Time, Knowledge, and Ignorance, and the Subversion of Economic Reason

When I accepted your invitation to address you in celebration of the scholarly contributions of Professor Franz I assumed, all too rashly perhaps, that what I have written on the subjects in my title might be of passing interest. Professor Mason suggested that I might have some new, or some newly ordered, light to throw on them. The subject I have chosen has certainly not diminished in importance in my thinking. At this time, when economics as an intellectual discipline is more than ever unsure of its way and even of its purpose, an attempt to sort out the methodological and substantive scope of our subject on these levels is urgently needed.[1]

I shall conclude, moreover, that our subject needs to give more urgent attention to the importance of what I shall call *real historical time*, as distinct from the *logical time* that has substantially engaged us. In doing so, my concern for historical time converges with the discipline of history whose province Professor Franz's distinguished scholarship has graced. I shall sketch all too briefly, then, what I see as some of the respects in which economics in particular, and no doubt the intellectual enterprise more generally, might address the seemingly unresolvable questions of time, knowledge, and ignorance.

I should say at the beginning that I have deliberately intended more than one frame of reference in my title. The questions of time and ignorance lie at the heart of my critique of the scope and practice of economic reasoning. But when I speak of the subversion of economic reason I want to expand my critique to what I see, also, as a principal respect in which economists have truncated their discipline in their attempts to escape from the logical pressures of real time and the absence of knowledge. They have done that by inventing a most damaging fiction. That is the fiction that gained currency as "the rational economic man." Abetted by the assumptions of the autonomy and omniscience of the individual, economics aspired to positivistic-scientific competence and surrendered interest in, or concern about, ethical desiderata.

Economic reason has been subverted, then, on the twofold counts of its failure to understand the true possibilities of knowledge or, as I shall refer

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to it, *un*knowledge, and the failure to understand that ends, and the ethical complexes that define the ends, are important.[2] Economics should never have been allowed to become, in the words of Lionel Robbins, the study of the allocation to competing ends of "scarce means which have alternative uses."[3] From that perspective, a false and damaging assumption shaped the methodological preoccupation of the subject. It was recognized that educated opinion could contemplate both the normative and the positive. But so far as economic reasoning was concerned, investigation, with its hypothesis invention and empirical testing, should be confined, it was claimed, to the positive. Robbins went on to claim, in a work that has had considerable influence, that economics "is neutral as between ends.... It is incapable of deciding as between the desirability of different ends. It is fundamentally distinct from Ethics."[4]

Let me address, then, three principal issues: First, the question of the ethical content of economic reasoning, or the preoccupation or otherwise of economists with the bequest from ethical philosophy; second, the manner in which theories of economic action have been grounded in postulates that evade the issues of both the ends-means relation and the disturbing realities of time and ignorance; and third, the subversion of economic reason by attempts to transmute ignorance into knowledge.

The Ends-Means Relation and Ethical Criteria

I shall confine my observations on the ends-means relation and the question of ethical criteria to only three points. I shall refer to the question of facticity and the status of the facts with which we deal, the nature of behavior criteria that we might embrace in the light of our perception of the facts, and two examples by way of illustration. First, then, the facts.

Economists have taken shelter in the leaky refuge of the normative-positive distinction. The facts, it has been supposed, are simply there, and they can be dealt with in positive-scientific fashion. Sadly, the false security which that shelter offered has beguiled what has emerged, somewhat shakily in recent times and without any secure direction, as "Christian economics," or economics in Christian perspective. The widely canvassed normative-positive distinction needs abandonment once and for all, certainly by those whose scholarship aspires to grounding in Christian-theological thought forms. The ends are not irrelevant. The means are not paramount. And the ends-means relation needs more robust attention and consideration. Economics is not, and should not be imagined to be, a value-free inquiry.

