaea's reading and responding is an exemplification of purposeful behavior rather than an externally determined process. Unlike the chemically determined formation of crystals, archaea are able to reproduce themselves because they have the capacity to ingest certain useful compounds for self-maintenance and reproduction as well as the ability to avoid some of the environmental factors that might harm them fatally. In their reading of environmental signs as positive or negative, they fashion the most basic rules of rightness to accomplish these goals.[1] No doubt at the very origins of life, sign reading is of a basic stimulus-response type that may be called pre-intelligent. Yet even then it still functions as a foundational form of inarticulate purpose (*PK*, 71). But note that even at this most primitive level of life, it is possible to discover the distinction between the instinctual actions of parts and the molar purpose of the whole. The material requires some immaterial guidance if it is to function purposefully.

In speaking of learning signs not instinctively known, we come to a key step in the emergence of increasingly more complex life. Mere alertness of the environment would be a dead end of spectatorship unless it was connected to appropriate responsive action. Therefore, alertness must be followed by learning what observable patterns are significant with respect to thriving and surviving. Then a living being must have the ability to act according to that loaded information. In sum, learning significant patterns must be accompanied by acting appropriately. Intended behavior is a step beyond instinctual behavior, but each is an example of telic behavior.

Polanyi describes the origins of intended behavior by proposing three types of learning that even comparatively simple forms of life possess. First, sign learning, we have already seen, is the ability to ascertain the recurring patterns and signals relevant to the being's survival. Second, latent learning is the capacity to recall these patterns and organize responses. Third, trick learning is the embodied ability to carry out the desired action (*PK*, 71-77).[2] Polanyi summarizes the abilities each form of learning provides as follows: "We have seen that animals can learn (1) to perform tricks, (2) to read signs, (3) to know their way about. These

activities were taken to prefigure primordially the three faculties of contriving, observing and reasoning, which are elaborated on the articulate level to the three domains of engineering, natural sciences and mathematics" (*PK*, 328).[3] Each of the three forms of inarticulate learning seems necessary to work in harmony if a living being is to advance and flourish.[4]

Polanyi applied the ideas he developed in his 1954 lecture to his discussions of "The Logic of Affirmation" and "The Logic of Achievement" in chapters 8 and 11 of *Personal Knowledge*. But he placed his discussion of rules in chapter 11 of *PK* in a somewhat different context than his commentary about formalisms in his earlier "Rules of Rightness." In *PK*, the rules of rightness are interpreted as what govern the proper functioning of "contrivances." The ability to discover and use contrivances is gained through the third form of inarticulate learning just discussed, trick learning. "Contrivances are classes of objects which embody a particular operational principle" (*PK*, 328). These are objects by means of which animals learn to manipulate their environment to their advantage. Most likely, their own bodies were the first objects animals used to function as contrivances for finding food, fending off enemies, mating, and so forth. Narrowly defined, contrivances are useful formalisms or devices such as tools or machines. More broadly defined, contrivances can be seen as any objects that function as the means for achieving purposes. In wielding a stick to knock fruit from a high slender branch, an ape is obviously unaware of any formal operational principle. Whether the contrivance is consciously understood or not, it requires personal, informal judgments to be implemented or used.

As a creative contriver, a beaver dams up a stream and constructs a home of sticks that creates an environment, a niche, in which it can flourish. Certain indwelt rules of rightness establish how the dam and home should be constructed. The dam and home are analogous to machines, and with proper construction they can be seen in the lives of beavers to be contrived formalisms manifesting operational principles. Yet storms and droughts come. Predators may lurk in the surroundings, and human activities can affect the quality of water. The beaver must have the ability to adjust to new circumstances with an informal sense of rightness. This higher level is the capacity to regulate affairs in service to the purpose of general welfare. Consequently, two levels of the rules of rightness are called for: those guiding the building and structure of the beaver dam and those guiding its maintenance for overall beaver welfare in the face of changing conditions.

The active principle of alertness that Polanyi identified as the basic force of life is reasonably interpreted as evolving into informal operations of mind capable of following rules of rightness—operations, that is, that cannot be reduced to "nothing but the actions of neurons." In "Rules of Rightness," the unformalized semantic operations carried out by the mind as agent are contrasted with formalizations that function as aids to knowing. In *Personal Knowledge*, Polanyi acknowledges that formalizations such as machines, maps, graphs, and theoretical constructs are aptly understood to be contrivances helping humans achieve specific purposes. To be sure, they have to be applied by informal, indeed personal, thought and action. Proper application of formalisms is no arbitrary action. Action in harmony with purpose must follow rules of rightness. Moreover, to be useful the formalisms must themselves operate according to rules of rightness.

In Part IV of *PK*, Polanyi interprets the growing scope of purpose in terms of succeeding levels of evolutionary emergence. A passage from his article "The Logic of Tacit Inference" in *Knowing and Being* most succinctly summarizes this evolutionary sequence.

> All living functions rely on the laws of inanimate nature in controlling the boundary conditions left open by these laws; the vegetative functions sustaining life at its lowest levels leave

> open, both in plants and animals, the possibilities of growth and also leave open in animals the possibilities of muscular action; the principles governing muscular action leave open their integration to innate patterns of behavior; such patterns are open in their turn to be shaped by intelligence, and the working of intelligence can be made to serve the still higher principles of man's responsible choices (*KB*, 155).

The discussion of rules of rightness, however, is not about the steps or levels of emergence. It is about the structure that prevails at any one of these steps. In an important summary statement, Polanyi makes the following claims about how the rules of rightness are situated in any particular step of emergence:

> Living beings function according to two always interwoven principles, namely, as machines and by 'regulation'. Machine-like functions are ideally defined by fixed structures; the ideal case of regulation is an equipotential integration of all parts in a joint performance. Both kinds of performance are defined by rules of rightness and these refer in either case to a comprehensive biotic entity. But there is this difference. Machine-like functions are ideally defined by precise operational principles, while the rightness of a regulative achievement can be expressed only in gestalt-like terms. One's comprehension of a machine is, accordingly, analytical, while one's appraisal of regulation is a purely skillful knowing, a connoisseurship. Yet both kinds of performances have it in common that their rightness cannot be specified in the more impersonal terms of physics and chemistry (*PK*, 342-343).

One might think from this statement that Polanyi is distinguishing at each step between three levels: (1) bodies—with machine-like structures—as things, (2) the rules or operational principles of machines and other formalisms or contrivances, and (3) the free unformalized ability to regulate bodies and formalisms in their changing environments. But this view neglects ascertaining where the contrivances, formalisms, and machine-like structures come from. They are the products—some developed over eons—of the active unformalized operations characteristic of all life. The rules of rightness of machines and other formalisms have been constructed by the energetic force that also has the capacity to regulate affairs. So for Polanyi, living beings seem to have two ontologically distinct levels: (1) bodies, including their many parts seemingly operating according to local rules of rightness, and (2) the active principle—including its expression in higher animals as minds—that discovers or creates contrivance and attends to the proper functioning of the parts and the overall welfare of the body.

The dyadic ontological structure just described may come as a surprise. For how does it differ from the much-criticized Cartesian dualism of matter (body) and mind? Well, it differs in several ways. For one thing, it is based on a study of life in which biology is supplemented by evolutionary and ecological insights. That is, it is based on an understanding of demonstrable world processes, not on a search for certainty that takes the mind's processes as the ontological base and proceeds by a method of doubt. Polanyi effectively demolishes that route of thought. He begins with a fallible scientifically informed grasp of the complex world rather than with the immediacy of consciousness. The latter approach ignores the fact that consciousness is a developmental byproduct of the preexisting rich ontological world. Polanyi does not define mind and matter as fundamentally different substances as Descartes does. By definition substances are self-sufficient islands rather than emergently dependent wholes. Generations of philosophers after Descartes were stymied in their attempts to reintegrate mind and matter.

Polanyi's philosophy includes several dualisms not subject to the problems of Cartesian dualism. When mind is related to matter in the context of emergent development, a two-level ontological difference has a dualistic character not subject to the problems of Descartes's one-level ontology that involves incommensurability. For Polanyi's evolutionary account concerning his stratified universe, "Each pair of levels would present its own dualism, for it would be impossible to account for the operations of any higher level by the laws governing its isolated particulars. The dualism of mind and matter would be but one instance of the dualism prevailing between every pair of successive ontological levels" (*KB*, 155).

But what of the dualism of the whole and its parts, the molar and the molecular, that has been claimed to exist in a living being? Why is this relationship not subject to the problem of Cartesian dualism? Let us return to the notion that concomitant with the rise of life is the advent of purpose in the cosmos as we know it. To become an effective reality not strictly determined by the laws of physics and chemistry, purpose requires a material base as well as an immaterial direction of possible fulfillment. Life is a telic phenomenon from the get-go. Thus, from its origins life has a dualistic character, a purposeful molar and a molecular embodiment. Furthermore, that unformalized regulative quality of life can evoke action if it is to fulfill its purposeful independence in an often-hostile environment. Earlier it was noted that this action at first would be strictly biological and instinctive in character. But with the lure of purposeful development, the three forms of inarticulate learning developed. And in time the active principle took on more and more forms and functions as life evolved.

