[*Mechanical Translation and Computational Linguistics*, vol.10, nos.1 and 2, March and June 1967]

A Note on Quine's Theory of Radical Translation

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This paper examines the theory of translation in Quine's Word and Object *and attempts to show that it involves tacit appeal to a premise concerning a regularity in the behavior of bilinguals. The regularity is one whose existence is neither explained nor rendered probable by the theory. The suggestion that the regularity could result from congenital dispositions to organize and pattern linguistic data in certain characteristic ways is considered and rejected as implausible. This leaves the conclusion that if the regularity does obtain, the most plausible explanation would be that people, when acquiring a language, pay attention to and are guided by information and evidence ignored by Quine's criteria of translation. Thus the novelty of the present discussion is this: if its principle contention is correct, then—even if one embraces the analysis in* Word and Object, *accepting all of its most controversial theoretical features, for example, its identification of a language with a set of behavioral dispositions and its requirement that analyticity and synonymy be operationally defined—one is still bound to recognize that its survey of relevant evidence is essentially incomplete, and one is logically committed to this recognition by a premise embodied in the very analysis one has embraced. That is, the soundness of the analysis* entails *its incompleteness, and, thus, the analysis is at best incomplete, at best an account of a fragment of the relevant evidence. Now the fact that theory in a given domain is undetermined by a fragment of the relevant evidence leaves wholly undecided the question whether theory in that domain is undetermined by* all *the relevant evidence. Thus, assuming the correctness of the contentions in this paper, the doctrine of translational indeterminacy does not follow from the analysis intended to support it, and one of the most elaborate expositions offered in support of Quine's misgivings over the analytic-synthetic distinction fails to make those misgivings plausible.*

> No difference between man and beast is more important than syntax.
>
> Apprendre une langue,
> c'est vivre de nouveau.

A striking feature of the deepest and most nagging problems we face in mechanical translation is their unclarity. We create a misleadingly optimistic picture if we say merely that we have not yet solved them. It is more honest and accurate to say that we have not yet managed to formulate them. For to say that our principal problem is to discover some way to program a computer to translate from one language to another is, in our present state of knowledge, to provide an immensely obscure characterization of our problem; the notion of "translation" and, indeed, all the other notions that belong to the idiom of meaning ("entailment," "ambiguity," "analyticity," and so on) are unclear and ill understood.

It should be evident, therefore, that any serious effort to shed light on semantic notions deserves our attention and respect. We desire to find a way out of our present confusion. In this paper, we will examine the analysis of translation presented by W. V. Quine in *Word and Object* [1]. Our purpose is, first, to get before us clear, explicit statements of the translational criteria embodied in the theory (and this will prove, in the case of the fifth criterion, a moderately difficult task) and, second, to attempt to determine whether the theory does indeed support the general thesis Quine advances concerning translation, his doctrine of translational indeterminacy. The conclusion we shall reach is that the criteria are incomplete, that is, do not begin to exhaust the evidence and information relevant to the evaluation of translation manuals. If I am not mistaken, this conclusion will turn out to be supported in a surprising but powerful way by a premise involved in the formulation of the fifth criterion. Thus, if our contentions are correct, the indeterminacy doctrine does not follow from the analysis intended to support it.

Radical Translation

At the outset of the second chapter of *Word and Object,* an interesting enterprise is described.

> The recovery of a man's current language from his currently observed responses is the task of the linguist, who, unaided by an interpreter, is out to penetrate and translate

a language hitherto unknown. All the objective data he has to go on are the forces that he sees impinging on the native's surfaces and the observable behavior, vocal and otherwise, of the native. Such data evince "meanings" only of the most objectively empirical or stimulus-linked variety. And yet the linguist apparently ends up with native "meanings" in some quite unrestricted sense; purported translations, anyway, of all possible native sentences.

Translation between kindred languages, e.g., Frisian and English, is aided by resemblance of cognate word forms. Translation between unrelated languages, e.g., Hungarian and English, may be aided by traditional equations that have evolved in step with a shared culture. What is relevant rather to our purposes is *radical* translation, i.e., translation of the language of a hitherto untouched people [1, p. 28].