We can illustrate the point at this stage very briefly. Consider the question of facticity, or what it is, in other words, that gives a fact its factness. Now from the point of view of Christian epistemology, we are bound to say that there are no brute facts. We do not need to investigate the Christian theory of knowledge at all deeply in order to claim that all of the facts are God's facts, and that they are what they are, and they exist in the constellations they assume, because of the place they occupy in the plan of God. All of the facts are preinterpreted by God's establishment of them, by the fact that God thought them before the foundation of the world. The task of Christian scholarship, as a result, is to achieve a *re*interpretation of God's *pre*interpretation of what we observe as factual reality. Every fact, by reason of God's action, is to be Christologically interpreted.

There are, we can say, no brute facts that constitute ultimate epistemological data. What that amounts to is that it is the meaning of the fact that establishes its factness, and the fact is what it is because of the place it occupies in its relevant scheme of explanation. The economist, then, no less than his colleagues in other disciplines, is under obligation to see the relevance to his scholarship of the meaning of factness and, as I am now arguing, the ethical dimension of fact-connotation and denotation.

I take only one example from the Scriptures to illustrate the point. The Scriptures do not present us with a bare fact of the atonement. At the same time as they present us with the death of Christ, they present us with an explanation of the atonement. The fact of the death of Christ is what it is because it has the meaning it has. There is, in that important respect, not a common ground of factness as both the believer and the unbeliever look at the atonement. One person looks at the death of Christ and sees an impostor suffering the penalty that the law administered. Another person looks at the same empirical reality and sees the Son of God dying as the substitute for sinners. In that respect, no common factness exists for the respective observers.

The same applies to all of what we contemplate as the fact situations. If we are to look at the world in the light of the Scriptures, our task, at the beginning of our investigative journey, is to think God's thoughts after him in the description of the reality complex with which we are dealing. For example, the economist will not be interested in a five percent or ten percent unemployment statistic as a brute fact. He will, at the very beginning of things, ask what unemployment means as God, whose works of providence govern the world, understands it. That, of course, should present the entire research enterprise in a markedly different light from that in which the unbelieving scholar sees it.

Consider, then, the economist's pretheoretical commitment, or his presuppositional foundation. What, in the light of his evaluation of the fact situation, is to be said of the ethical criteria in terms of which action or policy decision is to be taken? Behavior might proceed in terms, firstly, of consequentialist criteria. That is to say, the rightness or the goodness of action is to be evaluated in terms of the ends or results to which it leads. Contemplated actions look, in that manner, to the achievable end results, and the scheme of things can then be said to be teleological.

Economic reasoning, as it matured through its classical and neoclassical incarnations in the nineteenth and into the twentieth centuries, has been heavily consequentialist or teleological. Behavior and decisions were to be evaluated, it was claimed, in terms of their ability to contribute to the maximization of individual satisfaction or, as it was called, utility. In the more highly developed expressions of the theory, that utility maximization was understood to proceed against the background of preference orderings, ordinal utility having replaced cardinal utility, and maximands were carefully described as subject to constraints. But in it all, the individual was autonomous and, as we shall see, omniscient.

The alternative ethical criterion we refer to as deontological. That means that the criteria are what they are because the formulation of them involves a sense of duty or obligation. The work of economists has not in general been influenced in that direction. Perhaps a slightly different statement of the issues will be valuable by way of clarification.

In my recent *Economics and Ethics* I drew attention to what I called several dichotomies in ethico-economic argument. I shall refer to them again in what follows. The economist's work should be cognizant, I suggested, of the dichotomy of *individuality and solidarity,* that of *deontological and consequentialist criteria,* that of *entitlement and contribution,* as that is relevant to the production and distribution of what the economy produces, and that of *static and iterative criteria,* meaning the need to reevaluate policy action in the light of unfolding developments in the economy. But I referred also to what I regard as of paramount importance, the dichotomy between *Immanentistic* and *Transcendental Standpoints*.[5]

An immanentistic standpoint is one that allows its criteria to be determined by intra-mundane causal forces, or, that is, by considerations of social, cultural, or historical criteria, interpreted as autonomous, or determined by individual