At this point, I feel compelled to stop and ponder the significance of what has just been asserted. Recapitulation has a place here. The emergence of life and the birth of purpose have been claimed to be conjoint, intertwined phenomena. Without life, there is no evident purpose in the cosmos. Without purpose, no life could exist. The development of life is arguably the greatest, most significant event in the earth's history. Each living thing breaks the chain of total causal control of events by the laws of physics and chemistry. Those laws are relegated to roles that support life, not dominate and control it. Physical laws set constraints within which life must function. In a certain exaggerated sense, each living being can be seen as a world creator. Driven by the primary purpose of surviving, new, more complex purposes develop much as branches grow from the trunk of a tree. And just as branches jointly contribute to the health and survival of a tree, so the developing purposes with their local rules of rightness contribute to the overall welfare of a more complex living being. Polanyi speaks of living beings as having centers of individuality (*PK*, 349), but by that term he does not mean that living things have an executive center which controls all behavior and growth. No, the notion of centered being is Polanyi's way of describing how a living being's coordinated purposes and functions produce an effective autonomy not governed by or simply reducible to physical laws.

The implication of the foregoing claims is that rules of rightness are an inherent aspect of life existing from its very advent. Purposes have a normative dimension. Some things further a purpose; other things block or destroy a purpose. A contemporary version of Darwinism is called for here. The rules of rightness represent the accumulated lessons of surviving and thriving that are selected for. As Polanyi recognized, rules of rightness govern embryology and morphology. Some of the rules are encoded in DNA; some are embedded in repeatable chemical processes; some have evolved into customary practices. In humans, immanent rules of rightness apply to different bodily parts and processes: the heart, lungs, colon, for instance. But they also apply to indwelt functions learned by heart. Cooking a favorite dish, riding a bike, mowing the lawn—these are representative of learned activities that can function as second nature without needing sustained explicit attention but are still guided by rules of rightness. Purpose and rules of rightness function at both

tacit and explicit levels. As Polanyi points out in "Rules of Rightness," both moral judgments and statements of fact take place within purposeful behavior and differ not in kind but only in degrees of personal involvement.

The rules of rightness apply within human experience to the use of language as a socially transmitted type of contrivance. Use of the right words and proper grammar is basic to the purposes of adequate expression and cogent communication. Language usage is propelled and guided by the active principle in a new guise: reasoning, which Polanyi helpfully contrasts with causality. The active principle of life operates purposefully in many aspects of human life: in the act of attending to some things rather than others (both in perception and thought), at the levels of intention, assessment, and justification, and in the deliberate actions we take.

Ah, how the little, informal sense of significance and curiosity has grown and evolved from its origins through the ages. Aided by skill in observing, organizing, and contriving, rules of rightness have prodded and guided the active principle of living entities through steps of purpose-driven emergence into many-splendored forms of existence. We humans are the fortunate benefactors of this emergence thanks to the constructive work achieved by the passionate active principle as constrained and guided by rules of rightness.

ENDNOTES

[1]See *PK*, 348-354, for a discussion of taxonomy as an ability to identify shapes and types via informal judgments influenced by aesthetic considerations.

[2]I have stretched Polanyi's description of the three forms of learning a bit to fit the scheme of emergence I am advocating. For instance, Polanyi calls trick learning a form of motoric learning used to fulfill a discovered useful means-ends relation. But such forms of contriving an action presuppose the embodied ability to act in order to achieve a purpose, which I emphasize but he does not explicitly discuss.

[3]In connecting sign learning with scientific understanding, Polanyi seems to make an unwarranted leap. Animals can learn much about the objects and forces in their environment by reading and interpreting signs. But the discovery of basic scientific laws and processes seems to require inquiry that goes well beyond observation. Surely Polanyi should not want to reduce the processes of scientific discovery, which make use of imagination and intuition, to the second-level status of a machine with operational principles. Similarly, to correlate the organizing ability of latent learning to deductive logic and mathematics as examples of reasoning seems shortsighted. Latent learning seems to be the basis for informal sensitivity and assessment, not rigid deduction.

[4]The following statement by Polanyi might seem to indicate he discredits the notion that the three forms of learning are interdependent in animal existence: "To speak is to *contrive* signs, to *observe* their fitness, and to *interpret* their alternative relations; though the animal possesses each of these three faculties, he cannot combine them [as can humans]" (*PK*, 82). I offer two points in response: (1) Does the human use of language represent an integration of the three forms that is structurally different from animal purposive behavior? Calls, mating dances, and aggressive behavior can be seen as contrivances to effect some purposeful result just as much as language can be used in this way. Language use is an emergent feature of unprecedented power, but I don't see how its existence disqualifies the interdependence of the three forms of inarticulate learning. (2) Does a human speaker need to contrive signs in order to speak? Perhaps the forming of sentences can be seen as a contrivance, but a speaker uses words known through convention rather than through contrivance.

A FURTHER WORD ON LIKERT-SCALES INSPIRED BY "RULES OF RIGHTNESS"

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Keywords: Likert-scales, social science, pseudo-substitution, Michael Polanyi, Sigmund Koch

ABSTRACT

This brief commentary treats Polanyi's newly found lecture, "Rules of Rightness," as an occasion to revisit some earlier claims I made about the use of rating scales in social science research. It serves as something of an interim report on an ongoing inquiry into what an effective response to social science would look like from a Polanyian perspective

> "When we choose a theory or a method, are we choosing something momentous, like a self, or something innocuous, like an 'intellectual construct' or 'conceptual scheme'? or something depersonalized, like 'a series of logically consistent, interconnected, and empirically verifiable propositions,' or like 'a generalized statement of interrelationships of a set of variables'?"
>
> Sheldon Wolin, *Political Theory as a Vocation* (1969, p. 1075)[1]

Likert-scales are used in psychological tests and any kind of polling device that seeks to translate our attitudes and feelings into numerical values that can be operated on with statistics. For example, the statement "I feel that I'm a person of worth, at least on an equal plane with others" appears on a widely used psychological measure of self-esteem (Rosenberg 1965). An individual is typically asked to report his level of agreement with the statement on a 1-to-4 scale where 4 means "Strongly agree" and 1 means "Strongly disagree." Following Polanyi's lead (*PK*, 16), I called this act of translating statements of indeterminate meaning into numbers a *pseudo-substitution* in an article published early last year (Barnes 2022a). My interest in "Rules of Rightness" stems from its bearing on that decision.

While such a substitution purports to advance our understanding of others, I argued before that it primarily serves an objectivist epistemology and scientistic world picture. It does this in two ways: 1) by distilling the intrinsically indefinite and personal—i.e., the very words we speak (*PK*, 79-80)—down to a supposedly definite and impersonal number and 2) by overshadowing the respondent's sense of the world with the psychologist's own. This overshadowing is reflected in the simple fact that the psychologist will go

on to *model* the collected data, but the respondent will not—and not merely because he lacks the technical training to do so. He has no idea what "modeling" means, the commitments it entails, or whether he agrees with the implications these commitments have for his life.[2] The three-part diagram Polanyi presents in his lecture, "Rules of Rightness," and improves upon in *PK* (262) pictures what I mean. I included a modification of it in my article (Barnes 2022a, 15). It appears again below for convenience.

I	II	III
Mind (of psychologist)	Model of relationships between quantities taken from subjects	Cognitions, emotions, and motivations attributed by psychologist to subjects
I	II	III
Mind (of subject)	Subject's interpretative framework	Self-ascribed cognitions, emotions, and motivations

In this diagram, we could just as well substitute the term "social scientist" for "psychologist," so I will use these interchangeably in what follows. The two are hardly separable, and Likert-scales are used in sociology, political science, and economics just as they are in psychology. Further, it should be noted that while Likert-scales are the focus here, they actually serve as metaphors for everything that transpires in these fields. The method is not an isolable feature of social science. It grew up within social science's borders and is interwoven with and reflective of all the thought forms and practices of social science, albeit some (e.g., operationalization, experimentation, measurement, etc.) more obviously than others (e.g., ethnographies, interviews, etc.).

Polanyi notes that when a psychologist accredits to his subject a healthy mind possessing all the powers for believing and knowing that he takes for granted in himself, he places the subject on par with himself as an actual or potential equal (*PK* 263, 346). When the psychologist builds his model—not infrequently using quantities taken from Likert-scales—and makes sense of his subjects' conduct in light of it, he privileges the positivistic commitments implicit in his methods over whatever framework holds his subjects' allegiances. If the subject deliberately submits to the psychologist's reading of his life, that is one thing, but having now spent years studying and teaching psychology to undergraduates, I find that it is hardly clear whether researchers have any scruples about this. They readily admit that life can (and should) be lived outside the authority of such unfalsifiable systems as orthodox psychoanalysis, but they do not recognize how the same could be said about their own position.

