we live. They motivate the exercise, but it will only be successful as a theological exercise if it keeps in close touch with the general body of theological thinking. Only in that way will we avoid the mistakes of the later eighteenth century. I value natural theology, not just as an apologetic strategy nor as a preliminary warming-up exercise prior to the real thinking, but as a modest but indispensable component in the great search for the knowledge of God and of his ways with his creation.

3

What has theology to learn from scientific methodology?

Nancey Murphy

Introduction

I believe it is fair to say that the Christian tradition is still trying to recover from the advent of modern science. Popular views of the warfare between science and religion stress clashes between specific scientific theories (Copernicus' or Darwin's) and specific Christian doctrines. However, I believe that science has presented a much more serious challenge to theology *indirectly* through changes in our understanding of knowledge. The development of scientific method at the beginning of the modern period had dramatic effects on epistemology, and theology's inability to account for itself in the terms of that new epistemology has been devastating. Consequently, the theology of the modern period has been much preoccupied with the question of theological method. Furthermore, there may be no intellectual discipline wherein one finds less agreement on how to proceed.

So I am suggesting that modern empiricist accounts of knowledge have created a crisis for theology, a crisis yet to be resolved. There is, however, good news. The inability of theologians to give an account of theological reasoning that squares with modern canons of rationality has been as much the fault of inadequate theories of knowledge as the fault of theology. It is only within the past thirty years that theories of scientific reasoning have become sophisticated enough to make it meaningful to ask whether theology can measure up to them. I claim that, given an adequate account of scientific reasoning, it can be shown that theological reasoning does, or at least could, meet exactly the same criteria. If I can make my case,

this will be a very important result, both for apologetic purposes and for the sake of providing some stimulus and guidance for discussions of theological method.

It is not possible to make a thorough assessment here of the possibilities for a scientific theology — I shall only be able to sketch the outlines of such a proposal in this paper.[1] I begin with a brief account of recent developments in epistemology and philosophy of science, and then address some of the thornier issues involved in showing that theology fits these current canons of reasoning.

Recent advances in epistemology

The most significant recent development in theory of knowledge is the change from foundationalism to holism. Foundationalism is the view that if knowledge is to be knowledge at all it must be justified on the basis of assertions that cannot themselves be called into question lest there be an infinite regress of justifications. Different candidates have been proposed for a class of such "basic beliefs", beginning with Descartes's clear and distinct intuitions.

In philosophy of science, the foundational assertions were first taken to be descriptions of sense-data. However, philosophers quickly concluded that foundationalism will not work in science. If one begins with incorrigible sense-data, the logical gulf between the foundation and the next storey of the structure (knowledge of material objects) is too broad to span. If instead one begins at a more common-sense level with ordinary scientific facts, then the indubitability required by the classical foundationalist doctrine has already been lost. The neopositivist philosophers of science were willing to live with this chastened version of foundationalism. Karl Popper described facts in science as being more like pilings driven into a swamp than like a solid foundation.[2]

Ronald Thiemann has provided an interesting analysis of how foundationalism affected theology in the modern period, looking specifically at the way Scripture has been pressed into service to provide the foundation, a use for which many have found it ill-

1. For a more adequate account, see my *Theology in the Age of Scientific Reasoning* (Ithaca and London: Cornell University Press, 1990).
2. Karl Popper, *The Logic of Scientific Discovery* (New York: Harper, 1965).

suited.[3] In fact, I believe one could do a tidy job of summing up the history of modern theology by looking at answers to three questions. First, what proposals have been made regarding foundations for religious knowledge? Secondly, what are the problems with each of these proposals, and thirdly, in light of failure to find an adequate foundation, what moves have been made to side-step the whole issue?

Looking at the history in these terms, modern theologians fall roughly into three camps: those whose foundation is biblical, those whose foundation is experiential, and those who claim that theology does not belong in the category of knowledge at all. For the biblicists, the question always arises: how do you know that what you take to be revelation really is? Apologists from Locke to American Fundamentalists have turned to miracles and fulfilled prophecies. Karl Barth simply said (if I may be permitted a caricature), "don't ask".

The problem for the experientialists has generally been much like that of the sense-dataists in science: for the positivists it was how to make the leap from private, inner experience to a real *world*, external to the perceiver. For experientialists in theology, it is the problem of how to make the leap from private, inner experience to a real *God*, external to the believer.

The change from foundationalism to holism can be expressed as a change in dominant metaphors for thinking about knowledge. In his landmark article "Two dogmas of empiricism" Willard Quine proposed a new metaphor for understanding knowledge to replace the "building" images of foundationalism.[4] He suggested that the structure of knowledge is more like a web or net, where beliefs likely to be changed in the face of "recalcitrant experience" are near the edges; theoretical and logical beliefs, nearer the centre. When problems arise, in the form of inconsistency, there are usually any number of changes that can be made. These decisions will generally be made on a pragmatic basis: how best to restore consistency without disturbing other regions of the network.

3. Ronald Thiemann, *Revelation and Theology* (University of Notre Dame Press, 1985).
4. Willard Quine, *Philosophical Review* 40 (1951) pp. 20-43. Reprinted in *From a Logical Point of View* (Cambridge: Harvard University Press, 1953) pp. 20-46.

Holist accounts of scientific reasoning

Quine's image of knowledge as a net or web is suggestive, but perhaps it leaves too much to the imagination. For a more manageable account of holist epistemology, let us turn to philosophy of science. Thomas Kuhn's analysis of paradigm change is the best-known of holist accounts of science.[5] However, the work of a less-known philosopher, Imre Lakatos, turns out to be clearer and easier to apply to the theological task.