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excogitation. A familiar form of what I have called an immanentistic rationalist criterion derives from Kant's *categorical imperative.* One should act in such a way, that imperative says, that he would be prepared to have that action adopted as a universal law. Without taking that line of discussion further, we can set against it what I have called a *transcendentalist* standpoint. Such a standpoint envisages the determination of criteria by considerations that emanate, not from assumedly autonomous human thought, but from an extra-mundane source. I refer, of course, to what has been revealed to us as the law of God, the cognizance of which is grounded in the *sensus deitatis* from which the human consciousness has no escape.

If time and space permitted, it would be a valuable exercise to bring the matter of ethical criteria, as they can be seen in a Christian-theological perspective, into closer alignment with economists' traditional concerns. But I must leave that as an undeveloped challenge at this time. It will be useful, however, to make just two observations on what is involved.

I take, first, a rather stark example of the ways in which economists have turned their backs on the possibility of any extra-mundane relevance of their work. The eminent Cambridge economist, D.G. Champernowne, at the beginning of his *Uncertainty and Estimation in Economics,* discusses the meaning of facts and what he calls the "irrelevance" between independent events. He does that in order to state that his "irrelevance" is "about the most fundamental concept in the whole theory of probability." I shall return to the concept of probability and I shall argue for its substantial irrelevance to economics. But for the present I want to take note of Champernowne's argument in relation to it. He goes on to illustrate his point in a startling fashion by stating that "whether Christ ascended to heaven is irrelevant to whether this fair coin will come down heads or tails."[6]

Now such a statement may in itself appear minute and trivial, and barely adequate to bear the weight we might place upon it. But on the contrary, the appearance of triviality brings into focus the underlying postulates we are concerned with. For if, as I have argued already, every fact in the universe must be Christologically interpreted, the question now before us is rescued from the frivolous by the enormity of its potential relevance. To press the issue, is it of any significance to say that the apparently random outcome of tossing a coin can have any relation to the work of Christ?

If we answer our question in the negative, we would be saying, contrary to the underlying postulate of Christian thought, that we had discovered one fact situation to which the work of Christ had no relevance. Our basic postulate regarding facticity and the consequent possibility of knowledge would have been punctured. If there is one point in the phenomenal universe at which the work of Christ is acknowledged not to have relevance, then conceivably any number of such points are discoverable. The question is then presented of where in fact the cosmic significance of Christ begins to take effect. If the work of Christ is irrelevant to any fact, it is conceivably irrelevant to all.

In the case we have supposed, we would be saying that there existed, or that there could exist, in the universe a fact situation, seemingly inconsequential though it may be, which God had not ordered and of which he accordingly had no anterior awareness. In that case God would have to wait to discover an intra-mundane event. We would thereby destroy our basic postulate that the facts are what they are because God thought them before the foundation of the world. Moreover, it would be taxing credulity to imagine that the work of Christ is irrelevant to the tossing of Champernowne's coin. For who is to say, in the interdependent and causal nexus of events, what issues of larger enormity might follow from it?

Leaving aside for the moment that question of facticity, I take as a final example of the economist's concern for the ethical dimension of reality what I have referred to as macromorality. The relevant point can be made briefly by noting an implication of what I mentioned a moment ago as the dichotomies between individuality and solidarity, and that between entitlement and contribution. I intend by those dichotomies to say that an ethical dimension attaches to the responsibilities we assume, and to the schemes we adopt, for the morally acceptable distribution of what it is the nation produces. That takes up the question of the extent to which we envisage a coordination between the individual's entitlement to certain economic benefits and his obligation to contribute to economic production. We are individuals and we hold to the sanctity of individuality, but we live as individuals in solidarity and in community with others.