All of this means that, already from the start, research involving Likert-scales entails some degree of failure to engage subjects on their own terms. We might, therefore, suppose that authentically understanding them necessitates jettisoning the method altogether. But is this acceptable? Who is prepared to say that survey numbers and the statistical regimens they are tied to do not expand our comprehension of human experience? Do we not call mathematics a "language," and do we not sometimes find phrases in foreign tongues that help us express ideas in new and revealing ways? Why should psychologists' reliance on Likert-scales not be understood like this? Even Polanyi recognizes the immense value of formalized knowledge. This is evident in "Rules of Rightness." Think, for instance, of the aerial map in Air Force Command. Without translating the coordinates of enemy and ally aircrafts into a two-dimensional visual space, the events transpiring in the

sky would be virtually invisible to the officers charged with securing victory. Could it not be asserted that the surveyor of public opinion or the psychologist in his lab is only offering us something like this—namely, a window into the numerical associations between attitude variables that would otherwise be obscure and without which a practical grip on social and psychological problems remains elusive?

When I recall that the subject is a real or potential equal to the social scientist who is at liberty (albeit a hazardous liberty) to live life independent of the latter's conceptions of it, I hesitate to give these questions much credence—all the more when I reappreciate that the numbers in Likert-scales carry the same indeterminacy as the words they are meant to improve upon. These numbers are, essentially, *just other words*.[3] It is easy to forget this—to be seduced by the pseudo-substitution—because numbers give us the impression of clarity and certitude. They tempt us into thinking that the social scientist is doing something fundamentally more precise and therefore better than the novelist, historian, biographer, or journalist—all of whom evidently deal in words. But nothing magical happens when the number 4 is substituted for the phrase "Strongly agree." Certainly, there is no magic that warrants the former's reification and use in equations that, *save for the participation of the researcher*, pays no respect to the personal origins of word meanings, their context and nuance.

It is only the researcher's sensitivity to these features of language that may imbue her interpretation of Likert-ratings with any gradations of meaning. The ratings do not carry the meaning. They ignore it, and there is no guarantee that the researcher possesses the requisite sensitivity to do the imbuing. After all, her training has mainly required the skillful use of methods and statistics, not the close readings of texts or, unless she is a therapist, careful listening. Worse still, she does not (or only rarely) actually speaks to her respondents outside the strictures of her meticulously crafted protocol. Virtually every experiment and questionnaire administered under the auspices of social psychology confirm this. This means that whatever sense of nuance the researcher brings to the table, it has not been informed by the wider lives of those she investigates, but only by a "literature" that suffers from the same myopia. We must conclude, then, that if numbers are blind to nuance and the researcher herself is little prepared to appreciate it, the line above that says, "save for the participation of the researcher," offers little reassurance that social scientists' elaborate analyses of Likert-ratings permits the understanding of much beyond their own way of thinking.[4]

Contrast this with a series of YouTube videos I recently discovered in which philosopher Peter Boghossian travels to college campuses across the country and asks small groups of students to situate themselves on a Likert-like scale he has drawn on a sidewalk.[5] There are seven taped lines on the ground, and he clarifies that the extreme marks at the ends express either "Strong agreement" or "Strong disagreement" with some provocative statement such as, "The only way to remedy past discrimination is present discrimination"—a line he says comes from a rather controversial figure (at least for some), Ibram X. Kendi. The other lines of the continuum express agreement, slight agreement, or their opposites. The middle mark expresses neutrality. After putting these statements to students, he counts down from five. By the time he hits one, students are supposed to have positioned themselves somewhere on the scale. But what happens next is unlike anything one finds in large swaths of, at least, psychological research, and it is quite simple. A conversation ensues. Students discover they do not understand the meaning of certain words in the statement or they think, for instance, that "discrimination" entails one thing when, for Boghossian, it includes another. In the course of the exchange, students are free to move about on the scale as they realize new things or reconsider old, and they do—sometimes more than once. Because these videos are for public consumption and must hold viewers' attention, however, they last only about fourteen minutes; Boghossian has a number of people

to talk to as well, so no single student gets his undivided attention. One gets the distinct feeling after the exercise is over that the only thing Boghossian and his students have successfully touched on in every individual case is the tip of the iceberg. More movement along the scale is easy to imagine. Indeed, is it ever final? In this, Boghossian offers us a simple illustration of what could happen with virtually every Likert-scale item ever administered for research purposes, but it does not happen.

Of course, we can make too much of nuance. Boghossian's exercise, after all, has a pedagogical intent. Day to day, it seems we get along pretty well when we disattend to the penumbra of meaning surrounding our words. What difficulty would the cashier face if he made a habit of wondering what his customer really meant when ordering "Number 1" from the menu? Why should we proceed differently in social science? But one only has to dwell on the *mis*interpretations that daily confound our ordinary lives to see why this is inadvisable. Meaning frequently *is* missed, even with those we know well. Moreover, if we are honest, we even have trouble understanding ourselves. Given social scientists' extensive reliance on rating scales, however, one would think that they see no problems in this, or few of any importance. As a result, they make much of quantities I firmly believe do not and cannot carry the burden of meaning they wish to place on them. And because I count this meaning to be of vastly greater importance than any superficial and pseudo-substitutive mathematization of it, I find social scientists' willingness to proceed with Likert-scales anyway, and to the extent that they do, odd—even absurd.

What, then, is the social scientist to do who wants to understand people? How ought he approach the problem? If one does not see how or in what way a careful study of, for instance, John Wesley's sermons teaches us more about the lives of devoted Protestants than survey studies of the same (e.g., Mirels & Garrett 1971), it is doubtful that any answers I give to these questions will be satisfactory. Nevertheless, if there is a method implied in such "careful" studies, perhaps it is akin to those of the humanities, anthropology, or other disciplines. But even to look for a method is already to get embroiled in the problems of social science. Why is it that Polanyi never permits himself to worry with such questions? Is it because he is doing philosophy? Doubtful. I rather think it is because he is teaching us what place such questions should have in our own thinking. For him, as for us, method must always be seen as an expression of (and secondary to) persons. This is why I somewhat regret suggesting in my earlier essay that Polanyi points the way to a "reimagining" of social psychology (Barnes 2022a, 16). This implies that I am in search of a new methodology. I am not.[6]

Within Polanyi's thought we find ample clues to ways of speaking and thinking about social science that align it more with modes of human interaction (e.g., apprenticeships; *PK*, 52) already (or once) familiar to us and that openly accept the personal rather than attempt to hide it behind techniques. Indeed, I suspect that following these clues culminates in a fundamental return to the ordinary lives and relationships we already indwell or could indwell if we felt called to do so. It is more than a suspicion, actually. Polanyi clearly says that his thought is an invitation to us to "contemplate…a picture of things restored to their fairly obvious nature" (*PK*, 381). And in "Rules of Rightness," Polanyi writes, "It is only by *conversing* with the responsible core of a fellow person that we come to know it personally" (p. 9 in this issue of *TAD*, emphasis added). There are few activities more at home with ordinary human affairs than conversation, and we should remember that it is frequently the medium by which persons learn to get along in life, gain insight into others, and experience conviviality. This is why I appealed to education in my earlier paper. It pictures to us a form of relationship that, when appreciated in its broadest sense, touches every human relationship.

Tellingly, Sigmund Koch speaks of his work with the Aesthetics Research Center at Duke University similarly. He called upon novelists, poets, and other artists to meet with him and talk individually for several hours about their creative endeavors. He selected as discussants "mature artists of high caliber" (Koch 1999a, 44)—those generally recognized as being at or near the top of their vocations (e.g., Arthur Miller, Toni Morrison). Implicit in their perceptual capacities, Koch believed, was a *theory* of creativity that could be drawn out through careful engagement and, at least partially, made explicit (Koch 1999b). That is what he hoped to elucidate in his research, but for our present purposes what is most impressive is how Koch describes these exchanges. There were no surveys, no Likert-scales. There were not even interviews—the favored term of social scientists who perform qualitative rather than quantitative research. What was there, then? As if channeling Polanyi, Koch says there were "*conversations*" (Koch 1999a, 45). He goes even further. The artists he met with were "not 'subjects' who responded," he says, "but collaborators who conversed" (ibid.). These "collaborations" were a "pilgrim's progress" (47) in which the very concept of researcher was also irrelevant: "I conducted myself as a *person*," he says, "not a psychologist in this work" (48).

