The Theory and Practice of Economic Methodology*

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*Man must strive, and striving he must err.*
Goethe (1808)

Many methodologists today engage in what might be called ‘Beyondism’ by proclaiming that economics has moved ‘beyond positivism’. There is a major problem with Beyondism. It is almost always myopic. Small but stylish reforms are proclaimed to be major revolutions. If the truth were told, methodologists would have to recognize that neither they nor the economists they study have moved very far beyond positivism. All that has happened in the last 40 or so years of so-called ‘post-positivist’ methodology is a switch from an optimistic form of conventionalist methodology to a pessimistic form. The optimistic form of conventionalism emphasizes the ‘positive’ in Logical Positivism. Its pessimistic form emphasizes the ‘logical’.

To see whether we have actually moved very far beyond positivism, I think we have to step back and take a broader view. In this case, we need a theory of methodology which would explain why one thinks methodology or the practice of methodology has or has not changed in the last 40 years.

In this paper I will present my theory of why the movement of economic methodology has been limited to only the minor shift from optimistic to pessimistic conventionalism. And armed with this theory of methodology I will discuss some of the ways methodology is practiced in economics today. We shall see that, in terms of the practice of economic methodology, the primary effect of this minor shift is the obvious growth and dominance of mathematical formalism in economics.

**KNOWLEDGE AND TRUTH STATUS: HISTORICALLY SPEAKING**

Traditionally, methodology is considered to be about the identification of ‘correct’ answers to important questions. Whenever someone claims their answer is correct, the question methodologists might ask is: ‘How do you know your answer is correct?’ Needless to say, the question has been asked countless times. Many people today view ‘science’ as the embodiment of ‘correct answers’ and ‘scientific method’ as the only sure way to demonstrate that one’s answer is ‘correct’. Of course, methodology has been discussed for centuries. The currently popular belief in Science and Scientific Method is based on a 350 year old methodology that was refuted 200 years ago.

Since our modern view of methodology has its roots in philosophical problems, a good starting point for the study of methodology is history itself. But 350 years of history is surely filled with an excessive amount of detail. So, I will have to simplify the historical detail by presenting a ‘theoretical history’ concerning the common interest in correct answers and in the methods alleged to yield correct answers. My objective is to explain ‘historically’ why there has been a concern for a method of knowing the ‘correct answers’. From this we may learn why we find popular methodology frozen at a point just one step beyond its refutation in the eighteenth century.

1. **Thinking and ‘Correct Answers’**

Suppose I should begin my ‘theoretical history’ with a disclaimer like one of those found at the beginning of some movies: ‘All characters in this story are fictional, any resemblance to real persons is purely intentional.’

Students today are too often taught that the primary objective of learning, or even thinking, is finding the correct answers. The basic presumption is that ‘Knowing is knowing the truth’. It has not always been that way. Before the time in which Socrates was supposed to have lived (say, prior to 450 B.C.) many people considered thinking to be a process of discovering or inventing all of the possible or conceivable answers to any given question. That is, thinking people did not necessarily begin with a burning desire to know the correct answers.

Amongst the so-called Pre-Socratics were some fellows who I shall call Sophists. These fellows
maintained that there just had to be correct answers. But, whenever a Sophist thought he knew the correct answer he could not always prove it to be correct merely by arguing directly in its favour — i.e. by simply giving reasons to prove the truth of the answer. Some of these Sophists devised an indirect way to argue in favor of their chosen answer. This Sophist's method, which is still followed today by some members of the so-called Chicago school of economics, proceeds as follows.

First, the Sophist must claim (or presume) that there is a finite number of conceivable answers to any given question. For example, for some questions there are only two possible answers — 'yes' or 'no' (a response such as 'who cares?' is not an answer). The second step is for the Sophist to attempt to refute all other answers. If the first step was successful - i.e. if all possible answers have actually been listed - then the refutation of all answers other than the one thought to be true would mean that the favored answer is revealed to be the correct one.

The success of this Sophist argument depends primarily on there being a finite (and mutually exclusive) set of possible answers. Very often, Sophists argue without always being sure they have identified all of the answers. They might not have identified all answers if a complete search takes a long time. In general, the Sophist argues by criticizing competing answers in hopes of convincing everyone that the Sophist's favored answer is the correct one. But, the Sophist's argument can only work when all of the possible answers have indeed been identified and all the competing answers have been refuted.

2. Knowledge, Authority and Method

Unfortunately, the legacy of the Sophists is an excessive concern for (quickly) finding the correct answer - rather than for (slowly and carefully) identifying all the possible answers. For many questions it would be difficult even to list all the answers let alone determine which one is correct. But people demand (correct) answers. Politicians and kings demand answers, governmental agencies demand answers, and even corporation directors demand answers. Given these demands, it is easy to understand how the institution of 'authority' might be seen to be able to overcome the insufficiencies of logic - authority gives people answers quickly.

2.1 Galileo and the Authorities

For hundreds of years the Church was the institutionalization of authority. Its 'College of Cardinals' would decide what we were to consider true knowledge. It is this tradition that faced Galileo (1564-1642). Galileo believed the truth of one's knowledge could not be decided with a vote by a group of individuals - even a group of Cardinals. Rather, the truth of one's knowledge would have to be decided by the real world. Galileo is said to have climbed to the top of the Tower of Pisa to demonstrate the truth of his knowledge of falling bodies. This was particularly challenging to the 'authorities' and thus Galileo was not very popular with them.