We may well conclude, on grounds of adopted ethico-moral criteria, that entitlement should be in some way suspended on contribution. Economic work and economic production, that is, should go along with the expectation of economic benefits. But what I am now referring to as a question of macromorality states that if individuals are required to work, then work must be available for them to do. And we can envisage that there may well be conditions in which, in the context of the dynamics of fluctuating, disequilibrating economic forces, work is not readily available for people to do. In that case, I suggest, an ethical responsibility rests on responsible economic policymakers to pursue those lines of action which give reason to believe that work is made available. By saying that, I am not necessarily arguing for a large and overly-ambitious government sector in the economy. Decisions that might be made on that point rest on any number of grounds that I am not now addressing.

The Economics of Market Activity

I have already implied a good deal of what needs to be said about the conduct of market activity as economists have traditionally envisaged it. Since the time of Adam Smith and his "invisible hand," or his conception of freely functioning market activity, the notion of economically effective "self-interest" has been prominent. His conclusion that we don't get our dinner "from the benevolence of the butcher, the brewer, or the baker...but from their regard to their own interest" is well-known.[7] Adam Smith imagined that if all market participants acted in their own best interests, the hidden hand of competitive market forces would naturally conduce to the maximum attainable social benefit. At that point the notion of automatic harmonies entered economic thought, and it was developed by the classical economists, Ricardo, James Mill, and Say, to imply the automatic full employment of labor and other economic resources.

The story from that point on is both long and familiar. For our present purposes, it came to expression most prominently in the conception of the "rational economic man." What can be said about this fictitious individual follows from what we have already observed as his commitment to utilitarian, consequentialist, teleological criteria of action and economic behavior. As the theory developed to its present status, the individual has been assumed to come to the market place with well-specified preference orderings or utility objectives, to be himself autonomously defined, and quite untouched by the changing market and social forces that swirled around him. The rational economic man was not in any sense constituted by the market process in which he participated. He was exogenous from it, autonomous, and in him the Kantian and the Enlightenment assumptions of individual autonomy were apotheosized. The individual is assumed in the traditional theory to come to the market with full knowledge of all choice possibilities and of all relevant economic forces and issues. The market-participating individual is assumed to be autonomous, in that all of his objectives, endowments, tastes, skills, and constraints are, as has been said, completely specified.

Terence Hutchison has made the point we now have in view by observing that

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"the most criticizable and unrealistic feature of 'The Economic Man' is not his materialism, or selfishness.... His most fatal limitation, from the point of view of real-world applicability, is his omniscience."[8] And Bowles and Gintis have perceptively observed regarding market participation that "Agents are not 'endowed' with preferences that they take to market. Rather, the transactions are constitutive of economic agents; agents make exchanges, but exchanges also make agents."[9]

I pause briefly to underline the importance to the traditional neoclassical economics of the assumption of perfect knowledge or full information. Hutchison has recently addressed the question at length in his rejoinder to Hausman's attempt to insist on the validity and necessity of the assumption.[10] Hausman enters a defense of "the old-fashioned view" that "the method of economics is deductive and confidence in the implications of economics derives from confidence in its axioms rather than from testing their implications." But Hutchison rejoins that the "old-fashioned view" and the "traditional wisdom" is hopelessly locked to the "necessity for a fundamental assumption of perfect knowledge which is, in itself, exceedingly unrealistic."[11]

The importance, and even the vital role, of the perfect information postulate in orthodox equilibrium theorizing is, of course, widely recognized. The contemporary economist, Joseph Stiglitz, has referred to it as "the Achilles heel of equilibrium theorizing."[12] And economics more generally, certainly in its highbrow theorizing, is heavily dependent on the full knowledge postulate. That applies even to those parts of economic theorizing that I shall refer to later as pseudo-temporal dynamics. In that scheme of things an attempt has been made to escape from the strictures of completely static analysis, but the failure to deal adequately with real historical time reduces the analysis to merely the stochastic analogue of the classical perfect knowledge assumption. I am reminded of the comment by the Swedish economist, Bertil Ohlin, in his paper in which he took note of the advice that Wicksell gave in a speech on the occasion of his 70th birthday dinner. "[Wicksell's] advice turned out to be: Study history, study the development of economic life."[13] Such advice, of course, if analytical economists were to take it seriously, would connect the best work in our discipline with the agenda that Professor Franz so ably cultivated.