I have not had a chance to review the footage of these exchanges, though I have requested access to it. Boston University's library, where the footage is archived, is understaffed and is unable to assist me at this time. Nevertheless, enough is revealed by Koch's comments to say that his encounters have strong affinities with the kind of relationships I wish to underscore. Through them he saw what was vital in the creative process of different artists, and he, in turn, challenged these artists to see and articulate more than they, perhaps, thought they were capable of. He was drawn up into their world, and, one supposes, they gained a clearer perception of their own activities through him. Although I do not wish to be misunderstood by invoking the word "education" here—I mean it, again, in the broadest possible sense and with an eye toward a relationship rather than a methodology—overtones of the dialectic between mentor and apprentice are clear. That the learning did not unfold in a classroom or lecture hall is beside the point. And that the "results" of such research are not predictive in any strict sense is too. Fundamentally, I agree with Koch (1999a): "Whether [the results] be specifically allocatable to a 'discipline' called psychology, or to some composite area for which there is no standard name in the map of scholarship is of little moment" (43). What does matter is the "humanly important 'phenomena'" (ibid.) the results attempt to reveal and the form of relationship that makes their discovery possible.

All of this hardly says enough about the matter, but it is all I can manage at this time. I recognize that my comments reiterate more than add to what I have said before—and that they throw little light on "Rules of Rightness" as a lecture all its own. But sometimes reiteration is enough. I would, however, like to append a caveat in conclusion. What I have said might suggest to the reader that I believe Polanyi would have us listen to and understand everyone, or that this is somehow the ideal. I do not believe this. Polanyi does not indulge the skeptic (*PK*, 315), nor does he feel compelled to understand the Azande on their terms (ibid., 294). The presumption that we can and should understand everyone, or that this is a prerequisite to standing our ground—if we are ever to do so—contains more than a hint of the objectivist ideal. Empathy is not a bottomless well, and it can become an idol like anything else. I, and I believe Polanyi too, endorse the more perilous and existentially demanding mode of discerning *whether* one is called to empathize or not. The "either/or" nature of this statement is surely discomfiting to those who prefer a "both/and" approach to life. But for my part, such a picture misrepresents the human struggle entirely. The question is not between "either/or" and "both/and," as if life could be lived well by excluding one, but is about *judging* when the one is called for over the other. Pretending such decisions are hazardless is no good.

Bringing this to bear on the matter at hand compels us to admit the following. When social scientists proceed anyway with their rating scales despite grounds for seeing them as pseudo-substitutions, they show us where they have (responsibly, one hopes) decided to terminate their understanding. They do so at the risk of missing their subjects' experience but at the gain of preserving the system to which they are, perhaps without fully appreciating it, committed (Barnes, 2022b). In continuing to insist that Likert-scales, as used by social scientists, are pseudo-substitutions, I am doing the same with respect to their position.[7] This breakdown of communication is necessary because, in response to the question raised in the epigraph, I feel sure that something momentous is at stake.

ENDNOTES

[1]I wish to thank Jon Fennell for turning me on to this very important article by Wolin and for his comments on an earlier draft of this essay.

[2]The social scientist put off by this observation might sardonically ask, "What, must the respondent be given the opportunity to consider these commitments in the Informed Consent process?" Authentically judging the commitments of social science requires nothing remotely achievable by "Informed Consent." The present essay (and the one it builds on) attempts to break out of social science proper, but this question tries to prevent it from doing so by showing how silly its implications are for existing social science practice. As a result, it misses the point entirely.

[3]The reverse of this (i.e., words are, or might as well be, numbers) is a form of reductionism. However subtle and unexamined, it too is part of the faith that holds numbers and word meanings together for social scientists (Barnes 2022a, 15).

[4]On the other hand, even if we are fortunate enough to have an appropriately sensitive researcher at the helm of data analysis, recalling that his numbers are, again, just other words makes it unclear how the interpretations he offers are essentially different from those of any well-intentioned historian, journalist, or other humanist who looks at a body of evidence and derives a fitting generalization from it. The statistical apparatus he relies on no more guarantees the believability of his generalizations than the tools a carpenter relies on proves the value of his work. A chair is not a better chair *because* its builder used a screwdriver; neither is a generalization better *because* its author computed an average and tested it with inferential methods. What matters, instead, is the person behind the work and whether we, as persons ourselves, are prepared to follow his lead.

[5]"Kendipalooza #1: The Only Remedy to Past Discrimination is Present Discrimination," https://www.youtube.com/watch?v=RWcuGs-R6QI&t=26s

[6]Rather, I am after "something like repentance" (Lewis 1944/2001, 78).

[7]Reminiscent of the detractor who tells Polanyi, "You can believe what you like" (PK, 256), it is obvious that the social scientist could say to me, "You are called to one thing. I am called to another." Polanyi's response to the former is my response to the latter: "[S]o be it" (ibid.). When two callings are as divergent as those pictured here, one must confess that it is possible to be mistaken. But I do not believe I am.

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DECIPHERING HUMANITY: WHAT POLANYI AND THE ROSETTA STONE CAN TEACH US ABOUT BEING HUMAN

Andy Steiger

Keywords: Human, Rosetta, Ontology, Purpose, Sense-giving, Sense-reading, Morality

ABSTRACT

Polanyi is widely known for his development of personal knowledge, but he was also keenly interested in what can be called, personal existence. The historical backdrop of reviving, the once dead language of, Egyptian Hieroglyphics provides valuable insights into Polanyi's critique of objectivism and deciphering a human ontology. From applying physiognostic to telegnostic information to understanding static and dynamic meaning, Polanyi's philosophy of language and machines provides a wealth of vantage points from which to study who and what we are.

In 1799, a black stone inscribed with a message in three different languages—Egyptian hieroglyphics, Demotic, and Ancient Greek—was discovered in Rosetta, Egypt. The unassuming Rosetta Stone would prove to be one of the greatest archeological finds of all time as it contained the key to resuscitate the dead language of Egyptian hieroglyphics. By the eighteenth century, Egyptian hieroglyphics had been a dead language for well over a millennium. What revived it, and made this archeological find so significant, is instructive to understanding Polanyi's critique of objectivism and its implications for a human ontology.

How do you resuscitate a dead language? Archeologists knew that Egyptian hieroglyphics was a language containing a treasure of ancient information. The challenge was how to access it. Similarly, Polanyi's critique of objectivism insightfully illustrates how information is accessed and the connection between epistemology and ontology. Polanyi understood ontology to be built on what he called *dual control* that differentiates between two kinds of information: "*physiognostic*" and "*telegnostic*" (Polanyi 1969a, 128-29). Within dual control, Polanyi indicates that particulars contain physical-chemical knowledge that point *to* the laws they follow, whereas composites contain design or engineered knowledge that point *at* its meaning or purpose. For Polanyi a composite can fundamentally be any structure from a language to a machine that is composed of particulars, from ink to gears, to achieve a desired purpose. The symbols that make up Egyptian hieroglyphics are telegnostic in that they point at a meaning that can reveal the mysteries of ancient Egypt.

Polanyi relentlessly critiqued objectivism, which attempted to reduce telegnostic composites to their physiognostic particulars. He contended that meaningful structures such as language or machines cannot

be understood through this bottom-up reductionism. Bottom-up reductionism is the objectivist's attempt to account for telegnostic composites by appealing to only physiognostic information. Simply put, telegnostic information, such as Egyptian hieroglyphics, is inaccessible from a purely bottom-up analysis. For example, reducing Egyptian hieroglyphics to its physical-chemical parts found in the ink or papyrus paper will not reveal its meaning. More than that, such reduction cannot even tell us if it is a word or a picture. In the drama that unfolded with the Rosetta Stone, one of the greatest setbacks to deciphering Egyptian hieroglyphics was the mistaken belief that it was pictographic. What this indicates is that a composite has a distinct ontology that requires a top-down telegnostic approach.

Polanyi broadly illustrates this point with the simple example of an artist carving a stone. (Polanyi 1969b, 226, 233) The sculpted stone illustrates top-down control in that its structure or shape is not innate to its particulars or to the physical-chemical laws of its material (physiognostic) but instead reside outside the sculpture within a higher level of control—the artist (telegnostic) (Polanyi 1966, 40). Similarly, an archeologist or scientist examining the Rosetta Stone cannot decipher the stela by reducing it to the granodiorite that the Egyptian hieroglyphics were etched into. This is because languages and machines follow laws imposed on the particulars from the top down.