As is well known, Galileo ran into difficulty with the Church 'authorities' because he taught his students about a theory of heavenly bodies authored by Copernicus (1473-1543). Galileo's problem was that the authorities had given their approval to the competing theory of Ptolemy (127-151 AD). As the simple story usually goes, the approved Ptolemaic theory was that the earth is the centre of the universe and all the planets and stars revolve in circles around the earth. In a more complicated form the Ptolemaic theory allowed for epicycles (the path of a point on a rolling circle) in place of perfect circles.

Galileo chose to discuss the Copernican theory which put the Sun rather than Earth at the centre of rotation. The Copernican theory was a direct challenge of the authorized Ptolemaic theory. To maintain the authority of the Church, Galileo was told to stop teaching his students about Copernicus. But Galileo responded that people cannot dictate which answer is true, nor is the truth of one's knowledge a matter of authoritative opinion. The truth of one's knowledge is a matter of its objective relationship to the 'real world'. If you think you know something about falling bodies, you can climb with Galileo to the top of the tower and test your knowledge.

But the Church authorities replied, so my story goes, that Galileo simply had no authority to challenge the authorities or even authoritarianism. Furthermore, the Church did have the authority and the overwhelming power to prevent Galileo from challenging it. With a simple show of their immense power, Galileo was forced to give in. He was banished to Southern Italy and no longer taught his students about the Copernican view.

2.2 The Humanist's Challenge and their Social Contract

Another reaction to the authoritative Ptolemaic view that Earth is the Centre was the claim that by accepting this view we are actually led to further considerations which might also contradict the authority of the Church. Specifically, it was argued by some of those who witnessed the Church's victory over Galileo that if Earth is the centre of the rotation of heavenly bodies then potentially Man or Humanity is the centre of rotation. I shall call this interpretation of the Ptolemaic view Humanism. Although there
were many different aspects to this extension of
the Ptolemaic view (e.g. the rise of Protestantism). I
will be concerned only with what it means for our
modern view of knowledge. The Humanist’s
argument was, in effect, that if Man can be the centre
of everything, then all knowledge can reside in the
minds of men.

My concern here will not be with whether the
Humanist’s view of the possibility of human
knowledge is a logically sound view or even an
acceptable view on its own. Rather, I will be concerned
only with how it challenges the authority of the
Church in all matters and in particular in matters
of knowledge. Since the Church accepted the
responsibility of determining what is (or is not)
correct knowledge, there would seem to be little
room left for independent human knowledge. No
individual person was allowed to claim his or her
knowledge was true without the authoritative
approval of the Church. But the Humanists claimed
that one’s knowledge could be true regardless of the
opinion of Church authorities.

The Church authorities were unable to fight
back as effectively as they did in Galileo’s case. For
one thing, all overwhelming or excessively powerful
victories have a common problem - the victors tend
to be discredited in the eyes of the spectators and
critics. Such was the case with the victory over
Galileo. Thus, the Church authorities had to be more
careful with the Humanists. The tactic adopted by
the Church was to offer the Humanist-Challengers a
‘deal’ - namely, a specific social contract.

Now, my story of an explicit confrontation
between the Church authorities and the Humanists
may very well be entirely fictional - I was not there.
I can only propose the following heuristic viewpoint:
While the Church authorities wanted to defeat the
challenge of the Humanists, the Humanists wanted
to establish that Humans could possess correct or
ture knowledge. The authorities offered the following
contract: Any individual can claim to have knowledge
only if he or she can prove or ‘justify’ its truth.

The Humanists eagerly accepted and signed the
offered contract. I shall henceforth call this the Social
Contract of Justification. Although the
Humanists did not realize it, by signing they had
agreed to play a ‘lose-lose’ game with the authorities
- which of course is exactly why the authorities
wanted to play (from the authorities’ standpoint, it
was a ‘win-win’ game). But before I explain this, let
me first consider why the Humanists were so eager
to agree to play.

2.3 The Authority of Justification

The reason why the Humanists were willing to
sign the Social Contract of Justification was simply
that they thought there would never be a problem
proving one’s knowledge to be true whenever it is
ture. Today it is difficult to see why they could have
thought that it would be so easy. If we try not to be
wise in retrospect, we can see that the reasons were
easy. Far from the direct power of the Church in
southern Europe, there was one thinker - Francis
Bacon (1561-1626) - who was arguing that if one
were ‘scientific’, one could always provide rational
arguments for the truth of one’s knowledge. Thus,
Bacon was the Humanist’s ‘secret weapon’. Bacon’s
inductive Science would be their alternative to the
Church’s authority.

Before examining the nature of Bacon’s
Scientific Method of proving the truth of one’s
knowledge, we should ask why the Scientific Method
might be of interest to the Humanists or anyone else.
I think the reason is simple. By justifying one’s
knowledge using the Scientific Method, the Method
itself replaces the authority of the Church. The
Scientific Method is not a challenge to
authoritarianism. Rather, it is merely a challenge to
those who play the social role of authorities.

2.4 The Scientific Method

The Scientific Method of Bacon promised that
whenever your knowledge is true, you could always
prove the truth of your knowledge by following his
method. The promise of the Scientific Method is
founded on the following doctrines: (1) Truth is
Manifest in Nature (i.e. the truth of anyone’s
knowledge of the real world is manifest and thus
discoverable in the real world). And (2) To Err is Sin
(thus, error must be avoided). An appreciation for
these two doctrines is essential for a clear
understanding of Bacon’s Scientific Method. So let
us examine his doctrines.