For Lakatos, the units of appraisal in science are not paradigms, but "research programmes". These are vast networks of theories and data, which are unified by a central theory, called the "hard core", since it is the one part of the network not subject to change over time. Between the core theory and the data lies a belt of "auxiliary hypotheses". These include lower-level theories that apply the core theory in various domains, theories of instrumentation, and initial conditions. Lakatos called this the protective belt because scientists will make changes here in order to restore consistency between the core theory and anomalous data, thus protecting the core from falsification. Thus it is more accurate to say that a research programme is an evolving series of theoretical networks, where the core theory stays the same and the belt of auxiliary hypotheses is modified and amplified to take account of an increasing domain of data.[6]

How does this holist view of the structure of scientific knowledge differ from foundationalism? First, it deals with larger structures of scientific thought. Quine would say that it is the whole of our belief system that faces the tribunal of experience. Lakatos and other current philosophers of science concentrate on the testing of large networks of theory. In either case, this is much different from the sentence-by-sentence justification seen in most foundationalist accounts.

5. See Thomas Kuhn, *The Structure of Scientific Revolutions,* second edition (University of Chicago Press, 1970).
6. See Imre Lakatos, "Falsification and the methodology of scientific research programmes" in *The Methodology of Scientific Research Programmes: Philosophical Papers* 1, John Worrall and Gregory Currie, editors (Cambridge University Press, 1978) pp. 8-101.

Secondly, and this cuts more to the heart of foundationalism, holists deny the epistemic independence of the foundation from that which it supports. They claim that facts are theory dependent in at least three senses: first, the meaning of factual statements is partially dependent on theory. So, for example, measurements of mass may stay the same in the change from Newtonian to relativistic physics, but the very meaning of the word 'mass' has changed. Secondly, holists recognise that sometimes the weight of theory will lead to the rejection of experimental results.

Finally, theory is almost always involved in the production of experimental results. A very simple example: measurement of temperature with a thermometer assumes some understanding of the thermometric properties of matter — the rising and falling of a column of mercury would be meaningless without the association of temperature with some other directly measurable quantity. These associations, historically empirical, now increasingly theoretical, which are employed in constructing the experimental apparatus and in justifying the use of data thereby produced, are called theories of instrumentation.

The consequence of this dialectical relation between theory and data is that the justification of a research programme is always somewhat circular. One accepts the research programme as a whole because it is better corroborated by its facts than the competitors are by their own somewhat different sets of data, but the facts themselves have been produced, recognised, and interpreted with the aid of theories ingredient in the research programme, and can only be accepted as facts if these theories are assumed to be true. Recognition of this factor in scientific knowledge will turn out to be quite important when we raise the question of the confirmation of theories in theology.

To see how Lakatos' description of a research programme fits theology we need to consider four elements: the hard core, the auxiliary hypotheses, the data, and the aforementioned theories of instrumentation.

Core theories

The hard core of a scientific research programme is a theory so central to the entire project that to give it up is to give up the entire programme. It makes a claim about the general character of the aspect of reality under investigation; in so doing it ties together all of the more specialised theories within the programme. Lakatos says that the hard core of a scientific research programme is often so abstract as to count as metaphysical. A good example of this is Descartes's corpuscular theory of matter, which served as the hard core for early modern physics.

The hard core of a research programme in systematic or doctrinal theology, therefore, will most likely be one's non-negotiable and most general understanding of God and of God's relation to the created order. The doctrine of the Trinity functions nicely as a core theory for classical orthodoxy, since all of the rest of the Christian doctrines can be unified by means of their direct or indirect relation to one of the persons of the Trinity.

There are, of course, other starting points for systematic theology. Wolfhart Pannenberg has agreed that the statement "The God of Jesus Christ is the All-Determining Reality" functions as the core of his developing programme. "God is the God of the oppressed" might be seen as the core of Latin-American liberation theology. *Sola gratia* must figure as the organising principle of Martin Luther's vision of Christianity; and likewise the sovereignty of God is a unifying theme for the Reformed tradition.

Auxiliary hypotheses

The rest of the theories in a scientific research programme are called auxiliary hypotheses, and they bear most of the explicit theoretical content of the programme. The auxiliary hypotheses in systematic theology, then, will be the remainder of the Christian doctrines: theories of the Church, of the person and work of Christ, and so on. These doctrines are elaborated differently in different programmes. The differences will be due, in large part, to differences in the hard cores of the programmes. Consider two versions of the doctrine of the work of Christ: substitutionary atonement depends on the doctrine of the divinity of Christ, which is contained implicitly in a

triune conception of the nature of God; the liberationists' very different account of the work of Christ is equally dependent on their core assumption about the character and purposes of God.

Data for theology

The objection critics are most likely to raise to the project of likening theology to science is to argue that there is no parallel to scientific data. Theologians might reply that the scriptures are treated as data by most theologians, and that there are other sources of data from history, from religious experience, and perhaps others as well.

So the problem is not the absence of anything that *functions* for the theologian as the data do for scientists; but it may be instead that scriptural texts and religious experiences seem *defective* when compared to scientific data.