The "rational economic man" who has informed economic argument was fathered by the Kantian assumption of the autonomous individual, and that critical assumption of autonomy influenced most of what emerged as economic analysis in the century that followed. It was to that fictitious individual that the nascent economics discipline turned for its explanatory principles, as it was nurtured by the bequest of the eighteenth century Enlightenment that Kant culminated and by the laissez faire assumptions that followed from it. It is important for the Christian thinker, and in particular for the Christian economist, to understand that that invention was accompanied by, and was essentially an expression of, a widening theological Arminianism that also projected, from its unique level of influence, the autonomy of the individual.

Alfred Marshall, the principal architect of English language neoclassical economics, had been interested in philosophy early in his career, and in that connection had visited Germany where he studied Kant. Marshall has referred to "Kant my guide, the only man I ever worshipped."[14] Marshall, we shall see in a moment, was acutely conscious of "the great importance of the element of time" in economics.[15] He observed that "the element of time [was] the source of many of the greatest difficulties in economics."[16] But in his developed analytic argument he abstracted from those difficulties by making use of his well known device of the representative firm.[17] In that connection he invoked the idea of the "trees in the forest" which, as they grew and died and were replaced, allowed him to speak of an average size. The notion of "trees in the forest," it is worthy of note, also came from Kant.[18] The competition of trees for air and sunlight contributed to their growth, and that provided for Kant the analogy that explained his vision of society and his conception of antagonism as the cause of human progress. Without competition, the trees would grow feeble, and similarly, without antagonisms society would tend to a simple pastoral life.

Time, Uncertainty, and Ignorance

I turn, finally, to the question of time. This requires us to consider the uncertainty that the passing of time bequeaths, the ignorance in the context of which, as a result, economic decisions have to be made and actions taken, and the ways in which economic argument has pretended to do away with the disturbing implications of time. At this point we encounter again the distinction that has to be made between *logical time* as economic analysis has traditionally employed it, and *historical time* that speaks to real-world affairs, decisions, and responsibilities.

The human imprisonment in time has engaged the philosophic mind, though it is commonplace to say that its riddles and mysteries have scorned the attempts to unlock them. Time perplexes the human condition, and our existence is hostage to time. We do not need to wrestle with Augustine's asking what God was doing before he created time. For our present purposes we need only to recognize that time, as we say also of space, is a created entity. Recognizing that human experience is, in the very nature of things, temporal experience, economists, from virtually the point at which the subject became an autonomous discipline, have evaded the disrupting influence of time by assuming it away. Economics quickly became what was essentially a timeless body of thought.

Marshall, we have seen, recognized the difficulty that a genuine accounting for time introduced to economic argument. He went on to say, with relation to market activity, that analytical description was beset by the fact that

> "we cannot foresee the future perfectly. The unexpected may happen; and the existing tendencies may be modified before they have had time to accomplish what appears now to be their full and complete work. The fact that the general conditions of life are not stationary is the source of many of the difficulties that are met with in applying economic doctrines to practical problems."[19]

I have said that economic argument has assumed away these difficulties by concentrating on what has been essentially a timeless analysis. It has been for the main part static, and it has assumed that all of the givens remain unchanged and unchangeable during the conduct of the analysis. The upshot of the argument has been to describe what would be the outcome of the relations between determining variables if, as is generally supposed, the variables and the structure of relations between them were to remain as initially defined. In that way it was possible, it has been imagined, to describe what would be attainable as the state of rest, or the state of equilibrium, to which the outcome would resolve. Indeed, the notion of equilibrium became determinatively central to economic argument and what became known as general equilibrium theory substantially filled out the analysts' horizons. But of course, equilibrium is not, and was not intended to be, a characteristic of the real world. The equilibrium that economic analysis envisaged was always a characteristic of the explanatory model that was employed, not a characteristic of the world. That distinction, unfortunately, was not always borne clearly in mind in the economists' attempted move from model building to real-world policy prescription.