These two doctrines are not independent. If
‘truth is manifest’, truth is there to be seen. Only
people who blind themselves to manifest truth would
ever make false claims - that is, make claims that
their (false) knowledge is true. But would anyone
ever be so blind? Bacon argued that blindness to the
truth is a symptom of prejudice and impatience for
success and fame, and both are consequences of
greedy self-interest. Since greedy self-interest is
often considered a Sin, it is a Sin to make a false
claim about the truth of one’s knowledge. To avoid Sin,
one must not make any claim until one has gathered
the facts to prove it true. Only a greedy, impatient,
self-interested person would commit the error of
jumping to a conclusion without first collecting all
the facts.

The warning of ‘do not jump to conclusions’ is
both the key to Bacon’s Scientific Method and its
primary legacy. When following his method, one
must always be careful, patient, unprejudiced, open-minded, diligent, etc., and if one works hard and long enough (i.e. collects enough facts) then one cannot commit an error. Bacon's Scientific Method then is a recipe. Every scientific investigation begins with an unbiased collection of data, followed immediately by a logical demonstration (i.e. 'proof') of any knowledge derived from the collected data. Thus, Bacon's Scientific Method is both a method of assuring that the collected facts are beyond question since the collector was scientific (i.e. unbiased, unprejudiced, etc) and it is a method of justifying claims to true knowledge.

The scientific facts are accordingly the primary basis for any rational argument in favor of one's knowledge - one's human knowledge, that is. Thus, we see why the Humanists saw Bacon's Scientific Method as their secret weapon. The Humanists saw no risk in putting their signatures on the Social Contract of Justification since Bacon's Scientific Method assured them that there existed a way to prove one's knowledge true whenever it is true. And most important, the proof, the rational argument consisting only of the unbiased scientific facts, would never require the authority of the Church.

2.5 The Success of the Scientific Method

It was often claimed that there were many examples of successful applications of Bacon's method. The most famous is Newton's physics. Isaac Newton (1642-1727) claimed to have arrived at his 'Laws of Physics' by using the Scientific Method. With Bacon's Scientific Method, a proposition about the nature of the real world can be called a 'Law' only after it has been proven beyond a shadow of a doubt. Can one ever argue with someone who claims that his knowledge has been arrived at by the Scientific Method?

The promises of the Scientific Method even go so far as to suggest that all knowledge of the world can be shown to be based on real world experience - that is, on empirical data. It promises that it is possible to show that our knowledge is based only on facts since the logical demonstration of the truth of one's human knowledge will be based only on the scientific collection of empirical facts - gathered so to speak, by experience.

3. Knowledge versus Psychologism

3.1 The Problematic 'lose-lose' Contract: The Social Contract of Justification

For a long time Bacon's Scientific Method reigned as the solution to the problem of providing the rational basis for human knowledge. In short, all human (i.e. all subjective) knowledge could be shown to follow logically from objective facts or experience. In this light, there are only two elements that constitute human knowledge: (i) facts or experience, and (ii) logical proofs. But this also means that the Humanists, by relying on Bacon's Scientific Method, signed a contract which had a built-in contradiction. Let me explain.

Specifically, if human knowledge must be justified by logical proofs using only empirical facts, where is the humanity in human knowledge? Clearly, if facts must be found in the objective real world, they are not human. This leaves only the logic of the argument in favor of one's knowledge. If there is humanity in human knowledge, as the Humanists hoped, it must reside in the logic of argument.

Now, it should be easy for anyone living today to see that this is a problem. Consider the use of computers and consider that there are satellites circling Earth and others travelling by Jupiter and Saturn. These are merely logical machines and some of them just collect facts, without the hand of any human. It is not difficult for us to see that today there is no humanity in being logical. Logical decisions can be represented by a machine without any human having to make real-time decisions. In fact, the entire essence of logical proofs is their universality - anyone can understand them. The inventor of the proof does not have to be present to explain the proof.

Whenever the Humanist is successful in justifying the truth of his or her knowledge with a logical proof using only empirical (objective) facts, he or she has produced something which is necessarily not human! Thus, there is no humanity in (justified) human knowledge. This means that the Church has defeated the challenge of the Humanists on at least one count. The legacy of this apparent defeat is simply the common view that rationality or logic is itself the humanity in human knowledge. After all, as it has been often argued, how do we distinguish men from mere animals - well, of course, animals cannot reason!

3.2 The Problem of the Infinite Regress

There were more serious problems for the Humanists. The adequacy of logical proofs was always suspect. For a logical proof to be a justification, it must be possible to demonstrate the proof for all to see. Failure to do so is evidence of an error. An example of a failure to demonstrate is the so-called 'infinite regress'. If we give reasons for why some particular statement is true, we might be asked to show why we think our reasons are true. Following the Social Contract of Justification, we must step backward and provide another set of reasons to prove the truth of the first set of 'reasons'. But if that is
possible, then any subsequent reasons can also be questioned. This requires still another backward step and another set of reasons. There is no limit to the number of required sets. Hence, we have an infinite regress. Such a possibility means that one could never provide a complete (and thus finite) proof of one’s knowledge.

This is precisely the challenge of David Hume (1711-1776). He argued that there did not exist any objective logic that could do the job of providing a logical proof of one’s knowledge based only on experience. This is a serious indictment of Bacon’s Scientific Method. It means that one cannot even get started. For example, whenever one claims to have collected the facts to prove one’s knowledge is true, someone else can ask for an additional proof showing that one’s facts are true as well as logically sufficient. In face of these difficulties, nineteenth-century Romantics would have us consider relaxing the doctrine that to err is sinful. So, today most people would instead accept Goethe’s claim that to err is Human.