Scripture

The problem with taking Scripture as a source of data for theology is this: why should these texts be taken to provide reliable evidence regarding the nature and purposes of God rather than evidence merely of Israel's and the early Church's beliefs about God? To meet this objection we need to return to the concept from philosophy of science of theories of instrumentation. Just as the kinetic theory provides justification for taking thermometer readings as a genuine source of knowledge about certain physical processes, we have in theology a theory (or doctrine) of revelation, which serves as a theoretical justification for taking the scriptures as a reliable source of knowledge about God. So, in theology, in place of theories of instrumentation, we incorporate theories of *interpretation*. In particular, we have theories about the nature of the texts that tell us how to make proper use of them in our science of God. Note that different theological programmes with different understandings of the *nature* of revelation will employ the texts differently. If revelation means divine dictation, we take our 'scripture readings' differently than we do if revelation is through salvation history, or through personal encounter with the Word. As David Kelsey has noted, the manner in which Scripture functions to authorise theological proposals is dependent upon a prior judgment about the

manner in which God is present to the community — "a single, synoptic, imaginative judgment" in which the theologian attempts to "catch up what Christianity is basically all about".[7]

Religious experience

A great deal more needs to be said about the use of Scripture as a source of data for theology — all the questions about interpretation and historical accuracy, and so forth. However, I shall not pursue these issues here. If we are looking for parallels between theology and science, the more interesting possibility for theological data is religious experience, since we tend to equate confirmation of theories with empirical or experiential confirmation.

There has been a long debate within Christianity regarding the evidential value of religious experience: do Christians' visions and other experiences provide genuine knowledge of God? In particular, can we learn anything new from these experiences, or do they inevitably only confirm the recipient's preconceptions (or biases) about God? In order to make clear the difference that recent philosophy of science makes to this debate, I shall summarise some older arguments against the evidential value of religious experience, and then show how the current developments described above provide answers to these objections.

One common objection is that religious experience is essentially private and subjective. It is contrasted with data for science, which are public and replicable and, in that sense, objective. Let us call this the subjectivity problem.

The second problem with religious experience is what I shall call the circularity problem. It was stated succinctly by Alasdair MacIntyre in a 1955 article entitled "Visions".[8] MacIntyre's argument can be summarised as follows: Visions are taken by the recipient to convey information about something other than the experience itself — in most traditions, about God. However, we could never know from any such experience that it had the character of being a message from God unless we already had knowledge of

God, and knowledge, as well, about how messages from God were to be identified. "The decisive evidence for the divine", he says, "would then be anterior to the experience and not derived from it, whereas what we are concerned with here is how far the experience itself can provide such evidence."[9] In other words, to argue from a religious experience to a claim about God is circular, since one needed to have knowledge beforehand that God exists, and also about how God communicates.

In addition, MacIntyre argues that it may be thought that to treat a vision as a sign of the invisible is to accept in the realm of religious belief a procedure we are accustomed to employ elsewhere. So, for example, we infer unseen fire from smoke, approaching trains from signals. But the case of religion is not the same. We can infer unseen fires from smoke because we have seen fires producing smoke in the past. But we have no experience of the causal connection between God and any visions God might produce.

Here is an example that nicely illustrates MacIntyre's worry. Catherine of Siena, a fourteenth-century mystic, called her book *The Dialogue* because in it she posed questions to God and then wrote (or recorded) long passages that were supposed to be God's replies. One of these replies is to a question about how to distinguish between experiences that come from God and those that do not:

> Now, dearest daughter ... I will say something about what you asked me concerning the sign I said I give the soul for discerning the visitations she may receive through visions or other consolations. I told you how she could discern whether or not these were from me. The sign is the gladness and hunger for virtue that remain in the soul after the visitation, especially if she is anointed with the virtue of true humility and set ablaze with divine charity.[10]

So Catherine would say that she can recognise when a religious experience is from God by these signs: if it is from God, it produces gladness, hunger for virtue, humility, and charity.

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7. David Kelsey, *The Uses of Scripture in Recent Theology* (Philadelphia: Fortress Press, 1975) p. 159.
8. In *New Essays in Philosophical Theology*, Antony Flew and Alasdair MacIntyre, editors (London: Macmillan, 1955) pp. 254-60.

9. *Ibid.* p. 256. MacIntyre's argument is expressed in terms of visions, but it would apply equally to other kinds of purported experiences from God.
10. Suzanne Noffke, translator and editor, *Catherine of Siena: The Dialogue* (New York: Paulist Press, 1980) p. 198.

Now, MacIntyre would ask Catherine: "How do you know that those are reliable signs?"

Catherine: "Because God told me so."

MacIntyre: "How do you know it was God who told you that?"

Catherine: "Well, the experience produced gladness, humility, charity."

So you see the problem.

The subjectivity and circularity problems reinforce one another. Some authors have pointed out that religious experience is nearly always interpreted in terms of the categories of the religion it is taken to confirm: Catholic Christians have experiences of Christ or the Virgin Mary; Protestants only of Christ; Hindus have experiences of Brahman, and so on. Or, to put this point more accurately, religious experiences are experienced as manifestations of phenomena appropriate to the recipient's belief system. Thus, there is no pure, objective religious experience prior to its interpretation in terms of the adherent's presupposed categories.[11] To state the objection baldly, the subjective biases of the recipient affect the experiences through and through, and thus they cannot provide any independent confirmation for the presupposed systems of belief.

Part of the answer to these objections is to note that MacIntyre's circularity charge is based on a foundationalist understanding of knowledge and, furthermore, would apply equally well to much reasoning in science.

An example from science that would be entirely analogous to the situation regarding religious knowledge, as MacIntyre understands it, is the following. Suppose one puts a closed container of gas over a bunsen burner. The container has a constant volume gas thermometer and a pressure gauge affixed. The result of the experiment is that as the temperature goes up, the pressure goes up as well. This experiment provides confirmation of Boyle's law: the pressure of a gas multiplied by its volume is equal to some constant times its temperature.

However, this same law is involved as a theory of instrumentation to validate the use of thermometer readings as reliable and

11. See, for example, Steven T. Katz, "Language, epistemology, and mysticism," in *Mysticism and Philosophical Analysis*, Steven T. Katz, editor (New York: Oxford University Press, 1978) pp. 22-74.

useful data for such purposes. So MacIntyre could make the same objection to this bit of scientific reasoning as he did in the imagined dialogue with Catherine: "You are claiming that thermometer readings are reliable signs of the temperature of the gas, and you are using those readings as evidence for the gas laws. But you cannot know that thermometers provide reliable measures of temperature unless you already accept Boyle's law. So the reasoning is circular. The experiment with the gas cannot provide any evidence for the law."

