PURSUIT OF TRUTH

REVISED EDITION

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QUINE

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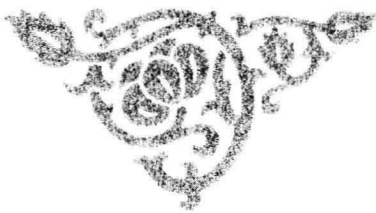

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TO

BURT DREBEN

firm friend and

constructive critic

down the decades

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Preface to the Revised Edition

In May 1990, a mere four months after this book first appeared, I was in the gallant little Republic of San Marino for a week-long international colloquium on my philosophy. Six months later I was in medieval Girona, in Catalonia, giving the Josep Ferrater Mora Lectures—fifteen hours of them and five of discussion. Donald Davidson, Burton Dreben, Dagfinn Føllesdal, and Roger Gibson were all imported with me, to add depth and zest to the discussion. The busy months of preparation and the stimulating exchanges on these occasions sparked thoughts that would have made for a better book if the chronology had been inverted. I am approximating such an inversion as best I can by this early revised edition.

Old §13, "Ontological relativity," has become more emphatically "Ontology defused," and incorporates bits from my responses in the projected San Marino volume. My treatment of domestic meaning in §22 is utterly changed, and so also, thanks to Davidson's and Føllesdal's abetting, are §§28–29 on propositional attitudes.

March 1992 W.V.Q.

Preface to the First Edition

In these pages I have undertaken to update, sum up, and clarify my variously intersecting views on cognitive meaning, objective reference, and the grounds of knowledge. Some of the progress is expository and some substantive. The substance has been precipitating sporadically over the past ten years, and some of it has surfaced in lectures, informal discussions, and scattered paragraphs. In interrelating these thoughts I have occasionally found a faulty joint and have firmed it up to my satisfaction.

I intend this little book no less for my past readers than for my new ones, so I have curbed my exposition of things already belabored in my other books. I do retrace familiar ground where I see an improvement in the idea or its presentation, and also where the new reader needs a little briefing to be kept abreast.

The bits of the book that have previously appeared in print add up to a scant nine pages, and are identified on a back page. Unpublished lectures were a richer source. My lecture "The Mentalistic Heritage" in Calcutta, 1983, is a source of §31, and "The Forked Animal" yielded earlier parts of Chapter IV. That lecture was the third of four Immanuel Kant Lectures that I gave at Stanford in 1980. The title of the series of four was "Science and Sensibilia," a takeoff of John Austin's takeoff of Jane Austen. The four lectures appeared as a little book in Italian, *La scienza e i dati*

di senso, translated by Michele Leonelli (Rome: Armando, 1987). Instead of publishing them intact in English, I have used portions of them in subsequent publications, as here.

Much of my lecture "Three Indeterminacies," presented at the Quine symposium at Washington University in April 1988, is woven into Chapter I, and bits into Chapter V. That lecture is to appear in the symposium volume, Barrett and Gibson, editors, *Perspectives on Quine* (Oxford: Blackwell). Another overlapping publication in the offing is "Truth," written at the request of the Institut International de Philosophie and slated for *Philosophical Problems Today* (The Hague: Nijhoff). I drew heavily on it for Chapter V, by prior arrangement.

I am blessed with bright and earnest readers. Leonelli wrote me from Pisa that my new blend of reification with observation gave him *una sorta di crampo mentale.* After two letters I began to feel the cramp myself. Result: a substantial revision of Chapters I and II. A letter from Felix Mühlhölzer in Munich prompted me to insert a couple of paragraphs recognizing the untidy side of scientific method. A difficulty spotted by Lars Bergström of Stockholm is now noted and dealt with in the text, and my indebtedness to Donald Davidson, Dagfinn Føllesdal, and Roger Gibson is noted at appropriate points. I am much indebted to Burton Dreben, who has read earlier drafts with care and insight and has made many helpful suggestions.

W.V.Q.

CONTENTS

I

EVIDENCE

1. *Stimulation and prediction*

From impacts on our sensory surfaces, we in our collective and cumulative creativity down the generations have projected our systematic theory of the external world. Our system is proving successful in predicting subsequent sensory input. How have we done it?

Neurology is opening strange new vistas into what goes on between stimulation and perception. Psychology and more particularly psycholinguistics may be looked to for something to say about the passage from perception to expectation, generalization, and systematization. Evolutionary genetics throws further light on the latter matters, accounting for the standards of similarity that underlie our generalizations and hence our expectations. The heuristic of scientific creativity is illuminated also, anecdotally, by the history of science.

Within this baffling tangle of relations between our sensory stimulation and our scientific theory of the world, there is a segment that we can gratefully separate out and clarify without pursuing neurology, psychology, psycholinguistics, genetics, or history. It is the part where theory is tested by prediction. It is the relation of evidential support,

and its essentials can be schematized by means of little more than logical analysis.

Not that prediction is the main purpose of science. One major purpose is understanding. Another is control and modification of the environment. Prediction can be a purpose too, but my present point is that it is the *test* of a theory, whatever the purpose.