The real source of the problem for the believers in the Scientific Method is that the Method depends on the existence of an inductive logic - a logic which can proceed from the truth of particulars (of experience) to the truth of general statements such as those which comprise anyone’s knowledge. Although Hume may have recognized that such an inductive logic does not objectively exist, he argued that people still claim that, on the basis of their experience, they know that particular statements are true and those ‘knowers’ are often correct. Hume concluded that they therefore must have a workable inductive logic in their heads. Thus, we see how the study of knowing becomes the study of the mind of the knower - that is, of the psychology of knowing. If there is no objective rational proof of one’s knowledge, then there can only be subjective proofs of one’s knowledge. In this case, every rational proof of knowledge reduces to a study of the psychology of the knower.

3.3 Romanticism and Neo-Romanticism

The consequence of Hume’s argument that knowledge exists in the minds of people, rather than in objective proofs which might please the Church, is that the minds of humans matter more than ‘the facts’ since the facts themselves must exist in the minds of humans. For many people today things have not progressed beyond Hume’s observations. Most of the Romantic literature of the early nineteenth century is merely examining the ultimate in truth - everything is centered in the human mind rather than in objective rationality. Even the Existentialists (or Neo-Romantics) of the early twentieth century adopted the view that everything may be a product of the mind - hence everything may be arbitrary. In either case, the justification of human knowledge is supposed to be based on the rationality of the human mind and thus justified knowledge is a product of Human Nature.

An ultimate reliance on Human Nature as the foundation of explanations is precisely what philosophers today call Psychologism. It is this type of explanation which was rejected in my 1982 book [Foundations of Economic Method, Allen & Unwin] and, of course, in Karl Popper’s writings. But as can be seen from my heuristic history of human knowledge, Psychologism is only a symptom of a more serious problem - namely, the signing of the ‘lose-lose’ Social Contract of Justification by the eager and optimistic Humanists.

4. Anti-Justificationism

There is no reason why anyone today should consider themselves bound to abide by a contract they did not sign. Thus, everyone is quite free to make any claims they wish. That anyone thinks his or her theory is true, does not guarantee the truth of that theory. Conversely, not knowing the truth of one’s theory does not guarantee that the theory is not true. Likewise, the truth of one’s theory or knowledge cannot be decided by a vote - simply because, even when the vote is unanimous, the voters could be unanimously wrong!

**EPISTEMOLOGY VS METHODOLOGY: THE THEORETICAL PERSPECTIVE**

The primary object of my heuristic story was to identify three elementary notions: (1) the doctrine of Manifest Truth, (2) the doctrine that To Err is Sin and thus error must be avoided and (3) what I called the Social Contract of Justification. I turn now to examine one particular theoretical legacy of that contract - namely, the historic fusion of questions of epistemology with questions of methodology. The distinction between epistemology and methodology can be simply stated. Epistemology is concerned with the nature of knowledge (i.e. with what knowledge) and methodology is concerned with how knowledge is acquired. In other words, epistemology is like a restaurant’s menu whereas methodology is more like a street map showing how to get to the restaurant.

1. Sensationalism, Methodology and Epistemology

In addition to these three elements of theories of knowledge and methods of knowing I wish to make explicit the commonsense notion about learning that
says all knowledge comes by way of the senses. This view, called Sensationalism, is the foundation of virtually all views of methodology and epistemology and is responsible for the fusion between epistemology and methodology. Here, I want to focus on the two major views which are based on Sensationalism - Inductivism and Conventionalism - because they are found at the roots of all methodological controversies and prescriptions in economics today.

One way to understand any theory is to understand the intellectual problem at issue. One can always take a retrospective view of any theory by conjecturing what problem is solved (intentionally or not) by that theory. This will be my program here for the study of methodology. Specifically, I will conjecture a problem situation in order to explain the existing views of methodology.

Throughout its long history, methodology has served to solve both epistemological and sociological problems. That is, methodologies have existed to deal with knowledge itself and with society's view of knowledge. Before discussing the specific matter of methodology in economics, I will attempt to formulate a general theory of methodology by discussing some of the philosophical and social problems that methodology has been, at times, thought to solve.

The primary philosophical problem that methodology has been said to solve arises out of various theories of knowledge which are based on the afore-mentioned Manifest Truth doctrine - namely, the doctrine that truth is there to be seen or discovered. The problem is: How do we mere humans uncover the truth without making errors if 'to err is human'? The 'how' will depend on the details of one's theory of knowledge, that is, on one's epistemology.

From the standpoint of Sensationalism, the epistemological question (What is knowledge?) is answered when one answers the methodological question (How do I know?). According to Sensationalism, the answer to the second question is: I know only by having either 'observable facts' or 'demonstrable truths'; hence, 'knowledge is essentially factual or demonstrable'. This latter conclusion precludes the existence of theoretical knowledge, that is, of knowledge which is not based on sense observations or demonstrable 'truth' alone. The next question is: How does one have the 'facts' or 'demonstrable truth'? Is this methodological question separate from epistemological questions (What are 'facts'? and What are 'demonstrable truths'?). The question of how one knows is not separable from specifying what the facts are or what is provable. The result is that methodology traditionally deals with the epistemological questions 'what are facts?' and 'what are demonstrable truths?'. If one follows Hume, the question of how I know would be considered a psychological phenomenon.