MacIntyre's imagined objections to both Catherine and to our example from science show that he is operating with a foundationalist theory of knowledge. He is assuming two things: first, that we only argue *from* experience *to* theory, and second, that *one* experience supports *one* theory. Thus, one experiment supports one theory (or law) in science; one vision supports the one simple theory that God exists.[12]

However, we have just seen that reasoning in science is much more complicated: we argue from a variety of experimental results to support a network of scientific theories. Some of those theories, in turn, give us grounds for regarding the experimental data as sound. To illustrate this, consider a more complete account of the relation between experimental measurement and theory regarding the expansion of gases. First, there exist a variety of procedures by which to measure temperature: the familiar mercury and alcohol thermometers, procedures based on the thermo-electric effect, changes in electrical resistance of material such as platinum, and others. The confidence we can place in any of these measuring techniques is based in part on the consistency of results obtained by the various methods.[13]

Secondly, the operation of each of these instruments is explained by, and thus validated in part by, the scientific theory. For example, Boyle's law is now explained by means of the kinetic theory of heat,

12. In fairness to MacIntyre, it is important to mention that MacIntyre's own recent works are some of the most interesting and valuable contributions to the recent epistemological revolution. See especially his *Whose Justice? Which Rationality?* (University of Notre Dame Press, 1988).

13. I wish to thank Jack Dodd and Lyndon Rogers for assistance in clarifying this example.

according to which gas pressure may be defined as momentum change in molecular impact with the walls of the container, and temperature is defined as the average molecular kinetic energy. The kinetic theory also partially explains the expansion of liquids when heated, and so stands behind the use of ordinary thermometers.

Thus, an entire network of theory, laws and experimental results is accepted as a whole because of its consistency and its explanatory power. There is always a degree of circular reasoning involved, but it might be called virtuous rather than vicious circularity because it is part of what is involved in showing the consistency of the entire network.

Theories of instrumentation in theology

Let us see what happens to MacIntyre's position if we apply a holist account of knowledge to theological reasoning. I claim, on the basis of an analogy with science, that we ought to expect to find vast networks of theological theories, where no single theory is supported by any single religious experience; instead, a variety of experiences contribute support to the whole network. Furthermore, we ought to expect there to be something that plays a role equivalent to theories of instrumentation in science, or to the theories of interpretation that we have seen to be required to validate the use of Scripture in theology.

Let us return to the example from Catherine of Siena. Catherine did not have an experience of God speaking to her out of the blue. She had a whole network of background theories about God, about Jesus Christ, about God's will for human life, and so forth. She also had a long history of previous experiences relating to God, as well as knowledge of others' experiences.

Of particular interest here is the set of criteria described above for recognising when she was dealing with God, and when not. Recall that her criteria are gladness and hunger for virtue that remain after the experience, growth in humility, and being set ablaze with charity toward others.

To investigate the value of such criteria, let us compare them with a proposal made by Teresa of Avila in her sixteenth-century

guide to the spiritual life, *The Interior Castle*.[14] The purpose of Teresa's book was to set out the stages her sisters should expect to go through in their relationship to God. Thus it was obviously necessary to explain how they were to tell if they were in communion with God, and if so, what God was doing "in their souls". Here is a passage in which Teresa is explaining how to recognise when one has reached the state of union with God in prayer:

> This union is above all earthly joys, above all delights, above all consolations, and still more than that... (p. 338).
> God so places himself in the interior of the soul that when it returns to itself it can in no way doubt that it was in God and God was in it. This truth remains with it so firmly that even though years go by without God's granting that favour again, the soul can neither forget nor doubt that it was in God and God was in it (p. 339).

If Teresa were familiar with modern theology, she might say that such an experience is self-authenticating — an experience such that the one who has it cannot doubt *that* the experience was and *what* it was. There have been assorted attempts to ground religious knowledge on self-authenticating experiences. Such moves are, rightly, I think, to be regarded with suspicion. The subjective certitude described here surely has value to the recipient, but has no *evidential* value, at least not for anyone else.

The difference between Teresa's and Catherine's criteria is that Catherine's judgment is based on the *connection* between the purported experience of God and other experiences — some at the same time and some later — and most important, to *observable* changes in the recipient's life. The one experience, taken to be an encounter with God, is validated by the way it fits into a network of other experiences or phenomena. Is it *accompanied* by gladness? Is it *followed* by greater humility? Is a felt increase in charity borne out in action in the days or weeks or years to come? Because of this last criterion, Catherine is not left to make a judgment alone; her

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[14] In *The Collected Works of St. Teresa of Avila* 2, Otilio Rodrigues and Kieran Kavanaugh, editors (Washington, DC: ICS Publications, 1980) pp. 261-499.

confessor and friends will be able to see the changes in her if the experience is valid, and will help her to judge its authenticity.

The significance of requiring an interconnected set of experiences and, especially, a publicly-observable criterion such as growth in charitable action, can be seen by considering the most prominent of the competing explanations for religious experiences. Catherine was most concerned that she not be misled by attributing to God experiences that were actually induced by the Devil. Teresa was apparently more worried by the possibility that the experiences were merely the product of the recipient's *imagination.* Modern investigators, similarly, will be most concerned by the possibility that religious experiences are merely psychological phenomena with no reference to a transcendent God. At first glance, such experiences can easily be explained psychologically. Religious people want to have experiences that affirm their beliefs. This desire is the cause of the experiences, whether directly and intentionally or, more likely, through a process of autosuggestion such that the experiences seem to come from an external source. Let us call this the self-inducement theory of religious experience.