Thus, particulars and composites, Polanyi concluded, are ontologically connected but distinct. For example, a composite is made up of particulars, but those particulars and the physical laws they follow are extraneous to the artificial shaping applied to a structure to achieve a desired purpose. The limits of bottom-up reductionism can be lost on people when discussing a language or machine that they are familiar with, because its purpose is known from the start. This is a form of top-down reductionism. Polanyi seeks to avoid this error in reasoning by illustrating his argument with an example of an unknown composite such as the machine he acquired on a trip, writing,

> Some months ago I brought home from America to Oxford a gadget which I had picked up without knowing what it was for. All the analytical laboratories of England could not tell my wife and me that it was an instrument for making simultaneously two holes in a can of beer; this was its purpose and this its meaning. (Polanyi 1965, 15)[1]

Notice that Polanyi had acquired what could be called a dead machine. He knew it was a device that had a purpose, but he had never witnessed it in operation. Given that all he could do was appeal to its parts (bottom-up reductionism), he was unable to decipher the machine's purpose. Of course, Polanyi could have guessed at its purpose. This, however, would still only be an attempt to escape the limits of bottom-up reductionism, which ultimately fails because the guess would need to be confirmed top-down that the intended meaning was correct. Language helpfully illustrates this point. It is immediately obvious that guessing at the meaning of Egyptian hieroglyphics is foolish, being that it cannot be confirmed. Language highlights that the intended meaning is necessary in order to read and thus access correct information about ancient Egypt. Polanyi refers to this interconnection between ontology and epistemology as *sense-giving* and *sense-reading* (Polanyi 1969c, 181, 187, 193). By this he means that people can ontologically sense-give a language, or a machine, both meaning and purpose.

Similarly, Polanyi contends that people can epistemologically *sense-read* a language or machine's meaning and purpose. However, sense-reading can only be accomplished in one of two top-down modes: explicitly or tacitly. For example, students can learn a foreign language explicitly from a textbook or tacitly by immersing themselves within the culture where the language is spoken. Notice that a machine's ontology can be

similarly acquired. Polanyi could have been explicitly told that his mystery machine was a beer can opener, or he could have returned to America and witnessed it in use.

This again highlights the challenge presented by Egyptian hieroglyphics and why it had remained a dead language. Its meaning could not be acquired top-down through either explicit or tacit means. It was not until 1822 that the treasure of information buried in the languages of the Rosetta Stone were slowly excavated top-down via their operational principles. Operational principles demarcate the boundary conditions of a composite's structure so as to achieve a specific purpose. Access to the operational principles, or what Polanyi also calls "rules of rightness," of Egyptian hieroglyphics was provided by the other languages on the stone, beginning with Ancient Greek, which could be read. Towards the end of the message, the Ancient Greek revealed that the stone contained the same message in three languages. By using Ancient Greek and Coptic, a top-down mix of explicit and tacit access was identified by which to decipher the operational principles of Egyptian Demotic. Then, by using both Ancient Greek and Demotic, again a top-down mix of explicit and tacit approaches provided top-down access to decipher the operational principles of Egyptian Hieroglyphics, and a dead language once more became living.

Now consider the difference between a secret code and a dead language. Why can a secret code, such as those used by Nazi Germany during WWII, be deciphered but a dead language once used by ancient societies remain unsolved? The difference is found in the distinction between static meaning versus dynamic meaning. A language dies when it becomes static, in that it can neither be accessed explicitly or tacitly; its operational principles remain but they are indecipherable. A foreign language or secret code, however, is dynamic, being that it is operational. Thus, even though a secret code has operational principles that are not explicitly available, they are tacitly available by observing it in action.

Similarly, a machine can be understood according to these same principles. People come to know machines explicitly and tacitly, but the same challenges exist with a machine that is static versus dynamic. Archeologists find not only dead languages but also dead machines and games that remain unsolved because they are static—not in operation. However, if a dynamic machine or game is observed, its operational principles can be decoded. This has led to creative attempts in archeology to decipher games by attempting to make them dynamic.[2] This is done by trying to play the games and even running AI simulations to see what works best. However, these simulations are not truly dynamic because their rules of rightness are not known. Thus, a number of guesses must be made. For example, it is assumed that the object is a game and that all the game pieces were found with it. Lastly, of all the possible ways to play the game, it can never be known with certainty that it is being played correctly. Consider that people and programs could come up with many possible purposes for Polanyi's beer can opener, but again they would need to confirm that they had arrived at its intended purpose. At best, AI simulations have discovered possible ways to play what is possibly a game.

Now what does the Rosetta Stone have to do with being human? Following Polanyi's logic of sense-giving and sense-reading, we can ask what happens when his model is applied to biological machines. A living biological machine is not static but dynamic, so it follows that its operational principles can be witnessed and thus tacitly deduced. Polanyi seeks to decipher biological machines, such as functioning organs, according to the same principles (Polanyi 1959, 52-54). When the principles are applied to dynamic organs, such as the heart, it is simple enough to understand its purpose within the body—to pump blood—but it does raise the question of a human as a composite whole. What is humanity's operational principle or purpose? According to Polanyi, a human is a dynamic machine that, although under the control of an

unknown operational principle, can be observed in operation (Polanyi 1969b, 227). Accordingly, if you want to know the ontology of humans, it must be acquired either explicitly, through revelation, or tacitly, by observing humans in operation. Within the theistic context of revelation, the purpose of humanity could be explicitly communicated theologically, but Polanyi does not make that argument. Instead, he approaches anthropology through observing humans as dynamic machines. This leads him to identify what he believes to be a human ontology within a moral, or what could be called a deontic, operational principle.

Within his historical context, Polanyi was influenced by his experience of WWI and WWII. These experiences led him to identify a moral purpose for humanity by observing how people fail and succeed, about which he writes,

> [M]oral judgments cut much deeper than intellectual valuations. A man may be consumed by an intellectual passion; he may be a man of genius, yet be also sycophantic, vain, envious and spiteful. Though a prince of letters, he would be a despicable person. For men are valued as men according to their moral force; and the outcome of our moral striving is assessed, not as the success or failure of any external performance of ours, but by its effect on our whole person. Accordingly, moral rules control our whole selves rather than the exercise of our faculties, and to comply with a code of morality, custom and law, is to live by it in a far more comprehensive sense than is involved in observing certain scientific and artistic standards. (Polanyi 1962, 214-15)

Here Polanyi indicates that one's humanity is defined, at its highest level, by moral character. By observing people fail and succeed (sense-reading), Polanyi identifies morality as the highest human purpose, which overshadows all other characteristics, such as intelligence. The second clue is history. Polanyi observes in "the study of man…making responsible decisions" is that "recorded by history" (Polanyi 1959, 71). Here again, Polanyi concludes that historically humanity is studied and judged as an "agent of responsible choices" (97). As with a machine, Polanyi is indicating that the dynamic nature of a living human person interacting in society provides personal and historical clues to the proper function of a human, which cannot be accounted for through a reduction to their parts. This again leads Polanyi to attribute a moral purpose to humanity within his structured ontology, concluding,

> These levels form a hierarchy of comprehensive entities. Inanimate nature is comprehended by physical laws; the mechanism of physiology is built on the physical laws and enlists them in its service; next, the intelligent behaviour of a person relies on the healthy functions of his body controlled by him and, finally, moral responsibility relies on the faculties of intelligence which it directs… each higher level of integration represents, in this sense, a higher level of existence, not accountable by the levels below it. (Polanyi 1964, 70)

It is this last and highest step into morality in which Polanyi differentiates between machines, animals, and humans, explaining, "only human actions are subject to moral judgment." (Polanyi 1959, 79). Again, Polanyi identifies the highest purpose of humanity with a moral operational principle, stating clearly, "I have said that at the highest level of personhood we meet man's moral sense, guided by the firmament of his standards" (Polanyi 1966, 51). In Polanyi's thinking, these standards are not subjective. He firmly establishes humanity's deontic operational principles outside of one's control functioning top-down, "the living above

the inanimate, man above the animal, and man's duties above man" (Polanyi 1997, 265). Further, Polanyi explains that this binding moral value and duty is encountered by persons within I-Thou relationships that "demand our respect" (Polanyi 1966, 51). Of course, this does leave unanswered the genesis of humanity's deontic operational principle and the wealth of knowledge it could contain, which is a lively discussion in science, philosophy, and theology.

ENDNOTES

[1]Polanyi expands on this illustration in Michael Polanyi, "Science and Man," 5 February 1970, box 41, folder 4, Michael Polanyi Papers, Special Collections Research Center, University of Chicago Library, 18.

[2]The Knossos game exemplifies this attempt to revive dead games. See Robert S. Brumbaugh, "The Knossos Game Board," *American Journal of Archaeology* 79, no. 2 (1975): 4. More recently the Digital Ludeme Project (http://ludeme.eu) undertook a five-year ERC-funded research project hosted by Maastricht University to complete a computational study of the world's traditional strategy games throughout recorded human history. They used modern AI techniques to chart the games' historical development and explore their role in the development of human culture and the spread of mathematical ideas. Also see Samantha Huioi Yow, "This AI Resurrects Ancient Board Games—and Lets You Play Them," *Wired*, 16 October 2021, https://www.wired.com/story/this-ai-resurrects-ancient-board-games-lets-you-play-them.