2. Inductivism

One variant of Sensationalism which has been attributed to Bacon is called Inductivism. Inductivism needs to be examined because it has been institutionalized. Its institutionalization has overcome its weak foundation, namely, the belief in the existence of an inductive logic. Inductivism attempts to answer simultaneously the methodological question 'How do I know?' and the epistemological question 'What is Knowledge?'. It does this by attempting to objectify knowledge - that is, by making the logical basis of knowing non-psychological.

Bacon's Inductivism objectifies knowledge by eliminating subjective influences in the process of establishing the 'facts'. Once the 'facts' are established the mental process becomes irrelevant since it can be replaced by a non-subjective inductive logic. To do this the existence of an inductive logic is simply assumed. Truth then will be manifest in the 'facts' if the facts and the logic are independent of human influence. For Inductivist-Sensationalism, methodology is thus a procedure which eliminates human influences and thereby minimizes error.

There are two important and well-known variants of Inductivist-Sensationalism. One is the Verificationism associated with the twentieth-century 'logical positivists' and the other is classical Empiricism. Both are well known to economists. Both have to do with the status of theories in the nature of knowledge. All that Inductivism says is that if theories exist they must have followed inductively from the existing facts (hence cannot go beyond the facts). Verificationism allows for hypothetical leaps beyond the available facts so long as one goes back later and verifies the hypotheses with facts. It is in this spirit that we are urged to say something is 'hypothetical' if not known to be true. For classical Empiricism all theories must always be directly related to existing facts. That is, no theory can go beyond experience - theories only represent our experience.

Most details of any Inductivist methodology are concerned specifically with the question 'what are facts?' (e.g., distinguishing between positive and normative statements). This question needs to be answered in order to answer the primary methodological question 'How do I know?'. The question 'what are facts?' is dealt with by explaining how one should collect them. The quality of the facts is supposed to be related to the personal competence of fact collectors (e.g. collectors must be unbiased,
unprejudiced, clear thinking, etc). From this perspective methodology is seen to be concerned with the personal mode of behavior of the ‘fact collector’. In particular, can just any ordinary individual’s observation report be accepted as a ‘fact’ worth noting or using? Obviously not.

Despite all its philosophical problems and controversial aspects, Inductivist methodology lives on as a ritual. Textbooks are written to satisfy Inductivist principles, curricula are organized according to Inductivist learning principles (viz., learning from examples, no speculation before data collection, practical questions before theoretical ones, etc).

The combination of the doctrine of Manifest truth and the doctrine of Sensationalism fails without something like an inductive logic. Although the combination has been institutionalized in academic economics through curriculum and textbook rituals, it is striking that no longer is it openly adhered to among economic methodologists. How does one abandon this combination of doctrines? There are three options available - abandon Sensationalism, abandon Manifest Truth, or abandon both.

The view which results when denying Sensationalism while still maintaining Manifest Truth is merely the well-known and oft-despised Apriorism. If we were instead to drop the doctrine of Manifest Truth but retain Sensationalism we would construct the foundations of the philosophy called Conventionalism. If we drop both doctrines we obtain the basis of Popper’s views of methodology.

With Apriorism all methodological matters reduce to matters of Deductive Logic hence reference to the real world is unnecessary. We need not discuss this further since there are so very few Apriorists today. By denying Manifest Truth, Conventionalism suggests that our senses need help - that is, the facts we collect are always ‘theory-laden’ since factual reports contain theoretical elements which cannot be separated out. Conventionalism is the methodology which Donald McCloskey calls ‘Modernism’. Conventionalism is both the methodology advocated today and the basis of most methodological arguments in economics.

3. Conventionalism

Given the Social Contract of Justification, if all facts are theory-laden, the basis of knowledge would still need to be objectively justified yet this would in turn lead to an infinite regress. The combination of the failure to provide an inductive logic to make Inductivism work with the failure to justify (rationally) any knowledge within the doctrine of Sensationalism has always been the basis for many bitter disputes within the sciences and between scientists and non-scientists. How congenial the world would be if an inductive logic could be found. Almost all disputes could be rationally resolved since everyone could appreciate the logic. Another way to avoid disputes over whose theories are supported by facts and thereby shown to be true, would be to relinquish the idea that theories can be either true or false.

Giving up truth of falsity does not avoid a primary Sensationalist problem - that is, the avoidance of controversies and disputes over whose senses have produced knowledge. Many think that what is still needed is an objective authority - something to substitute for the previous combination of inductive logic and Manifest Truth. It might be said that without an objective authority we would have mere Existentialism. The solution to the implied problem is rather easy, it would seem. We can still rely on Rationality itself (i.e. Deductive Logic and Mathematics) to be the needed objective authority. This is just the program of a Conventionalist alternative to Inductivism, namely to rely on universal Rationality without giving up Sensationalism.

Conventionalist methodology is concerned also with the question ‘what are demonstrable truths?’. Like Inductivism, this question needs to be answered in order to answer the primary, but now modified, question ‘How do we know?’ Without Manifest Truth, Conventionalist methodology consists of a set of (social) conventions or decision rules for accepting a given theory or for choosing one theory from a set of competing theories. The need for a (rational) choice exists because (the retained) Sensationalism denies the existence of informative theories (i.e. information beyond the facts or known truths). The appearance of informative theoretical knowledge must be explained away if Sensationalism is to be retained. By using non-theoretical criteria, possibly involving independent observations, we can choose to accept a theory. The standard means for making a choice is to view all theories as catalogues of ‘facts’, classification systems or even languages and then apply some criteria such as simplicity, generality, or minimization of statistical error with respect to observations. In other words, choose the ‘best’ is approximation where the definition of ‘best’ is based on explicit rational criteria.