Note that we are looking at a situation exactly parallel to one that arises in science. The value of empirical evidence for a research programme is called into question by showing that the same phenomena, if differently interpreted, serve equally to support a competing research programme. The self-inducement theory can be construed as an auxiliary hypothesis in a *functionalist* programme in the sociology or psychology of religion. In my judgment, one of the most important tasks for Christian apologists is to show that non-theistic programmes of this sort cannot do as good a job in accounting for religions experience as do theological programmes.

That Teresa was concerned about the self-inducement theory of religious experience is shown in the following passage, where she attempts to convey the reasons why some experiences seem as if they could not have been produced by the person's own imagination:

> Wonderful effects are left so that the soul may believe; at least there is assurance that the locution doesn't come from the imagination. Furthermore, if the soul is attentive, it can always have assurance for the following reasons: first, there is a difference because of the clarity of the locution. It is so clear that the soul remembers every syllable

> and whether it is said in one style or another ... But in a locution fancied by the imagination the words will not be so clear or distinct but like something half-dreamed.
>
> Second, in these locutions one often is not thinking about what is heard (I mean that the locution comes unexpectedly and even sometimes while one is in conversation) ... It often refers to things about the future that never entered the mind, and so the imagination couldn't have fabricated it.
>
> Third, the one locution comes as in the case of a person who hears, and that of the imagination comes as in the case of a person who gradually composes what he himself wants to be told.[15]

So Teresa is arguing that the characteristics of the experience itself can provide adequate evidence against the self-inducement theory. However, it is easy enough to discount this claim. First, we simply do not know how great are a person's powers to create such experiences without realising it. Secondly, Ludwig Wittgenstein's arguments against private language are relevant here. Without external, public criteria there is no real difference between saying something such as "this locution *is* clearer than that" and saying "this locution *seems* clearer than that". Thus the first expression has no real use, and is therefore meaningless.[16]

So let us consider whether any of Catherine's criteria are public in the required sense, and whether they could possibly serve to distinguish between the two explanatory theories: divine encounter versus self-inducement. The criterion of gladness is public enough; that is, we are often able to tell whether people we are close to are happy. However, this criterion is likely to be met whichever of the theories is true: if one is strongly motivated to have an experience in conformity with one's religious beliefs, and the experience occurs, then one ought to be happy as a result.

The criterion of increased humility begins to create problems for the inducement theory. Greater smugness is the reaction more to be expected from a person who has just had his or her desires met and beliefs confirmed.

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15. *Ibid.* p. 376.
16. See Ludwig Wittgenstein, *Philosophical Investigations,* G.E.M. Anscombe, translator (New York: Macmillan, 1953), especially sections 258-263.

Hunger for virtue is a noble sentiment, but does not mean much unless it is enacted. This leaves the criterion of increased charity. Can this be taken as a reliable sign of the working of God, or is it compatible with the inducement theory as well? It could certainly be argued that in a setting where good works count as validation of one's status as a spokesperson for God, one would have strong motivation for performing such acts.

Catherine's confessor and biographer Raymond of Capua states his intention to relate "the events which establish the credibility of Catherine's account of her inner life".[17] To this end he notes that she never confessed a serious sin. Furthermore, even if we take due account of tendencies to exaggerate and embellish the biographies of saints, Catherine can be said to have adopted a remarkable pattern of service to the poor and sick in her community. However, Raymond's intention is to show that Catherine's charity went so far beyond the ordinary as to warrant her claim to have been in direct contact with God.

This issue raises a theological question: is there a limit to the extent one can reform one's own character for the purpose of gaining a hearing for visionary experiences? This is an instance of the larger question: is moral perfection within the grasp of the human will? Christians have generally answered no, and no one has said it more elegantly than the Apostle Paul:

> Though the will to do good is there, the ability to effect it is not. The good which I want to do, I fail to do; but what I do is the wrong which is against my will ... I discover this principle, then: that when I want to do right, only wrong is within my reach. In my inmost self I delight in the law of God, but I perceive in my outward actions a different law, fighting against the law that my mind approves, and making me a prisoner under the law of sin which controls my conduct. Wretched creature that I am, who is there to rescue me from this state of death: Who but God? (Romans 7:14-25, *passim*, REB).

Here Paul is making a straightforward empirical claim about human capacities: we want to do good; we often do evil instead, no

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17. Conleth Kearns, translator, *The Life of Catherine of Siena* (Wilmington: Michael Glazier Inc., 1980) p. 85.

matter how strong our motivation. I know that young people do not always believe this, but I suspect that everyone over forty does.

So it is possible to recognise lives that do not fit the pattern; lives that violate our expectations regarding the natural limits of virtue. This means, in turn, that the self-inducement theory has limits; exceptionally noble lives may justifiably call us to raise the question whether a higher power is not involved after all.

The criterion of increased charity, or as we might now express it the criterion of charity beyond the bounds, interacts with the criterion of humility. If the self-inducement theory is true, and its corollary, that good works are undertaken for the purpose of self-accreditation, then good works done in secret will be of no value. Hence it is common to find spiritual writers warning their readers to pay no attention to good works that are done in a highly visible manner.

So my claim is that Catherine's criteria have some interest for the religious epistemologist. Given the right circumstances, such as the opportunity to observe changes in the lives of those who claim to receive visions or teachings from God, these signs would have some value for distinguishing between experiences generated by the recipient's own imagination and others that could not be so easily explained away.