The remainder of that chapter is given over to the analysis of radical translation. The analysis is put forward in support of a general conclusion concerning the process of translation. That conclusion, Quine's doctrine of translational indeterminacy, is that although there are indeed empirical constraints on translation manuals, they are slack constraints and always admit conflicting manuals. That is, mappings from the sentences of one language to those of another can be constructed so that all the maps are compatible with the objective evidence (the speech dispositions in both communities involved) and yet, nonetheless, diverge in infinitely many places by offering as their respective translations of an unambiguous sentence of the one language sentences of the other not equivalent in even the roughest sense of equivalence.

Before we examine the analysis with which Quine supports his general conclusion, we must acquaint ourselves with some relevant notions and terminology.

A key notion in Quine's treatment of radical translation is the concept of "stimulus meaning." This concept depends on two others: the notion of a *stimulation* and the notion of a stimulation's *prompting* assent or dissent to a (simultaneous or nearly simultaneous) query. For the moment, we shall allow our rough-and-ready everyday understanding of the term "stimulation" to carry us along as we discover the manner in which Quine understands the relation of *prompting.* If, as I stand beside a speaker of English, I point to a long-eared animal hopping along in plain view and ask, "Is that a rabbit?" then, as Quine conceives the situation, my companion's subsequent assent is, at least in part, *caused* by the sensory stimulation he underwent as a result of his being where he was as things happened as they did. Part of that sensory stimulation was provided, of course, by the sounds I produced in the course of posing my query. What Quine has his eye on, however, when he speaks of "prompting," is the non-verbal sensory stimulation undergone in this situation. The non-verbal sensory stimulation σ is what *prompts* assent. The complex compound of σ and my query is what *elicits* assent. Quine proposes a criterion which he says, "under favorable circumstances, can assure the linguist of the prompting relation. If, just after the native has been asked *S* and has assented or dissented, the linguist springs stimulation σ on him, asks *S* again, and gets the opposite verdict, then he may conclude that σ did the prompting" [1, p. 30]. On the notion of stimulation, we shall allow Quine to speak for himself.

A visual stimulation is perhaps best identified, for present purposes, with the pattern of chromatic irradiation of the eye. To look deep into the subject's head would be inanpropriate even if feasible, for we want to keep clear of his idiosyncratic neural routings or private history of habit formation. We are after his socially inculcated linguistic usage, hence his responses to conditions normally subject to social assessment . . . Ocular irradiation is intersubjectively checked to some degree by society and linguist alike, by making allowances for the speaker's orientation and the relative disposition of objects.

In taking the visual stimulations as irradiation patterns we invest them with a fineness of detail far beyond anything that our linguist can be called upon to check for. But this is all right. He can reasonably conjecture that the native would be prompted to assent to "Gavagai" [an utterance volunteered when a rabbit scurries by in an example Quine imagines] by the microscopically same irradiations that would prompt him, the linguist, to assent to "Rabbit," even though this conjecture rests wholly on samples where the irradiations concerned can at best be hazarded merely to be pretty much alike.

It is not, however, adequate to think of the visual stimulations as momentary static irradiation patterns. To do so would obstruct examples which, unlike "Rabbit," affirm movement. And it would make trouble even with examples like "Rabbit," on another account: too much depends on what immediately precedes and follows a momentary irradiation. A momentary lepiform image flashed by some artifice in the midst of an otherwise rabbitless sequence might not prompt assent to "Rabbit" even though the same image would have done so if ensconced in a more favorable sequence. The difficulty would thus arise that far from hoping to match the irradiation patterns favorable to "Gavagai" with those favorable to "Rabbit," we could not even say unequivocally of an irradiation pattern of itself and without regard to those just before and after, that it is favorable to "Rabbit" or that it is not. Better, therefore, to take as the relevant stimulations not momentary irradiation patterns, but evolving irradiation patterns of all durations up to some convenient limit or *modulus.* Furthermore, we may think of the ideal experimental situation as one in which the desired ocular exposure is preceded and followed by a blindfold [1, pp. 31-32].

Actually, of course, we should bring the other senses in on a par with vision, identifying stimulations not with just ocular irradiation patterns but with these and the various barrages of other senses, separately and in all synchronous combinations [1, p. 33].

Given the notions of *stimulation* and of a stimulation's *prompting* assent to a query, we can now define the "affirmative stimulus meaning of a sentence *S* for a speaker *W* at a time *t.*" This term denotes the class of all those stimulations that would prompt *W*'s assent to the query "*S?*" at *t.* The "negative stimulus meaning of

S for *W* at *t*" *is* defined in the same fashion, with "dissent" substituted for "assent." And the "stimulus meaning of *S* for *W* at *t*" is defined as the ordered pair of the affirmative and negative stimulus meanings of *S* for *W* at *t*.