The ‘explicit rational’ criteria simply do the job that the doctrine of Manifest Truth was supposed to do when applying inductive logic. Their use avoids pure subjectivism in the process of state of knowing. Thus to complete the Conventionalist version of Sensationalist methodology, we need one more assumption which will ensure objectivity. That assumption is about the existence of universal Rationality, namely, the view that if everyone begins...
with the same mutually consistent premises (or criteria) everyone will necessarily reach the same conclusions. Here it is the common acceptance of the criteria by rational (hence 'objective') people that is the basis of all knowledge. Facts are demonstrable truths. Facts by being logically derivable from accepted theories are thus defined by those theories used to demonstrate the truth of the 'facts'. By defining facts, theories have no epistemological status. It is the logically derived, i.e. 'valid', facts (hence demonstrable truths) which are the sought-after goal, viz, knowledge. With Conventionalism it is said that we 'know' when we accept particular theories. The only possible errors one could make within this Conventionalist view of knowledge (which combines Sensationalism with the denial of Manifest Truth) are those which result from being irrational; hence if one is rational then errors will be avoided. In short, Conventionalist methodology, by choosing the 'best theory' to define the 'facts', solves the problem of establishing a factual basis for rational (social) agreement over what is knowledge.

4. Anti-Sensationalism as a Social Theory of Knowledge

I have been arguing that traditional philosophy has dealt historically with the question 'What is Knowledge?' within the confines of the Social Contract of Justification and thus that knowledge can never be explained without explaining 'knowing'.

Although the origins of psychology may be found in the history of the problems of fulfilling the Social Contract, the everyday, commonplace solutions are more sociological. In simple terms, knowledge is whatever a knower knows. The only social problem then would seem to be about how to determine who the 'knowers' are. There are two extant solutions which I will call the 'Role Theory of Knowledge' and the 'Status Theory of Knowledge'.

The Role Theory says that a knower is anyone who plays the role of a knower in society - the most obvious example is the 'expert witness'. In general, the Role Theory implies that 'it is not what you say, but how you say it' - but of course, how you say it may depend on what you want to say. Role playing with regard to knowledge is rather vague and uncertain. The Status Theory is much less ambiguous - it implies that 'it is not what you say, but who you are'. There are many obvious examples. Knowers usually hold university degrees or professional licenses.

Although role or status gives the appearance of solving the problem of determining who is a knower and hence what is knowledge, few philosophers or methodologists would ever be impressed. However, what can be noted is that both theories are non-Sensationalist. But of course, philosophers are generally more impressed by sensationalist theories of knowledge or method. The (Sensationalist) view that knowledge is obtained through our senses can clearly be seen as a way of fulfilling the Social Contract of Justification. Inductivist-Sensationalism is an attempted explanation of subjective knowledge (I know...) of the objective world. Conventionalist-Sensationalism is an attempted explanation of group-subjective Knowledge (we know...) of the objective world. At this stage I think we could consider a new question: Is it possible to explain Knowledge without explaining the process of Knowing? An affirmative answer to this question is a denial of the Social Contract. Such a denial also makes it possible to reject Sensationalism and instead adopt the view that all knowledge contains essential theoretical elements.

THE PRACTICE OF ECONOMIC METHODOLOGY

1. Conventionalist Methodology in Economics

I suspect that when discussing their philosophy of science, most economists advocate Inductivism in the long run and Conventionalism in the short run. Of course, if one had an infinity of time, then one could always make induction work in the long run. Most economists who advocate Conventionalism will readily admit that there is a problem with induction in the short run. These economists will be concerned with a different problem - namely, the Conventionalist choice problem: How can we choose the 'best' theory when there is no inductive logic? This would seem to be a simple matter of economic analysis where the only question concerns our objective function - that is, our choice criterion.

1.1 The Conventionalist's Choice Problem

Most recent methodological debates in economics are about the criterion to be used to choose between competing theories. I will list a few of the most commonly discussed criteria. Concerning the choice of one theory over another, Conventionalism admonishes us to choose the theory which is one of the following:

(i) more simple,
(ii) more general,
(iii) more verifiable,
(iv) more falsifiable,
(v) more confirmed,
(vi) less disconfirmed.

For the followers of Friedman's Instrumentalism, i.e. the economists interested only in solving practical problems, the confirmation criterion, (v), should
probably be more important, but usually Instrumentalism would have us just try each theory until one is found which works regardless of these criteria.

1.2 Criticizing Conventionalist Methodology in Economics

While I never wish to prescribe methodology to anyone, I do think economists who wish to propound their versions of Conventionalism ought to consider two elementary criticisms of Conventionalism.

The first concerns the irrelevance of the Conventionalist Choice-Problem. Once one drops the Social Contract of Justification, choosing a ‘best’ theory would no longer seem to be essential. Of course, there may be sociological needs for choosing one theory. For example, textbooks are easier to write when there is only one theory to be described. Also, a certified ‘best’ theory provides a Shibboleth which can be used to determine who are the ‘good-guys’ and who are the ‘bad-guys’. The choice of one theory among competitors might be appropriate for practical or policy concerns - since only one can be applied at a time - but the choice cannot solve any intellectual problems. Without the Social Contract of Justification, the onus is on anyone practicing Conventionalism to show why we should even have to choose one theory.