The Christian tradition contains a number of teachings similar to Catherine's on criteria for recognising the work of God in people's lives. There are some variations from one denomination to another, and some individual variation from one author to another, but over-all quite a bit of agreement. So we have here a theory, which I shall call the theory of discernment, which states that it is possible to recognise the activity of God in human life by means of signs or criteria, some of which are public and relatively objective. My claim is that the theory of discernment functions in Christian theology in exactly the same way as theories of instrumentation do in science.

The criteria for discernment can be grouped conveniently under two headings: consistency and fruit. 'Consistency' for Protestants means consistency with Scripture. For Catholics, it also includes consistency with church teaching. Use of the consistency criterion, of course, raises all the problems of interpretation that go along with use of the Bible for any purpose — a set of problems I shall not go into here, except to note that a wooden application of this criterion

would mean that no religious experience could ever challenge traditional teaching, since such an experience would automatically be judged inauthentic. However, if this criterion is used in conjunction with others, there will be cases where an experience, attested on the grounds of other signs, conflicts with a traditional *interpretation* of Scripture, and the experience, together with critical reflection on the received interpretation, may result in that interpretation being overturned. So there is room for a dynamic interplay among texts, interpretations and religious experiences.

If this is the case, there is a clear parallel with science, where an observation or experimental result that conflicts with accepted theory will be regarded with suspicion. The decision either to ignore the datum or to revise the theory can go either way, and will only be made after re-evaluating the theory and performing additional experiments.

The criterion of "fruit" refers to various effects in the life of the recipient and her community. The term is appropriate in that Jesus declared that false prophets could be known by their fruits (Matthew 7:16). Paul listed the fruit of the Holy Spirit as love, joy, peace, patience, kindness, generosity, faithfulness, gentleness, and self-control (Galatians 5:22-23). Catherine, as well as many other spiritual writers, would add humility and contrition for sin.

The one significant difference in views of discernment from one branch of the Christian tradition to another has to do with *who* does the discerning. In both the Catholic and the Reformed traditions, the assumption is that discernment is exercised by the one receiving the experience, or at most by that person and his pastor or confessor. In a third major tradition — the Anabaptist or Radical-reformation tradition — discernment is a function exercised by the gathered community. That is, it is the job of the Church to decide who are the true and false prophets.

The communal nature of discernment among Mennonites, Quakers, and other Churches from this radical tradition allows for another kind of fruit to be added to the list, the agreement and unity of the congregation. This means that in the first instance that all members need to agree that the other criteria are met — consistency with Scripture and production of love and virtue. But, in addition, the experience being judged must contribute to the building up of the body of believers, not to discord and dissension. It is important to

note that this criterion presupposes a church community in which evidence of conversion is required for membership, since, as Jesus himself noted, the presence and activity of God produces conflict between true believers and the world.[18] Yet, even among "true believers" dissension is so common that the Church's being brought to unity of mind and heart can well be taken as a sign of the activity of God in their midst.

The circularity problem

We began with two objections to the use of religious experience as evidence for religious beliefs: the subjectivity problem and the circularity problem. I have described a theory of discernment, and have claimed that it functions in theology in the same way that a theory of instrumentation does in science. Now I want to show that circularity is not a problem after all — in fact, the modest degree of circularity involved in employing a theory of discernment is a virtue of the system rather than a vice.

Let us return to the example from science. Temperature readings are accepted as usable data because we have theories of instrumentation that connect the measurements to a conception of "kinetic energy". That is, the theory states that there is a regular relation between this observable sign (for example, changes in the column of mercury) and an invisible quantity (kinetic energy). Now, recall MacIntyre's claim that we can only infer the presence of the unseen from the visible sign if we have had *experience* of the connection between the sign and that which it signifies. But the example of the thermometer shows this claim to be false: no one has ever seen kinetic energy. How, then, is this particular theory of instrumentation confirmed? By the conjunction of two factors: one is the experienced reliability of the instrument — it produces similar or identical readings again and again under similar circumstances —

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[18]. "But when you are arrested, do not worry about what you are to say, for when the time comes, the words you need will be given you; it will not be you speaking, but the Spirit of your Father speaking in you. Brother will hand over brother to death, and a father his child; children will turn against their parents and send them to their death. Everyone will hate you for your allegiance to me..." (Matthew 10:19-22; cf. Matthew 10:34-36).

and these results correlate with results produced by other measuring devices. The other is that the theory of instrumentation follows from theoretical beliefs that we have no good reason to call into question. In other words, the truth of the theory of instrumentation is supported by its consistency with a network of other statements, some rather directly from experience, others of a theoretical nature.

I claim that the Christian theory of discernment is likewise supported by its connections to a variety of other statements, some from experience, others of a theoretical (or theological) nature. For example, Jonathan Edwards, the theologian of the Great Awakening, presents a simple theoretical account of why the fruits of the Spirit should provide valid signs of God at work in a human life. The fruits of the Spirit jointly constitute a particular kind of character, what Edwards calls the "lamb-like, dove-like character" of Christ. In the light of Christian theology, this is exactly what is to be expected. The fruits are signs that the Holy Spirit is at work in a person's life; the Holy Spirit is otherwise known as the Spirit of Christ; Christ's spirit should manifest itself in a Christ-like character. How could it be otherwise?

The second kind of support for the theory of discernment needs to be experiential — does it work *reliably*, and is it connected in a consistent way with other experiences? As we saw above, the process of discernment is exactly the test of whether the inner experience, putatively of God, is correlated with the other sorts of experiences that our theories lead us to expect. Reliability means, simply, that a measurement or process results in roughly or exactly the same results under similar circumstances. Reliability is always a matter of degree; different degrees are required depending upon the complexity of the matter under study. Measurements with a ruler are highly reliable; measurement with an IQ test is only moderately reliable. We have no data on the reliability of believers' judgments regarding the presence or absence of God's agency in certain events. But it is significant that communities that exercise communal judgment do not readily abandon the practice. This fact suggests that the results tend to be somewhat consistent over time, since a practice that yielded erratic results would soon lose its appeal.