Various further notions are defined in terms of *stimulus meaning.* Thus, a sentence is an *occasion sentence* if it has a (non-vacuous) stimulus meaning for each member of the alien community. A sentence is *stimulus analytic* if it is assented to by all members of the alien community under any stimulation (provided merely that the stimulation does not stun them or otherwise render them incapable of reply). Similarly, a sentence is *stimulus contradictory* if it invariably commands dissent.

Finally, a sentence is an *observation sentence* if its stimulus meaning for each member of the community "approximates" its stimulus meaning for each other member. "Lo, a rabbit!" is offered by Quine as an example of an observation sentence. Notice that while we can see in a rough way what might be meant by speaking of people assenting and dissenting under "roughly the same conditions," it is not obvious how to specify in an exact way a relevant sense of "roughly the same." Given the definition above, the stimulus meaning of a sentence for a person appears to be determined by a vast number of factors of which age, personality, general health, belief, set, attention level, and sensory acuity are just a few. Since it is likely that the stimulus meaning of any occasion sentence varies strikingly from one person to the next, the task of specifying precisely the notion of "approximately the same" required in the definition of "observation sentence" seems non-trivial. Given the intrinsic epistemological interest of the notion Quine suggests, the task is probably worth undertaking. We can safely ignore it here, however, since the notion "observation sentence" does not figure in Quine's final set of translational criteria.

Criteria C(1)-C(4)

In section 15 of *Word and Object,* there appears a summary of the results of radical translation. "Let us sum up the possible yield of [our] methods," Quine says. The list [1, p. 68] is as follows:

(1) Observation sentences can be translated. There is uncertainty, but the situation is the normal inducive one.
(2) Truth functions can be translated.
(3) Stimulus-analytic sentences can be recognized. So can sentences of the opposite type, "stimulus-contradictory" sentences, which command irreversible dissent.
(4) Questions of intrasubjective stimulus synonymy of native occasion sentences even of non-observational kind can be settled if raised, but the sentences cannot be translated.

Now, with reference to these "results," four criteria are briefly sketched in the paragraph following the list. They are introduced as specifications of the manner in which *analytical hypotheses* are to "conform" to (l)-(4). As Quine views the process of constructing a translation manual, it necessarily involves appeal to "hypotheses" that are not verifiable. These he calls "analytical hypotheses." One example he offers of appeal to such an hypothesis is the decision to translate a particular recurrent segment of alien utterances as the *term* (monadic predicate) "rabbit." He contends that no amount of pointing and querying can serve to establish the "correctness" of that decision. However frequently the natives assent to or volunteer the segment when rabbits are about, we are taking an unlicensed step when we decide that the segment is a term true of just those objects that are rabbits. His contention, his doctrine of the inscrutability of alien terms, is that other decisions are equally in accord with the behavioral evidence, that we might with equal justice translate the segment in question as "rabbit stage" or "undetached rabbit part" or "rabbithood" or "rabbit fusion" (in Nelson Goodman's sense of "fusion"). "Point to a rabbit and you have pointed to a stage of a rabbit, to an integral part of a rabbit, to the rabbit fusion, and to where rabbithood is manifested. Point to an integral part of a rabbit and you have pointed again to the remaining four sorts of things" [1, pp. 52-53]. Indeed, Quine ventures the suggestion that the very notion of term may be an idiosyncrasy of our culture. In any case, it should be clear, from the opening words of the next quotation if nothing else, that the conditions sketched in section 15 are conditions imposed on translation manuals. They are as follows: "The translations derivable from the analytical hypotheses are to include those already established under (1); they are to fit the prior translations of truth functions, as of (2); they are to carry sentences that are stimulus-analytic or stimulus-contradictory, according to (3), into English sentences that are likewise stimulus-analytic or stimulus-contradictory; and they are to carry sentence pairs that are stimulus-synonymous, according to (4), into English sentences that are likewise stimulus-synonymous" [1, p. 68].

Now, then, let us consider each of these four criteria in turn. The first can be formulated as follows:

> C (1). If *t* is a translation manual that correlates the sentences of an alien language with those of English, then it must satisfy the following condition:
>
> For all alien sentences σ, if σ is observational in the alien community, then $t(\sigma)$, the translation of σ under *t,* must also be observational in our community, and, further, the stimulus meaning of $t(\sigma)$ in our community must significantly approximate the stimulus meaning of σ in the alien community.