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MY INTEREST IN POLANYI, HIS LINKS WITH OTHER THINKERS, AND HIS PROBLEMS: AN INTERVIEW WITH RICHARD T. ALLEN

C. P. Goodman and Richard T. Allen

Keywords: Richard Allen, Michael Polanyi, Karl Popper, Thomas Kuhn, F. R. Leavis, Stanley Jaki, Eric Voegelin, Marjorie Grene, Max Scheler, R. G. Collingwood, Lucian Blaga, tacit knowing, quantification, free will, state planning, Keynesianism, monetarism, positive liberty, natural law, Gnosticism moral inversion, metaphor, tacit integration, emergence, commitment, transcendent ideals

ABSTRACT

In this interview, C. P. Goodman invites British Polanyi scholar Richard T. Allen to reflect on his interest in Polanyi's philosophical ideas and share what he believes is valuable in his thought.

Goodman: If you look at most philosophy of science textbooks, you will generally not find the name Michael Polanyi, and, if you do, it will often be in the form of a footnote. I believe I know why this is the case. It is not because his reflections on the practice of science are lacking in quality, or that he was not read, or indeed that he was not influential. It is that, for all their differences, the names mentioned in these textbooks, such as Popper, Kuhn, Feyerabend, and Lakatos, attack the concept of truth, leading some to claim that what we call truth is the result of a power struggle. David Stove (*Scientific Irrationalism: Origins of a Postmodern Cult*) calls this approach irrationalism. Polanyi, unlike Stove, does not ground science in inductive logic; he asserts that scientists pursue ideals such as truth and beauty. Where did you first come across the name Michael Polanyi, and what first attracted you to his writings? Once you started reading him, what made you want to read more of his work?

Allen: I think by stressing the activity of the scientist in science Polanyi suffered from being taken to be a subjectivist, even though in his writings he refutes pseudo-substitutes for truth. But few people bothered to read him. I first came across Michael Polanyi when I saw the green covers of *Personal Knowledge* in the University of Nottingham's Library (sometime between 1960–1963), but I did not borrow it. When I had given up an academic career—big mistake!—I borrowed it (c. 1965) from the county library and wasn't very taken by it. When I was engaged in a part-time M.Ed. at Leicester University (which elsewhere would have been an M.Lit.) with a thesis on Emotion and Education (1969–1973, first part philosophy and second part

D. H. Lawrence), my supervisor, Professor Geoffrey Bantock, suggested that for the first part there might be something in Michael Polanyi, and there was! I haven't looked back since. I also discovered Macmurray and Scheler, via J. N. Findlay in the library at Leicester and Collingwood, whose book *The Idea of History* (1946) I think I had read previously. In 1971 I went to the first Polanyi conference, which was held at Cumberland Lodge in Windsor Great Park, and in 1978 I became a member of the committee of the British Polanyi group, suggesting "Convivium" for its name because Robin Hodgkin thought that naming a society after a person might encourage a cult [most copies of *Convivium* are available on the Polanyi Society website here]. These days I do not bother with publications about Michael Polanyi or anyone else—only with extensions and applications of their work. Much later, I worked out that Bantock knew of Michael Polanyi via F. R. Leavis's essay on him, which I have never read. Bantock had studied under Leavis.

Goodman: Popper got one of his post-graduates, Alan Musgrave, to write a thesis claiming that Polanyi was a subjectivist. Musgrave edited the papers from a 1965 conference in London which became known for its debate between Popper and Kuhn. Lakatos had invited Polanyi to the conference, but Popper told Lakataos to disinvite him; otherwise, Popper would refuse to attend. The joke at the London School of Economics was that Popper's most famous book should be called "The Open Society by one of its Enemies." Lakatos however continued to correspond with Polanyi in secret. In 1962 in a debate about the relative importance of the sciences and the humanities, F. R. Leavis famously attacked C. P. Snow. In 1959, Polanyi had already published his own contribution to this debate in an article titled "The Two Cultures." Leavis was introduced to Polanyi when he came across Marjorie Grene's book *The Knower and the Known* (1966) in a secondhand bookshop in Cambridge. He approved of its critique of scientism. David Holbrook (*English in a University Education*) and George Watson (*Never Ones for Theory: England and the War of Ideas*), who like Leavis taught English literature at Cambridge University, were both influenced by Polanyi. It was because Polanyi was thought to be advocating subjectivism that Kuhn and Feyerabend were drawn to his writings. From a Polanyian point of view, however, both the Logical Positivist and the Sociological approach are misguided. Indeed, they are two sides of the same false dichotomy between facts and values. Knowing without a subject is impossible. All knowing is personal. But it does not follow that because it is personal knowing is subjective. Polanyi, and many of those who have been influenced by him, are Christians. Saint Paul rejected the claim that doing good is simply a matter of knowing what is right and wrong. You may know what is the right thing to do and still do the opposite. Polanyi suggested his Post-Critical philosophy was foreshadowed by Saint Augustine. To what extent is the idea of a person connected with a defence of free will?

Allen: I've never understood why Hayek liked Popper. Yes, I should have remembered Polanyi's "The Two Cultures" as a likely link. David Holbrook came to our first Convivium Conference in 1976 and joined for a while. At that time, he was in the Education Department at Cambridge University. He was a prolific author. I have his *Education, Nihilism, and Survival* (1977), which has many references to Polanyi. I haven't heard of George Watson. Polanyi liked Kuhn at first, but not after his book was published. I would say that Kuhn merely "observed" scientists from the outside and did not "rethink" their thinking, as Collingwood would have said, or, as Polanyi would say, he did not "indwell" it. Hence, he treated science as mere facts and events and not as an earnest endeavour to discover truths about the natural world. Contrary to what Wikipedia says, not only is Kuhn a relativist; he is also a behaviourist. Free will (I prefer "freedom of the person" to avoid making will into a thing rather than what a person decides to do and follow through on) is essential to personhood. It is the power of choice and self-determination. Every animal has some degree

of decision and judgement, but ours is more or less explicit. By *sophia*, Plato meant more than knowing; he meant knowing which changes the person and results in us acting in accordance with it.

Goodman: Another person influenced by Michael Polanyi was the historian John Lukacs. He attended the 1966 Ford Foundation-funded conference of the Study Group on the Foundations of Cultural Unity (chaired by Polanyi) in the USA at Bowdoin College and described it in his autobiography *Confessions of an Original Sinner* as one of the most disillusioning experiences in his life! According to Lukacs, instead of being about intellectual curiosity academia has become almost exclusively about careerism. I recently read through various books about Polanyi. I found William Poteat (who was also involved in this 1966 conference) to be one of three authors who reflect in an original way upon Polanyi's ideas rather than simply repeating his words. Many American supporters of Polanyi were pupils of Poteat. I am sure there will be others who will discuss his influence upon them. The other more recent writer on Polanyi who caught my attention is Esther Meek, who takes seriously the Polanyian claim that tacit knowing puts us into contact with reality, and then there is Marjorie Grene, who of course was Polanyi's assistant when he wrote *Personal Knowledge*. She attended and helped organize the 1966 conference, editing the books that resulted from both the 1965 and 1966 conferences. They were attended by philosophers who subsequently became well known, such as Hubert Dreyfus, Charles Taylor, and Alasdair MacIntyre. Grene comes across as a very forceful person who, although wonderfully sharp, can be quite blinkered, but on epistemology she is a delight. She describes herself as a dogmatic fallibilist. She relates Polanyi to other thinkers such as Merleau-Ponty and J. J. Gibson. Another person who attended the 1966 Bowdoin College was Stanley Jaki, who later became one of Polanyi's sharpest critics. He reports that he found the conference repellant since Polanyi was treated by some like a guru (see "Knowledge, Personal and Impersonal: Reflections on Polanyi's Thought," in Jaki's collection *Uncodified Conspiracy and Other Essays*, 129–40). Jaki claims that Polanyi had good intentions but had no talent for mathematics and so sought to dilute the precision of the sciences. He notes that Polanyi countered materialism and mechanism by deriving science from the personal and the tacit. But, according to Jaki, it is only the quantitative which makes something amenable to scientific investigation and gives it its predictive power:

> His readings do not show familiarity with Eddington's books. There Polanyi could have found the felicitous phrase that the principle line of separation lies not between the immanent and the transcendental, but between the metric and the non-metric, that is between the quantitative and non-quantitative data in our cognition…. Polanyi did not seem to know of a most seminal remark by Hertz…"Maxwell's theory is Maxwell's system of equation." (136)

Polanyi, according to Jaki, grew up in intellectual circles in Budapest, where parroting flashy phrases passed as familiarity with the subject. All knowledge is personal insofar as it is conscious, but tacit knowledge can only exist within the context of explicit knowledge. Quantities are not impersonal, but they are the least subjective form of knowledge. It is therefore a mistake to talk about the beauty of mathematics. Is this a fair criticism?