It might be objected that the variety of beliefs and practices found throughout the Christian movement across denominations and through time argues for the unreliability of discernment. I suggest,

however, that it argues instead for the need to make more frequent and determined use of the practice. In fact, much of what goes on in the life of Churches has never been subjected to this sort of testing. Greater reliance on discernment would turn Churches into laboratories for testing theological formulations.

So the theory of discernment may not be as well-confirmed as many of the theories of instrumentation in the hard sciences, but some informal confirmation does exist; and the fact that it presupposes some aspects of Christian theology is a factor in its favour, not a detriment.

The subjectivity problem

Much of what is needed to address the subjectivity problem has already been said. It is clear that suspicions about our ability to delude ourselves calls for greater emphasis on discernment criteria that are public and intersubjective. "Gladness" could be as much a result of effective self-deception as of the presence of God. Humility can be feigned. But, I have suggested, there are limits to the degree to which growth in charity can be undertaken at will. So the criterion of greatest interest for the philosopher must be fruit of a publicly observable sort such as extraordinary growth in virtue. While we have no laboratory instruments to measure virtue, it is nonetheless a public phenomenon, there for anyone to see.

So the kind of experience that is relevant for confirming religious belief is not so much the immediate experiences of the mystics, but rather "experience" in a different sense: the accumulated observ-ations made by a discerning community regarding correlations between reports of private experiences such as visions and other, publicly observable phenomena such as acts of charity.

Here, as in science, observations and the conclusions drawn from them will interact with theory. For example, if Catherine's experience is judged genuine, then her teachings will be taken to be true by the community in which she lives. Their lives will be affected, and the next generation will be able to see the fruits (or lack of fruit) manifested in the lives of her followers, and so on. Theologian Peter Moore observes:

A mystic is, precisely, one who has tested through his own experience the claims made by earlier generations of mystics. Finally, there is in mystical writing much evidence for the epistemological stability and hence objective validity of mystical experience: concordance among the reports of different mystics, refinement of observations, development of theory, improvement of technique, and so on. In sum, it could be argued that most if not all of the conditions which are met in the case of experiences known to have objective validity appear, from the accounts given by mystics, to obtain in the case of mystical experience too.[19]

Moore's comment raises the issue of objectivity. "Objectivity" is a word used rather loosely in many circles — perhaps it is more of a commendation than a description. The most appropriate use of the word for present purposes is that of social scientists, whose difficulties in measurement are almost as great as those of the empirical theologian. Here "objectivity" can be equated with an observation's or measurement's reliability, validity, and inter-subjectivity.

We have already addressed the reliability of the results of discernment. The validity of a measurement refers to its genuine connection with the thing measured; for example, is IQ a valid measure of intelligence? The value of Edwards's theology, mentioned above, is that it provides a rationale for believing the fruits of the Spirit to be *valid* indicators of God's activity, not because of some accidental connection, but because they participate in the divine character they represent.

We have also addressed the issue of intersubjectivity: discernment criteria that involve publicly observable effects will be given greater weight by the philosopher just because they allow for, even demand, intersubjective agreement. So Catherine's experience of God in the depths of her soul, in the privacy of her room, is not a suitable datum for theology. But the fact that such experiences were coupled with extraordinary acts of charity, known throughout much of the Christian world at the time, may very well be an objective datum for confirming her claims to receive revelation from God, and thus also the belief system with which her revelations cohere.

19. "Mystical experience, mystical doctrine, mystical technique," in Steven, Katz, editor, *op. cit.* p. 126.

Further problems

I now wish to address another epistemological worry that may have arisen during the presentation of this paper. I have been arguing that under proper circumstances some instances of some kinds of religious experiences might provide suitably objective empirical support to confirm religious theories. I have emphasised the consistency or coherence of beliefs drawn from experience with beliefs belonging to the theoretical or theological structure of the system. The new worry that is likely to have been raised by the foregoing arguments is that the system now appears too neat, too pat. A genuine empirical theory has to be falsifiable as well as confirmable; we need to be able to specify what experiences would call it into question.[20] If the data of religious experience are theory-laden — interpreted, even in a sense produced, in light of the theories they are taken to confirm — if one of the criteria for recognising a relevant experience is its conformity to Scripture or church teaching, then have we not described an essentially unfalsifiable system?

I have already mentioned the possibility that the consistency criterion could be used in such a way as to make the system unfalsifiable, but it need not. Consider another passage from Catherine's *Dialogue*:

I have shown you, dearest daughter, that in this life guilt is not atoned for by any suffering simply as suffering, but rather by suffering borne with desire, love, and contrition of heart. The value is not in the suffering but in the soul's desire. Likewise, neither desire nor any other virtue has value or life except through my only-begotten Son, Christ crucified, since the soul has drawn love from him and in virtue follows his footsteps. In this way and in no other is suffering of value. It satisfies for sin, then, with gentle unitive love born from the sweet knowledge of my goodness and from the bitterness and contrition the heart finds in the knowledge of itself and its own sins. Such knowledge gives birth to hatred and contempt for sin and for the soul's selfish sensuality, whence she considers herself worthy of punishment and unworthy of reward. So you see, said gentle Truth, those who have heartfelt contrition, love for true patience, and that true

20. This is Karl Popper's claim. See Popper, *op. cit.*

humility which considers oneself worthy of punishment and unworthy of reward suffer with patience and so make atonement.[21]

If it is the case that this locution comes from God, it has definite theological implications. I selected this particular passage because it touches upon a disputed point in Christian theology: does human suffering atone for sin (as some Catholics have taught), or does atonement come only through the suffering of Christ, mediated to sinners by grace (as most Protestants maintain). On first glance, this passage seems to confirm the Catholic view that human suffering is meritorious. But careful reading shows that the correct understanding is more complicated than either Catholic "works" or Protestant "grace alone". Suffering is of value, but only insofar as one is united by love to Christ, which leads to true contrition and, it can be presumed, opens the penitent to grace.