The second criticism is quite simple. It concerns the circularity of Conventionalist criteria. Although economic methodologists who practice Conventionalism usually deny that a theory is true or false (a theory is either ‘better’ or ‘worse’), they presume their criteria can be true. Each of the criteria listed above presumes something about the true theory of the real world. For example, saying the ‘best’ theory is one which is most simple presumes that the real world is essentially simple. In other words, whenever economic methodologists propose any particular criterion for choosing the ‘best’ theory, we can always ask, ‘how do they know that is the ‘best’ criterion?’. Of course such a question can lead to an infinite regress. If instead economic methodologists argue that their proposed criterion is ‘best’ because by using it one can show that the chosen theory is ‘best’, then Conventionalism is reduced to circularity.

2. Conventionalism and the Sociology of Economics

My many criticisms of Conventionalism are sometimes acknowledged by economic methodologists but seldom heeded since economic methodologists regularly claim that they have long ago rejected Conventionalism. They often claim to have rejected the explicit criteria listed above since these criteria no longer seem to hold promise - even Popper’s criterion of falsifiability. Some methodologists claim to have gone beyond Conventionalism and even gone beyond Popper. But if a methodologist walks like a ‘duck’, and ‘quacks’ like a ‘duck’ then he or she is a ‘duck’. In a fundamental way it does not matter what methodologists claim they are doing. Of more concern is what economists do that depends on accepted methodology. In the remainder of this paper I shall dig deeper to show how Conventionalist methodology permeates the economics profession and its practiced methodology.

By rejecting the Manifest Truth doctrine but accepting the Romantic’s doctrine that ‘to err is Human’, practitioners of Conventionalism would have us think that the fundamental social problem concerning knowledge is: How does our society, now and in the future, avoid mistakes with respect to understanding the world around us? One of society’s many social institutions is the economics profession itself. As such it produces economic knowledge which represents acceptable knowledge based on a rational minimization of error. The standard ways of making this representation concrete are the particular institutions of textbooks, professional meetings, and above all, academic departments and curricula. To understand more clearly how Conventionalism permeates economics, I will now attempt to analyze each of these ‘concrete’ institutions to show that Conventionalism is the methodology practiced among economists.

Textbooks Standard textbooks are deliberate attempts to represent the consensus concerning accepted facts (and theories) in a given area of study. The logic of the textbook business is that a book can only become one of the standard textbooks if it does in fact represent the consensus in terms of both content and form. What the standard textbook contains is the latest accepted work on what are the accepted theories in a given area of study. Any would-be textbook whose contents deviates from this will fail as a textbook since it will not be generally used. The form in which textbooks are written is as important as their contents. Any attempt to deviate here may also be doomed. For example, in areas elementary economics where the consensus is very strong, one finds that virtually all textbooks about ‘Principles’ contain only minor variations in their table of contents from that of the leading textbook; for years it was the one written by Paul Samuelson, today it is more likely Richard Lipsey’s. Such mimicry is often true in more advanced areas such as microeconomic theory; for years, all accepted textbooks were variants of older leading textbooks (perhaps, one written either by Richard Leftwich, C.E. Ferguson, or George
Stigler). Furthermore, most of the standard textbooks have an introductory chapter on methodology which does nothing more than state some variant of Conventionalism. Of course, the philosophical aspects of economic theories are confined entirely to that chapter - otherwise one might be suggesting that there could be some controversy over a particular theory.

The problem that is solved by such an institutionalized consensus (concerning the proper form and content of any textbook) is not clear. It might only be that it permits teachers to estimate what any rational student or colleague expects of them when teaching courses in a given area of study. Or, it might help to assure that students are getting their money's worth. Most likely, it minimizes the obvious mistakes one might make in thinking about the given area of study.

*Professional Meetings* Specialized professional meetings are organized much like standard textbooks. Opening addresses (typically like afterdinner speeches) are usually the depository of all philosophical matters while the meetings themselves, i.e. lectures, symposia, etc, that follow contain the non-philosophical matters. (Of course, meetings among methodologists can easily be exceptions.)

Ideally, the lectures, symposia, etc would contain the latest attempts at solving new problems or the latest findings concerning some old problems, thereby solving the social problem of keeping the profession aware of new developments. Unfortunately such meetings are very difficult to organize. In reality the actual meetings are characterized either by 'cronyism' or 'anticronyism' - one either invites papers only from friends or one does not invite papers from any friends. A select group, which supposedly represents the consensus concerning the proper areas of interest, delegates the job of organizing meetings in chosen areas. Usually, the criteria applied to choose papers for presentation would be irrelevant for an ideal meeting. All this turns out to make little difference since the intended consequences of holding professional meetings have lately been superseded by more desirable unintended consequences. The unintended consequences are primarily social and for large meetings they can be economic. Large meetings today serve the purposes of both a social gathering and a 'slave market' for recruiting and employment. Although the unintended social consequences can be used to explain why smaller professional meetings continue to be held, if they were recognized as the intended consequences, the universities or companies that pay for the expenses of holding the meetings would be unwilling to finance the attendance of an ordinary member. But, they are quite willing to finance the intended consequences because these promote the progress of science through timely communication of the latest developments, findings, etc, etc.