Allen: I think I've read something in *Tradition and Discovery* about William Poteat, but I can't remember anything of it if I did. As for Jaki, I really like his books and often refer to them. But I totally disagree with his claim that the tacit only exists because of the explicit. It can be only the reverse. The knowledge

of animals and human infants is inevitably tacit. Only with language does anything become explicit, and then only because it relies on what is tacit, as Polanyi proved with many examples. As for the quantitative making something scientific, natural science is primarily concerned with structures, before any measurement of them is made. Finding subatomic particles and discovering what they do is prior to measuring them and their interactions. Indeed, measuring atomic weights proved to be a dead end for further investigation. Polanyi does not dilute the importance of mathematics; he shows that there is more to science than the quantitative. As Polanyi points out in relation to Laplace, all measurements wouldn't tell us about that of which they are the measurements. Daniel Paksi, in one of his *Appraisal* articles, makes a good point that mathematics can be substituted for reality, which he claimed Einstein did at one point. I have heard Analytic Philosophers say that equations can always be reversed. Yes, but not the processes that they quantify. No, beauty in mathematics is not irrelevant: an elegant proof is mathematically as well as aesthetically better. Also, how else can one get out of mechanism if not by showing that knowledge of it is not another mechanism but is the product of something that is not mechanical, a living, thinking, and truth-seeking person? I agree with you on Grene's book. It is very good, but not her resolute secularism.

Goodman: When Polanyi emigrated to England in 1933, central planning was popular—at least it was popular with the sort of people for whom the answer to every problem is giving the government more power, by which of course they mean themselves. Polanyi, together with John Baker, founded the Society for Freedom in Science, which opposed those who claimed that scientific research should be directed by the State. He also attended the first Mount Pelerin Society meeting in 1947, which Hayek set up in order to promote the claim that free markets are better at giving people what they want. Polanyi argued that a complex society cannot function without free markets. But he did not see free markets as the only answer. Keynesianism was a disaster because the above-mentioned advocates of State planning used it to justify government interventions in the market. Polanyi however justified efforts to moderate booms and busts by decreasing or increasing the money supply. Paul Craig Roberts argued that his Keynesian-Monetarism was thirty years ahead of its time. But Polanyi failed to take account of the fact that politicians in democracies obtain power by offering jam today. While they are happy to create short-term booms, they are less keen on implementing the discipline required to limit the long-term damage caused by inflation. Polanyi argues that a utilitarian justification for a free society is as inadequate as a utilitarian justification for science. Both are practices which rely upon value commitments. These commitments are passed on in the form of traditions. Does this accord with your understanding of Polanyi?

Allen: I agree with this account for the most part, but one other consideration needs to be added: Polanyi's distinction between private and public freedom. By that he did not mean submission of the individual to the collective but the use of freedom for the pursuit and cultivation of those activities which are inherently good, such as the human and natural sciences, justice, religion, and being a good neighbour, together with the institutions and traditions which support them, i.e., a set of "positive liberties" with the ideals and standards to the achieved and observed needing no other "justification," with private freedoms being more a matter of individual inclination and therefore largely "negative liberties." Both should be protected, but the former should take priority. (See his *The Logic of Liberty*.) On reflection, I would now qualify this, because hobbies, games, and sports also have their standards, though there is truth in Chesterton's remark that "If something is worth doing it is worth doing badly." It is better for example to be a bad painter than to spend all of your free time passively watching television irrespective of what's on. This leads to the problem of modern lists of

human, universal, or natural rights: they are merely assertive and individualist demands to do as one likes, with the implicit obligation of others not to interfere with the individual's exercise of them. Natural Law was a doctrine of universal obligations, with the implicit duty not to be obstructed in obeying them. Polanyi is a Natural Law thinker and certainly not a modern human rights advocate.

Goodman: Polanyi claims that scepticism about the objectivity of values in the modern period, far from deflating moral passions, created a hyper-moralism that, unconstrained by any reality, seeks to destroy the existing society and replace it with a utopia. Voegelin characterized this quest in religious terms. The Gnostics believed that the world was created by an evil demiurge. We are not responsible for this evil, and via their knowledge of the goodness of a transcendent God, the enlightened will liberate us from this world. Voegelin embarked upon a history of ideas. He noted that over time our understanding of the order of the universe becomes increasingly differentiated. But when he reached Christianity he gave up on the project. He declared that we create symbols to articulate our experience, and if we focus on the symbols, we ignore the experience which gives them their meaning. It seems to me that another reason Voegelin stopped writing his history of ideas was because he was reluctant to explore the connection between Gnosticism, which he disliked, and the Christian, and ultimately Jewish, quest to live in accordance with the will of a transcendent God. Polanyi views moral passion as Jewish in origin. When it is combined with a materialist account of reality, this passion is inverted into an attack upon all existing values. A Pantheist derives this error from comprehending values as transcendent. Moral inversion simply takes the next step and replaces God with ourselves as the source of value. Polanyi describes transcendent ideals as self-set ends of inquiry. But he does not take them to be subjective. Is he supplying an immanent theology in which the divine spirit comes to self-knowledge via persons engaged in a quest for understanding?

Allen: These are very complicated matters. I'll start with Voegelin. I have lost my copy of *Science, Politics and Gnosticism* (1968), but so far as I can recall he focuses on the claims of Marxism and other systems to know the future, rather than the evil that is the present, though it is implied. In his book on Gnosticism, Hans Jonas ends it by discussing modern versions such as Heidegger. It seems to me that in his study of the search for order Voegelin baulks at Christianity and life everlasting in the presence of God as being the logical conclusion of life in the metataxy, and he substitutes for it a merely nominal construction of symbols. Hence the metaxy is between the solid reality of the universe and something that is not substantial at all, let alone far more real than this world. Polanyi appears to do the same in *Personal Knowledge* and *Meaning*. Years ago in *Convivium*, I reviewed the three principal interpretations of Polanyi on Christianity in an issue of *Zygon*: the minimalist by Prosch, the maximalist as fully Christian by Gelwick, and the intermediate by Apczynski, with which I agreed. See also chapter 2 of my book *Transcendence and Immanence in the Philosophy of Michael Polanyi and Christian Theism* (1992). This brings me to what Polanyi meant by "Transcendent Ideals." He certainly does not state or imply any theological or other metaphysical foundation. So what do they transcend? I suggest it is anything less than that which requires devotion, raising oneself to a higher level, and acting accordingly. In *Science, Faith, and Society*, he lists truth, justice, and charity and belief in their reality as ideals (p. 81). At the end of the book, he does suggest that God is the source and end of these ideals, but that is as far as he goes, and in *Personal Knowledge* and *Meaning*, he affirms even less than this. There is, however, a path to God which starts with the "fundamental beliefs" used in any attempt to prove or disprove them. For example, the general reliability of our perceptions and mental powers, especially induction, which Polanyi mentions in *Personal Knowledge*, results in a correspondence of our beliefs with

reality (that is the only definition of truth, the others being ways of testing them), and this is what I call a "Global Absolute Presupposition," together with the "Regional" ones in the human and natural sciences, with which Collingwood deals. You mentioned "moral inversion." This is identical with Scheler's refutation of Nietzsche. The difference is that Polanyi applies it to the claim that lack of scruples is being "honest" about one's immorality, whereas Scheler counters the Nietzschean "overturning of values" by comprehending it as motivated by resentment.

Goodman: Humans are symbol-using animals. We enrich our awareness by indwelling within articulations. Marjorie Grene points out that Polanyi is often described as claiming that articulation sometimes has a tacit residue, but what Polanyi is saying is that all articulation always relies upon our tacit awareness. Consciousness has a focal and a subsidiary component, and its from-to structure derives from the fact that we are situated. This is not a flaw; it is the ground from which all understanding arises. He rejects the claim that we can generate meanings simply by manipulating symbols in accordance with rules. This is a Rationalist myth. Graham Dunstan Martin (*Shadows in the Cave: Mapping the Conscious Universe*) claims that poets deliberately impede the everyday transparency of prose in order to evoke our tacit awareness. You have just finished writing a book called *The Effable and the Ineffable: The Tacit Dimensions of Language, Truth, and Logic*. Do you discuss poetry? Grene said that Polanyi was going senile when he tried to reflect upon the nature of metaphor in his late writings and therefore advises us to ignore them. She also said that when he wrote *Personal Knowledge* (whose subtitle is "Towards a Post-Critical Philosophy") it took him a year to write his Articulation chapter. To what extent do his claims about the structure, power, and limitations of articulation go to the heart of what he is trying to do in his Post-Critical philosophy?

Allen: Yes, Marjorie Grene was right about that. In my book, I discuss "heightened" language, which includes poetry, in which the words themselves are focal. There is also a chapter on real metaphors, whereas Michael Polanyi considers them to be only figures of speech, i.e., as using the terms of one known thing to express another known thing. The Romanian philosopher and poet Lucian Blaga calls these "manufactory metaphors," as opposed to "revelatory metaphors" which extend the use of existing terms for what is already known to refer to something radically new, and for which there are no words. The audience has to tacitly grasp what the speaker is trying to say and convey. I published a paper on this and with permission I reproduced it in the book.