So here is the record of an experience that Catherine judged to be a communication from God, that her Catholic superiors saw fit to publish as such, and that modified the Catholic thinking of her day in the direction of a not-yet-enunciated Protestant emphasis on grace. (Recall that Catherine was writing nearly two hundred years before the Protestant Reformation.) So it is, indeed, possible for religious experience to clash with and thus correct theological theory.

A second problem that really ought to be addressed here is the problem of the plurality of religions. David Hume recognised over two hundred years ago that the claims of one religion, if taken seriously, tend to cancel out the claims of the others. If Christian experience confirms Christian beliefs, then is it not also the case that Jewish experience confirms Jewish beliefs, and Hindu, Hindu, and so on? The first step in addressing this problem would be to ask whether each of these other religions has a criterion comparable to the Christian theory of discernment to separate authentic encounters with the divine from counterfeits, which are presumably as common in other faiths as they are among Christians. If such procedures exist, giving warrant for the claim that their members experience the presence of God (as I presume they do), then we have a situation, again, that is entirely analogous to science: competing research programmes, each with its own supporting evidence. Lakatos has

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21 Noffke, *op. cit.* p. 29.

provided a criterion for choosing among competing research programmes, which can be summarised briefly as a test of the amount of *progress* each programme makes in explaining novel facts.[22] This criterion needs to be used to arbitrate among competing theologies within Christianity, as well.

Summary

I claimed earlier that what was needed to show theology to be like science in terms of structure, reasoning and evidence is to consider the core theories, auxiliary hypotheses, theories of instrumentation, and data. The picture I have presented of systematic theology construes the theologian's treatment of the theological loci as akin to the scientist's elaboration of an interconnected network of auxiliary hypotheses. The scientist's theorising is controlled by the central vision of reality dictated by the hard core of the programme and by the requirement of consistency with empirical data. Similarly, the theologian's work is constrained by a central vision of what Christianity is basically all about — some construal of God's relation to the world.

The bulk of this paper was addressed to the question of a theological analogue for scientists' empirical data. I have suggested that the theologian's data come primarily from Scripture, history and religious experience. I claimed that while some of these categories of data may seem defective by scientific standards, they really are not when we consider the role of theories of instrumentation in science and the quite comparable theories of interpretation and discernment in theology. Such data differ only in degree from those of science: they are somewhat less reliable, less objective than those of the hard sciences, but probably comparable to those of the human sciences.

What is the significance of my conclusions? I mentioned above that showing theology to be compatible with the epistemological standards derived from science would have apologetic importance, overcoming one of the most significant critiques of theology in the

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22. See Lakatos, *op. cit.*; and my *Theology in the Age of Scientific Reasoning* for an application to theology.

modern period. I also believe that the account I have given here provides workable guidelines for how to do theology, and how to recognise whether or not one has succeeded at the task.

There is a third consequence, especially important for the discussion of the relations between theology and science. An account something like mine is needed in order to justify the supposition that theology and science could possibly have anything to say to one another. That is, it is necessary to show that the discipline of theology aims at *knowledge* of a reality independent of the human subject. If theology is really only about human values or meanings, then there is no more reason to think that theology and science can engage in dialogue than to think that science ought to dialogue with ethics or art or literary theory.

So the deeper agenda of my work is an attempt to reverse the turn taken by modern liberal theology — the "subjective turn" from discourse about God and the world to discourse about human religiosity. The great increase in conferences and publications, such as this one, wherein theology is treated as a fit dialogue partner for science, encourages one to think that such a reversal may indeed be possible.

Response by Grant Gillett

Before I embark on my substantive worries about Nancey Murphy's interesting paper there are one or two preliminary points of detail to which I should respond. The first concerns Wittgenstein's objection to private language. Wittgenstein famously and, in my opinion, cogently argued that the meaning of a term could not be given by an in-principle private or Cartesian object or criterion.[1] He did not conclude, however, that one could not talk about private experiences or aspects of mental life which are both important and private to the person who experiences them. He argued that the criteria by which these could be identified and described might derive from a public sphere of language and communication but, having learned the use of terms such as "gladness", "set ablaze", and so on in such a way that one feels confident in their meaning, one can apply them to experiences which are not shared or validated by anybody else, in the same way that one could observe or report a red and yellow butterfly as one walked alone in the woods and be in no doubt that one had correctly discerned the striking features of its appearance. Indeed if one could not generally be sure, without corroboration, about one's psychic experience one could conceivably say and mean "I think I am in pain but could you please check for me", which is patently absurd. Therefore, once we have established that a witness is generally reliable and confident in her grasp of the meaning of psychological predicates, there need not invariably be publicly accessible criteria available to validate her use of them.

This, in fact, is likely to be an important conclusion for Murphy because she will surely want to say that a subject who shows the requisite public criteria of godliness is then to be trusted when she goes on to use the disputed psychological or phenomenological predicates to locate her experience of God in a tradition of revelation. Now, if the said subject could be trusted only where the reported

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[1] I have discussed Wittgenstein's theory of meaning at length in my *Representation, Meaning and Thought* (Oxford: Clarendon, 1992).