Time, as economists have traditionally reckoned with it, has been what I have referred to as *logical time.* Take, for example, the description of an economy by a

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system of differential equations. The differential equation, it may be supposed, describes what is understood to happen over time as the system unfolds. But the problem is that such a scheme gives rise only to what I have called "pseudo-temporal dynamics."[20] That is because the structure of the differential equation system is itself taken to be independent of time, and time is therefore nothing more than a serially-dated variable. John Hicks had suggested that neoclassical economics could escape from the constraints of static analysis and could genuinely explain causation over time if it employed a scheme of analysis in which every variable was dated.[21] But that scheme failed because it had no way of reckoning with the reality that the structures of causal complexes themselves change over time.

Real historical time is unidirectional. It passes. And economic decisions are made and actions are taken at unique points in real time. Economic decisions are in the nature of what we should call unique decisions. They are made at unique points in time, by individuals whose epistemic status is uniquely defined, in a context which is uniquely characterized as to institutional structures, endowments, and possibilities. At the unique decision point in economic time, the decision-making individual is in possession of knowledge that is unique to that time-date. His epistemic structure is different on Thursday, for example, from what it had been on the preceding Monday, because Thursday has a different history than Monday.

George Shackle has probed the meaning for economics of time's onward movement and has reflected on "the unique nature of the human existence, the human being's endless journey into the void of time."[22] And Keynes observed that when we look into the future and consider its possible bequests, we are forced to conclude that "we simply do not know."[23] But economic theory has invented subterfuges to suppress and conceal that reality, to lull our disquietude sufficiently to allow us to imagine that the future could be described in terms that could corral the disturbing influences. History, however, matters. We cannot assume it away. We must be forever looking into it for its possible lessons and indications of what could conceivably happen. It provides us with bases for imaginative contemplation of possible futures. But the remark of Marshall haunts us, and we know that "the unexpected may happen." And Keynes' dictum that "we simply do not know" disquiets us.

The reality that confronts us, and which presses upon us in unique ways as economists, is that at every time-date in real historical time the future is unknown. But more important than that, the future is not only unknown, it is unknowable. That, in essence, controverts what I discussed a little earlier as the reliance of traditional neoclassical economic theorizing on the full-information or perfect-knowledge assumption. When we look out into the future, we are simply ignorant of what will come to pass. In the light of that, economics has invented its subterfuges that have purported to transmute ignorance into knowledge. The principal subterfuge that economists have employed, and which has found its way into social science discourse more generally, is that of the probability calculus. I shall conclude with some brief comments on it and shall suggest that it is substantially irrelevant to economic analysis.

The dissent from the relevance of probability has by now been widely recognized in the literature. Knight,[24] Keynes,[25] Hicks,[26] Shackle,[27] Davidson[28] and others have made important contributions. At issue are two separate distinctions, both of which should be noted carefully. First, a distinction is to be drawn between what can be referred to as risk, on the one hand, and genuine or residual uncertainty on the other. And secondly, a distinction exists between objective and subjective probability. For our present purposes we acknowledge that economics has frequently made use of subjectively assigned probabilities and has recognized that, in the nature of what has been perceived as economic reality, objective probabilities are not attainable. But whether the probability calculus is contemplated as established on objective or subjective bases, the critique I shall suggest applies to both forms. More fundamental at present is the distinction between risk and uncertainty.

I have frequently employed the terminology, "probabilistically reducible risk," meaning by that the suggestion in economic argument that the uncertainties inherent in the future can be abolished by assigning one or the other forms of probability distributions to future dated variables. The future is in that scheme of things understood to be describable in terms of random variables that are in turn describable, most usually, by subjectively assigned probability distributions.