Goodman: In her summary of his philosophy, Esther Meek claims that Polanyi highlights the importance of responsible fiduciary commitment, the integration of two levels of awareness, and contact with reality as the discovery of indeterminate future manifestations. Instead of viewing knowing only in propositional terms, he returns us to the context of discovery. Articulation renders higher levels of meaning possible. But one of the hazards of description is the temptation to reduce A to nothing but B. Relativism is the negative version of the same misguided obsession with exhaustive description. Nor do we only seek to describe reality. We also create it. In the final chapters of *Personal Knowledge*, and in various subsequent writings, Polanyi outlines an emergent cosmology in which higher levels direct lower levels and are rendered possible by them. Although our embodied consciousness is fallible, our existence is not meaningless. In his heuristic phenomenology, we observe, explore, and create, enriching our meanings by building upon the achievements of others. What do you find most valuable in his writings?

Allen: The central element of his thinking is tacit integration: in one way or another, most of his previous work leads up to chapter 4 ("Skills") in *Personal Knowledge*, which he then applies and extends. Two items I think are incorrect. First, in *The Tacit Dimension*, he says that tacit integration no longer needs commitment, but it is clear that tacit integration tacitly requires it, and so the very important chapter 10 in *Personal Knowledge* about commitment (and titled "Commitment") is still highly relevant. Second, his last few chapters in *Personal Knowledge* about emergence, like all his writings on this topic, give a merely verbal pseudo account which entails that life, sentience, intelligence, and personhood are already latent in mere matter and that the principles of operation of higher levels bring these new levels into existence, as if the addition of more levels is somehow able to bring about that which is radically different. The implication is that no extra-mundane explanation is required. Marjorie Grene was right to reject those chapters, but for the wrong reasons.

BOOK REVIEW

Giles Scott-Smith and Charlotte Lerg (eds.). *Campaigning Culture and the Global Cold War: The Journals of the Congress for Cultural Freedom*. London: Palgrave MacMillan, 2017. ISBN 978-1-137-59866-0. Hardbound $119.99. ISBN 978-1-137-59867-7. E-book $89.00.

This book is a collection of sixteen essays discussing the history of the different journals from across the world that were supported by the Congress for Cultural Freedom (hereafter CCF) during the Cold War. The CCF was surreptitiously subsidized by the CIA and used this funding to support its set of journals promoting Western culture and political ideas and policies. Essays are written by scholars who have studied each particular journal in its local political and cultural context. The helpful, concise general introduction to the book provides basic information about the CCF, from its 1950 origins in a Berlin conference through its transformation into an international organization cultivating intellectuals across the world to its final demise after its CIA funding became public. There are brief comments about major players, including Michael Josselson, Polanyi's friend and a primary administrative figure in the CCF (and a link to the CIA) who worked with Polanyi on many CCF projects after 1953. The editors Scott-Smith and Lerg make clear their point of view: this collection aims to avoid the way much earlier scholarship on the CCF slips into a preoccupation with either condemnation or praise of the CCF. Here the effort is to focus attention on the CCF's "most influential cultural products scattered across the globe, operating in their own particular local settings" (2) and to understand each of these sixteen journals in terms of its place in the CCF network and history.

Michael Polanyi was deeply involved in the CCF from 1953 until October 1967, when he resigned during the controversy about secret CIA funding of CCF programs and whether to accept the resignation of Josselson. Many articles by Polanyi were published in CCF-subsidized journals, and Polanyi and a son and daughter-in-law seem to have been primarily responsible for producing one journal, *Science and Freedom*, from 1954–1961. Here I can briefly comment on only a few of the essays, treating these CCF journals shaped to court intellectuals in many different cultural contexts. The three essays that I treat are those likely to be of interest to students of Michael Polanyi's thought.

Audra Wolfe's "*Science and Freedom*: The Forgotten Bulletin" (27–44) is an account of a CCF-subsidized publication edited by George Polanyi, Michael Polanyi's oldest son who was a liberal economist and may have influenced his father's liberal views. Before the formation of the CCF, Michael Polanyi was a leader opposing "planned" science and articulating the relationship between science, freedom, and liberalism. Because of his status, Polanyi was talked into co-chairing a large CCF conference in Hamburg in 1953 on science and freedom. Out of this grew a CCF Science and Freedom standing committee that Michael Polanyi chaired for several years, a committee for which he recruited several prominent scientists. The cover of *Science and Freedom* suggests that the journal was a bulletin of the committee, but just what role the committee played is ambiguous; Wolfe pronounces the committee a "paper committee" (30). She points out that some administrators in the CCF came to

regard *Science and Freedom* as "the house organ for the Polanyis" (28). Also, there are many questions about George Polanyi's role as editor (as well as secretary to the committee). How George (as well as his helpful wife Priscilla) came to have responsibility for publishing *Science and Freedom*, operating out of their home in Manchester, is unclear, as is the degree of Michael Polanyi's involvement in promoting this arrangement and, more generally, in shaping the journal.

Wolfe portrays an ongoing power struggle between the Paris CCF headquarters and the Manchester-based bulletin. Paris wanted more focus on criticism of communist infringements of scientists' freedom, but articles took a broader interest in academic freedom. Michael Polanyi (as his publications reflect) and apparently George also viewed matters not simply as a struggle against communism per se: "the crisis in science was different only in degree, not kind, from the broader crisis of political authority afflicting intellectuals more generally" (32). The bulletin also seemed to promote an unmistakable "embrace of economic liberalism" (35), and this seems to have raised questions for readers.

The CCF, comparatively speaking, invested little money in this journal, but the irregularly published journal's success in enlisting subscribers was dismal. George Polanyi apparently did not seek approval from the CCF Paris Secretariat for material published, and his handlers were often frustrated and unhappy with the editorial process and what was published. Paris did not seem to know what was going on in Manchester; George Polanyi seems to have been an independent actor. The Paris Secretariat eventually in 1961 shut down *Science and Freedom* (taking pains not to alienate Michael Polanyi) and began to subsidized a new journal, *Minerva*, edited by Michael Polanyi's close friend Edward Shils who had long been a member of the CCF Science and Freedom Committee. Wolfe does not seem to know much about the scope of the collaboration between Michael Polanyi and Edward Shils that began in the late forties, and this perhaps carried over to matters concerned with *Science and Freedom* if not also early issues of *Minerva*. Wolfe treats the case of *Science and Freedom* as an interesting exploration of the "limits of 'editorial freedom' within the CCF's larger operations" (28). But her general conclusion about the journal is pellucid: *Science and Freedom*, when compared to other CCF-subsidized publications, was "amateurish" (27). The story she tells is a fascinating one, but to this reader the story could have been enriched if Wolfe had read more of Michael Polanyi's writings from the forties and fifties in addition to the CCF literature that she has carefully studied.

Ray MacLeod, who became the *Minerva* editor in 2000, is the author of "Consensus, Civility, Community: *Minerva* and the Vision of Edward Shils" (45–68), an essay in this collection that in some ways continues the story after the demise of *Science and Freedom*. Michael Polanyi had an article in the first issue of *Minerva* (and at least one later article), just as Shils had an article in the first issue of *Science and Freedom*. But *Minerva* is clearly a special Shils project to which he was tenaciously committed—he was editor for thirty-three years. This essay recalls the changing, bumpy road that Shils and the journal followed for its long history that extended beyond the life of the CCF. *Minerva* focused on "science, learning and policy," and, as MacLeod notes, Shils "gave definition to the changing landscape of research policy" (45). He and the journal espoused, from its founding, the "Enlightenment values of consensus, civility and community" (45). This essay not only provides a history of *Minerva* but is also an interesting, concise source of biographical information about Edward Shils, who clearly was one of a handful of intellectuals who worked closely with, influenced, and was influenced by Michael Polanyi.

Jason Harding's "Our Greatest Asset: *Encounter* Magazine and the Congress for Cultural Freedom" (107–25) is an examination of "the brightest star in

the constellation of magazines that were lavishly, and secretly, funded by the CIA during the Cold War" (107). Michael Josselson, the executive director of the CCF and the figure ultimately responsible for the more than twenty subsidized magazines, called *Encounter* "our greatest asset" (107). *Encounter* was a journal in which several important Michael Polanyi essays appeared, and it was the funding of this journal that led to exposure of the CIA link to the CCF. But Harding argues that, from its earliest days until the exposure of CIA funding, *Encounter* was not ever a crude programmatic mouthpiece for anti-communism. Otherwise, it never would have acquired a sophisticated and large readership in London. Harding points out that Editor Stephen Spender "quickly built up *Encounter* as a leading venue in London for literature and the arts," and the journal "was respectful to the legacy of European modernism, in spite of the hostility to liberal democracy that was displayed in many of these works" (113). Harding makes his interesting case by paying close attention to what was published in *Encounter* rather than relying primarily on archival materials about *Encounter* and its various internal discussions.

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