It is common usage to say that the evidence for science is observation, and that what we predict are observations. But the notion of observation is awkward to analyze. Clarification has been sought by a shift to observable objects and events. But a gulf yawns between them and our immediate input from the external world, which is rather the triggering of our sensory receptors. I have cut through all this by settling for the triggering or stimulation itself and hence speaking, oddly perhaps, of the prediction of stimulation. By the stimulation undergone by a subject on a given occasion I just mean the temporally ordered set of all those of his exteroceptors that are triggered on that occasion.

Observation then drops out as a technical notion. So does evidence, if that was observation. We can deal with the question of evidence for science without help of 'evidence' as a technical term. We can make do instead with the notion of observation sentences.

2. *Observation sentences*

We were undertaking to examine the evidential support of science. That support, by whatever name, comes now to be seen as a relation of stimulation to scientific theory. Theory consists of sentences, or is couched in them; and logic connects sentences to sentences. What we need, then, as initial

links in those connecting chains, are some sentences that are directly and firmly associated with our stimulations. Each should be associated affirmatively with some range of one's stimulations and negatively with some range. The sentence should command the subject's assent or dissent outright, on the occasion of a stimulation in the appropriate range, without further investigation and independently of what he may have been engaged in at the time. A further requirement is intersubjectivity: unlike a report of a feeling, the sentence must command the same verdict from all linguistically competent witnesses of the occasion.

I call them *observation sentences*. Examples are 'It's raining', 'It's getting cold', 'That's a rabbit'. Unlike 'Men are mortal', they are *occasion* sentences: true on some occasions, false on others. Sometimes it is raining, sometimes not. Briefly stated, then, an observation sentence is an occasion sentence on which speakers of the language can agree outright on witnessing the occasion. See further §15.

Observationality is vague at the edges. There are gradations in an individual's readiness to assent. What had passed for an observation sentence, say 'That's a swan', may to the subject's own surprise leave him undecided when he encounters a black specimen. He may have to resort to convention to settle his usage. We shall need now and again to remind ourselves thus of the untidiness of human behavior, but meanwhile we foster perspicuity by fancying boundaries.

The range of stimulations associated with an observation sentence, affirmatively or negatively, I call its affirmative or negative *stimulus meaning* for the given speaker. Each of the stimulations, by my definition, is global: it is the set of *all* the triggered exteroceptors, not just the ones that happened

to elicit behavior. Hence the stimulations encompassed in a stimulus meaning will differ wildly from one another in their ineffective firings, but in their effective core they are bound to be similar to one another in some respect, by the subject's lights;[1] similar, that is, in eliciting similar behavior. His according them all the same observation sentence is itself a case of similar elicited behavior.

An observation sentence may consist of a single noun or adjective, thought of as a sentence; thus 'Rain', 'Cold', or 'Rabbit', for 'It's raining', 'It's cold', 'It's a rabbit'. Observation sentences also may be compounded to form further observation sentences, for example by simple *conjunction*: 'The sun is rising and birds are singing'. Another way of compounding them is *predication:* 'This pebble is blue', as a compound of 'Lo, a pebble' and 'Lo, blue'. An equivalent rendering is simply 'Blue pebble'; they have the same stimulus meaning. But they are not equivalent to the mere conjunction 'Lo, a pebble, and lo, blue'. Their connection is tighter. The conjunction is fulfilled so long as the stimulation shows each of the component observation sentences to be fulfilled somewhere in the scene—thus a white pebble here, a blue flower over there. On the other hand the predication focuses the two fulfillments, requiring them to coincide or amply overlap. The blue must encompass the pebble. It may also extend beyond; the construction is not symmetric.

What brought us to an examination of observation sentences was our quest of the link between observation and theory. The observation sentence is the means of verbalizing the prediction that checks a theory. The requirement

[1] Hence perceptually similar, not receptually. *Roots of Reference*, pp. 16–18.

that it command a verdict outright is what makes it a final checkpoint. The requirement of intersubjectivity is what makes science objective.

Observation sentences are thus the vehicle of scientific evidence, we might say—though without venturing a definition of 'evidence' itself. But also they are the entering wedge in the learning of language. The infant's first acquisitions in cognitive language are rudimentary observation sentences, including 'Mama', 'Milk', and the like as one-word observation sentences. They become associated with stimulations by the conditioning of responses. Their direct association with concurrent stimulation is essential if the child is to acquire them without prior language, and the requirement of intersubjectivity is essential in order that he learn the expressions from other speakers on appropriately shared occasions.

That observation sentences serve in both ways—as vehicles of scientific evidence and as entering wedge into language—is no cause for wonder. Observation sentences are the link between language, scientific or not, and the real world that language is all about.

Observation sentences as I have defined them far exceed the primitive ones that are the child's entering wedge. Many of them are learned not by simple conditioning or imitation, but by subsequent construction from sophisticated vocabulary. The requirement of direct correspondence to ranges of stimulation can be met either way. Which ones are learned directly by conditioning, and which ones indirectly through higher language, will vary from person to person. But the two requirements, intersubjectivity and correspondence to stimulation, assure us that any observation sentence *could* be learned in the direct way. We

hear our fellow speakers affirming and denying the sentence on just the occasions when we are stimulated in the characteristic ways, and we join in.