We have already expressed reservations concerning the notion of "significant approximation" among stimulus meanings. The obscurity we find in the notion is an obstacle to evaluating the present criterion. No statement can be clearer than the most obscure notion to which it appeals. And such questions as whether a statement is correct or incorrect, helpful or unhelpful,

are premature as long as one is unclear as to the statement's meaning. Still, it is possible, and probably worthwhile, to notice how criterion C(l) involves induction. The passage we cited earlier said that the situation is the "normal inductive one." And so it is. What perhaps is not obvious at first sight is that it is the "normal inductive" situation in *three* utterly distinct ways. *First,* there is, for each of the aliens whose verbal behavior is being investigated, the projection from a finite number of observed stimulations to two infinite or, at any rate colossally huge, sets. These are the two sets that are the members of the ordered pair which is the stimulus meaning of a particular sentence for the alien under study. This seems an immensely difficult projection to undertake reliably, but, as far as I can see, the difficulties are all technical, "merely technical" as the careless saying goes. No conceptual problem intrudes here. *Second,* there is projection from observed agreement among the stimulus meanings of a sentence for each of several speakers to the generalization that its stimulus meanings for all, or nearly all, alien speakers significantly approximate each other. Here is where the obscurity we were just considering makes itself felt. *Third,* there is projection from the apparently correct treatment of a finite number of observation sentences (the uncertainty here is the product of probabilities of inductions of the sorts just described) to the conclusion that *all* of the infinitely many, or at any rate indefinitely many, alien observation sentences are correctly handled. Now this third induction is an especially interesting one. It does not seem that one could begin to carry it out without engaging in a detailed study of the recursive devices available in the alien language, that is, the devices for constructing ever more complicated expressions and sentences out of simpler expressions and sentences. The criteria we are considering take into account one kind of recursive device. The second criterion (which we will consider next) concerns idioms of truth-functional composition. But if known human languages are any guide to the possible richness of recursive idiom, truth functions are a meager sample of the realm—for example, possessive constructions, as in,

His father's father's father's hat.

adjectival constructions, as in,

Lo, a quick white rabbit!

relative-clause constructions, as in,

Lo, a rabbit that has leaves!

and combinations of these, as in,

Lo, a large, wary, young, quick, white rabbit that has bright green leaves in its mouth!

There is, as the consideration which prompted the present remark suggests, strong reason to believe that the study of recursive devices deserves a prominent place in the study of language. Among current writers on the topic of language, Noam Chomsky has probably placed most emphasis on this point. It is intimately related to what he calls "the creative aspect" of language.

> The central fact to which any significant linguistic theory must address itself is this: a mature speaker can produce a new sentence of his language on the appropriate occasion, and other speakers can understand it immediately, though it is equally new to them. Most of our linguistic experience, both as speakers and hearers, is with new sentences; once we have mastered a language, the class of sentences with which we can operate fluently and without difficulty or hesitation is so vast that for all practical purposes (and obviously, for all theoretical purposes) we can regard it as infinite [2, p. 50].

Humboldt, who is quoted by Chomsky [3], put the point suggestively when he said that "language makes infinite use of a finite means." In any case, it is clear that induction of the third sort is necessarily involved in any attempt to satisfy criterion C (1).

If one attaches importance to the creative aspect of language, it is not encouraging to be told, as we are in *Word and Object,* that among the "practical constraints" imposed on the linguist is that "he is not, in his finitude, free to assign English sentences to the infinitude of jungle ones in just any way whatever that will fit his supporting evidence; [that] he has to assign them in some way that is manageably systematic with respect to a manageably limited set of repeatable speech segments" [l,p.74].

Next, let us consider the second criterion. Here the relevant text is section 13 of *Word and Object,* where Quine writes:

> Now by reference to assent and dissent we can state semantic criteria for truth functions; i.e., criteria for determining whether a given native idiom is to be construed as expressing the truth function in question. The semantic criterion of negotiation is that it turns any short sentence to which one will assent into a sentence from which one will dissent, and vice versa. That of conjunction is that it produces compounds to which (so long as the component sentences are short) one is prepared to assent always and only when one is prepared to assent to each component. That of alternation is similar with assent changed twice to dissent [1, pp. 57-58].