Now it is a matter of elementary statistical mathematics to list the conditions that must be satisfied in order to enable variables to be described as probabilistically defined. I have discussed that question as it applies to economics in another place and I pass over it now.[29] I pass over also the interesting philosophic and logical debates regarding differing forms and descriptions of probability. I do, however, make the claim that in whatever form the probability calculus is thought to be relevant to, and usable in, economics, the notion of frequency, replicability, or repetitiveness is central to the argument.

Now consider what is being done when, as a basis for decision making, future-dated variables are assumed to be definable by a probability distribution. That, I suggest, is itself an assumption of knowledge. I have said that the future is not only unknown, but is unknowable. When we look out on the future, we are in a state of ignorance. Knowledge, then, is the antithesis of ignorance. And if we make the claim that we know the form of the probability distribution that describes the future, we are making a claim of knowledge. We have, therefore and to that extent, assumed away our ignorance. Or we have transmuted ignorance into knowledge. Or put in yet another way, we have thereby abolished the future, so far as its impact on our economic position and condition is concerned. The future has ceased to be relevant because we have thereby reduced it to the present by applying our subjectively accepted discount factors to the moments of the probability density functions, the pretense of which has beguiled us into thinking we have said all that needs to be said about the unknowable future.

I have suggested in other places certain paradigms of analysis that might replace the use of the probability calculus in a way that avoids the false assumption of knowledge I have just referred to.[30] In short, we can make the best use possible of the best and hopefully most relevant historical data we can amass. We must use our imagination as to what might occur and how our condition will be affected if we take this action or some other. We must do our best to contemplate how the future may be determined, not only by what we do, but by what a thousand other decision makers simultaneously do. For what we realize is that the future is not something that is out there waiting to be discovered. Our decisions are history-creating decisions. Decision making is always imaginative, involving the imagination of what could conceivably occur, and we may contemplate the extent to which, following our action, we would be surprised if such and such an outcome were to result. But we do not make any assumption that we know the future, not even that we know it as probabilistically defined. For the latter is itself, I have argued, an assumption of knowledge that flies in the face of ignorance that logically refuses to be transmuted.

One final thing is to be said. I make the point by recalling what was said at the beginning. As Christian thinkers we know that only that is possible which God has already thought. Any assumption to the contrary is tantamount to the same kind of assumption of autonomy as I have identi-

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fied as the leading error of non-Christian economic reasoning. We cannot know the future, but we know that our Father in heaven knows, because he has already ordained it for our good and for his glory.

ENDNOTES

1 These issues are addressed more fully in Vickers (1994, 1995).
2 See Vickers (1997).
3 See Robbins (1935), p. 16.
4 *Ibid*., pp. 147–48, 151–52.
5 See Vickers (1997), pp. 10–14.
6 Champernowne (1969), Vol.1, p. 18.
7 Smith (1937), p. 14.
8 Hutchison (1984), pp. 2–3.
9 Bowles and Gintis (1993), p. 8.
10 See Hutchison (1988) and Hausman (1992).
11 Hutchison (1988), p. 43.
12 Stiglitz (1994), p. x.
13 Ohlin (1926).
14 Keynes (1956), p. 48.
15 Marshall (1920), p. 347.
16 *Ibid*., p. 109.
17 *Ibid*., p. 317.
18 Kant (1991), p. 46.
19 Marshall (1920), p. 347.
20 Vickers (1994), p. 116.
21 Hicks (1946), p. 115.
22 Shackle (1967), p. 149.
23 Keynes (1947), p. 185.
24 Knight (1921). But Knight's analysis was marred by his dependence on subjective probability.
25 Keynes (1936, 1947).
26 Hicks (1976, 1979).
27 Shackle (1968) and Shackle (1972).
28 Davidson (1991).
29 See Vickers (1994), p. 82.
30 See *Ibid.*, passim.

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