3. *Theory-laden?*

My definition of observation sentence is of my devising, but the term is not. Philosophers have long treated in their several ways of what they called observation terms or observation sentences. But it has now become fashionable to question the notions, and to claim that the purportedly observable is theory-laden in varying degrees. It is pointed out that when scientists marshal and check their own data or one another's, they press no farther than is needed to assure agreement among witnesses conversant with the subject; for they are reasonable men. 'The mixture is at 180°C' and 'Hydrogen sulfide is escaping' are observational enough for any of them, and more recondite reports are observational enough for some. I agree that the practical notion of observation is thus relative to one or another limited community, rather than to the whole speech community. An observation sentence for a community is an occasion sentence on which members of the community can agree outright on witnessing the occasion.

For philosophical purposes we can probe deeper, however, and reach a single standard for the whole speech community. Observable in this sense is whatever would be attested to on the spot by any witness in command of the language and his five senses. If scientists were perversely to persist in demanding further evidence beyond what sufficed for agreement, their observables would reduce for the most part to those of the whole speech community. Just a few,

such as the indescribable smell of some uncommon gas, would resist reduction.

But what has all this to do with a sentence's being theory-laden or theory-free? My definition distinguishes observation sentences from others, whether relative to special communities or to the general one, without reference to theory-freedom. There is a sense, as we shall now see, in which they are all theory-laden, even the most primitive ones, and there is a sense in which none are, even the most professional ones.

Think first of primitive ones, the entering wedge in language learning. They are associated as wholes to appropriate ranges of stimulation, by conditioning. Component words are there merely as component syllables, theory-free. But these words recur in theoretical contexts in the fullness of time. It is precisely this sharing of words, by observation sentences and theoretical sentences, that provides logical connections between the two kinds of sentences and makes observation relevant to scientific theory. Retrospectively those once innocent observation sentences are theory-laden indeed. An observation sentence containing no word more technical than 'water' will join forces with theoretical sentences containing terms as technical as 'H_2O'. Seen holophrastically, as conditioned to stimulatory situations, the sentence is theory-free; seen analytically, word by word, it is theory-laden. Insofar as observation sentences bear on science at all, affording evidence and tests, there has to be this retrospective theory-lading along with the pristine holophrastic freedom from theory. To impugn their observationality thus retrospectively is to commit what Firth (p. 100) called the fallacy of conceptual retrojection.

More sophisticated observation sentences, including those of specialized scientific communities, are similarly two-faced, even though learned by composition rather than direct conditioning. What qualifies them as observation sentences is still their holophrastic association with fixed ranges of sensory stimulation, however that association be acquired. Holophrastically they function still as theory-free, like C. I. Lewis's "expressive" sentences (p. 179), though when taken retrospectively word by word the self-same sentences are theory-laden, like his "objective" ones.

When epistemology rounded the linguistic turn, talk of observable objects gave way to talk of observation terms. It was a good move, but not good enough. Observation sentences were distinguished from theoretical ones only derivatively, as containing observation terms to the exclusion of theory-laden or theoretical terms. Consequently Reichenbach and others felt a need for "bridge principles" to relate the two kinds of sentences. No bridge is wanted, we now see, and bridging is the wrong figure. Starting with sentences as we have done rather than with terms, we see no bar to a sharing of vocabulary by the two kinds of sentences; and it is the shared vocabulary that links them.

Starting with sentences has conferred the further boon of freeing the definition of observation sentence from any dependence on the distinction between the theory-free and the theory-laden. Yet a third advantage of this move is that we can then study the acquisition and use of observation sentences without prejudging what objects, if any, the component words are meant to refer to. We thus are freed to speculate on the nature of reification and its utility for scientific theory—a topic for Chapter II. Taking terms as starting point would have meant finessing reification and

conceding objective reference out of hand, without considering what it is for or what goes into it.

4. *Observation categoricals*

The support of a theory by observation stands forth most explicitly in experiment, so let us look into that. The scientist has a backlog of accepted theory, and is considering a hypothesis for possible incorporation into it. The theory tells him that if the hypothesis under consideration is true, then, whenever a certain observable situation is set up, a certain effect should be observed. So he sets up the situation in question. If the predicted effect fails to appear, he abandons his hypothesis. If the effect does appear, his hypothesis may be true and so can be tentatively added to his backlog of theory.

Thus suppose a team of field mineralogists have turned up an unfamiliar crystalline mineral of a distinctively pinkish cast. They speak of it provisionally as *litholite,* for want of a better name. One of them conjectures its chemical composition. This is the hypothesis, of which I shall spare myself the details. From his backlog of chemical lore he reasons that if this chemical hypothesis is true, then any piece of litholite should emit hydrogen sulfide when heated above 180°C. These last provisions are the observables; for our mineralogist and his colleagues know litholite when they see it and hydrogen sulfide when they smell it, and they can read a thermometer.

The test of a hypothesis thus hinges on a logical relation of implication. On one side, the theoretical, we have the backlog of accepted theory plus the hypothesis. This combination does the implying. On the other side, the observa-