*Departments and Curricula* Despite what some economists might think, the administration of academic economics is quite similar to that of other disciplines in the scientific community. By far the most interesting social phenomena of the scientific community are the academic institutions of departments and curricula. Let us consider some problems that might be solved by having separate departments of Economics, Physics, Sociology, Philosophy, etc. Since the Conventionalist view is that scientists do not get involved in arguments over truth, one way to make sure that this view is correct is to separate those 'schools of thought' administratively such that there is little contact, hence overcoming the social problem of having scientists 'fighting it out'. In other words, separating departments within a University or partitioning a department into such subdisciplines as microeconomics, macroeconomics, international trade, finance, accounting, etc, makes the practice of Conventionalism possible. By grouping together those scientists who speak the same 'language', it makes common agreement more possible since if they speak the same language they will be able to concentrate on the logic of the discussion. Similarly since all rational people will ultimately agree if they start from the same premises, if we group together scientists who use the same premises, we minimize the possible disagreement. Moreover, since those in one group (by definition) will accept the same theories, they will agree on what are to be the accepted facts in their area. This makes it possible to write textbooks, hold meetings, etc. Above all, agreement on facts makes it possible to agree on what students must learn.

Since the entire fabric of the academic scientific community is organized to prevent (embarrassing) disagreement from breaking out and thereby organized to make the ordinary economists' Conventionalist methodology work or seem to be true, we cannot risk allowing students to be a source of disagreement. Thus, students must be socialized as soon as possible. The primary technique of socializing them is to have a set pattern of prerequisite courses that they must take before we allow them to think on their own about any particular area. If such an organization is successful, again one can show that Conventionalism today is true by construction. (Such a proof would be very popular among Mathematicians and other advocates of Conventionalism).
3. Methodology of Mathematical Economics

In my 1982 book I explicitly examined the two ways the economic researcher practices Conventionalism. One of my chapters presented the view that all of positive economics is ‘optimistic Conventionalism’. Specifically, I argued that positive economics is nothing but repeated attempts to prove inductively that neoclassical economics is true. It does this by showing that neoclassical economics can be successfully used to explain ordinary behavior. Another chapter presented a view that all of analytical economics is ‘defeatist Conventionalism’. Analytical economics retreats to dealing with analytical truths that are not dependent on empirical statements about the real world rather than deal with the difficult problem of determining the truth of statements about the real world. In recent years, the optimistic proponents of Conventionalism have been retreating to departments of applied economics that are located within business schools. These optimistic economists are being displaced by proponents of pessimistic Conventionalism who see considerable virtue in an excessive use of formal mathematics.

Let us look at the last forty years of the *American Economic Review* to see how the use of mathematics has developed. It is astounding to find that in the entire 1950 issue of the *Proceedings* there was only one equation. In the latest available issue of the AER [June 1991], there are fourteen major articles. Seven deal primarily with formal ‘theorems’, ‘lemmas’, ‘proofs’, etc. Five others are exercises which apply econometrics to formal mathematical models. Of the remaining two, one is a report on survey results and the other is an exercise in pure mathematical economics. Things have really come a long way in forty years.

Despite the monumental growth of mathematical economics, there seems to be no public discussion of the use of mathematics in economics. My colleague Herbert Grubel and I have surveyed opinions concerning the economics of mathematical economics [see *Kyklos* 1986]. That is, we asked prominent economists whether they think there are any net benefits to encouraging more mathematical economics at the expense of more modest literary and applied economics. The idea of even asking about net benefits has caused much wailing and abuse from those of our colleagues who spend most of their time manipulating mathematical models. But just what are the net benefits?

Let us look at the commonly stated benefits. The most common claims are that mathematics ensures a high degree of ‘rigor’ and promotes ‘economy of thought’. This latter is related to mathematics being a ‘common language’. Without arguing whether mathematical economics is rigorous or whether also non-mathematical economics is incapable of rigor, it is interesting that neither of these supposed attributes of mathematical economics ensures that whenever we make our theories and models more dependent on mathematical analysis that we will thereby be able to make better predictions or that our models will be true or better able to explain economic phenomena. The ostentatious use of mathematical models is only a matter of ‘proper scientific form’ rather than substance. The emphasis on form rather than substance is a characteristic of Conventionalism. Since Conventionalism denies that theories can be true of false, what can be of concern other than form?

The question to ask believers in mathematical economics is just what has been accomplished in the last forty years? While the believers will be quickly getting their list ready, a better question is, what has been accomplished with mathematical model-building that could not have been accomplished without mathematical model-building? The honest answer to the second question is that nothing has been accomplished that could not be done without sophisticated mathematics. And whatever is listed for the first question will be seen to be an accomplishment only by believers.

I think I have said enough to indicate that the methodology practiced in economics is what I have been calling Conventionalism. The firmly established dominance of mathematical economics is the most convincing evidence. Form is more important than substance and logical validity by itself is considered more important than difficult questions of empirical relevance. Today if you wish to show you are a ‘knower’, you had better express your thoughts using mathematics. Make sure you have used only acceptable techniques of analysis. And, if you want tenure or promotion, you would be wise to try to publish your papers in journals with status, that is in those that specialize in mathematical economics.

But most important, never be caught worrying about the truth of your analytical models or how you might learn whether your model is actually true or false.

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*Note*

* This is a revised version of a paper delivered during a ‘debate’ with Donald McCloskey at Laval University in March 1985 and subsequently published as ‘Economic Methodology: Theory and Practice’ in *La production des connaissances scientifiques de l'administration/The Generation of Scientific Administrative Knowledge* edited by Michel Audet and Jean-Louis Malouin (Quebec, Canada: Les Presses de l'Universite Laval). It is republished here with the permission of Les Presses de l'Universite Laval.
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