The proposal is that we translate the familiar truth tables, for example,

S	~S
T	F
F	T

into assent and dissent tables, for example,

S	*~S*
Assented to	Dissented from
Dissented from	Assented to

and that we require alien idioms of negation, alternation, and conjunction to conform to these assent-dissent tables. Thus the second criterion is:

> (C2). If a translation manual translates an alien idiom, *I,* as negation, alternation, or conjunction, then *I* must satisfy the appropriate assent-dissent table (for all component sentences brief enough to yield surveyable compounds).

Now this criterion appears to be a quite reasonable one. One effect of accepting it is of great theoretical interest. If one accepts the criterion, it is no longer possible to entertain the speculative possibility that there exists an alien people who earnestly believe a statement whose English translation is of the form

S and ~S.

It is no longer possible, because every piece of evidence supporting the claim that the natives did in fact earnestly believe a sentence our translation manual rendered in English as

S and ~S

would equally be powerful evidence that our translation manual was *wrong.* Thus, speculations concerning exotic logics or "prelogical people" are sharply circumscribed by the present criterion.

It would be misguided to seek a "proof" that the criterion we are considering is correct. Quine does not undertake such a demonstration. He puts forward his criterion; offers the translational maxim that "assertions startlingly false on the face of them are likely to turn on hidden differences of language"; remarks that "one's interlocutor's silliness, beyond a certain point, is less likely than bad translation—or, in the domestic case, linguistic divergence" [1, p. 59]; and allows the considerations he has brought before the reader's intelligence to make their weight and force felt.

Notice that criterion C(2) does not exclude in any way the possibility of translating an alien *sentence* as

S and ~*S*.

It is natural to expect that any reasonable manual would translate infinitely many alien sentences into English sentences of this form. What the criterion does exclude is the possibility that any *uniformly assented to* or *asserted* sentence be translated in this way.

As one contemplates the present criterion, a question naturally suggests itself. Why truth functions only? Why not extend the criterion to other logical particles such as "all" and "some"? To be sure, Quine holds that hypotheses concerning alien idioms of quantification rest on assumptions that are, to a widely unsuspected extent, arbitrary and unverifiable. But would this prevent us from formulating coherence conditions that any such hypothesis must satisfy however large the ingredient of unverifiable assumption embodied in it? Quine himself says, in the very section of *Word and Object* we are considering, that "when someone espouses a logic whose laws are ostensibly contrary to our own, we are ready to speculate that he is just giving some familiar old vocables ('and,' 'or,' 'not,' *'all,' etc.)* new meanings" [1, p. 59; my italics].

One possible explanation of the restriction of C(2) to truth functions seems to accord with Quine's exposition. For it might be proposed that truth-functional idioms "yield directly to radical translation" in the sense that they can be translated without appealing to any assumptions not directly subject to behavioral test. Let us expand the clause of C(2) concerning negation and see whether this is true. Stated more explicitly the clause reads:

> If a translation manual translates an alien idiom *I* as negation, then for any alien sentence *S*, it must be true in general that whenever a member of the alien community assents to *S* he dissents from *I(S)* and also that whenever he assents to *I(S)* he dissents from *S*.

Now I want to claim that this is *not* a purely behavioral criterion. Why not? Well, ignoring difficulties that would beset any attempt to formulate purely behavioral criteria for *assent* and *dissent,* we can focus our attention on a very important phrase in the criterion: "for any alien sentence S." The criterion appeals to the notion of sentencehood. And what are the behavioral criteria of sentencehood? The behavioral characterizations of *occasion sentence, observation sentence,* and *standing sentence* all depend on the notion "sentence." The formulations all presuppose that this notion is antecedently understood. Yet no behavioral tests of sentencehood appear anywhere in *Word and Object.* Nor is this a defect of Quine's exposition. For it is unreasonable to suppose that there could be a purely behavioral test of sentencehood. In *From a Logical Point of View* (Essay III), Quine [3] did speculate concerning the possibility of characterizing sentencehood in terms of "bizarreness reactions," but the absence of this theme in *Word and Object* may reflect a loss of confidence on his part in the feasibility of such a construction. Let us hope it does. For, although it is probably not possible to *prove* the impossibility of an operational test of sentencehood, still the lack of operational tests for almost all the theoretical concepts of science, and the staggering burden of attempting to distinguish among the varieties of "bizarreness reactions" that would be prompted by such examples as "The naked girl wore a green dress," "Charles is between the tree," "All moths are nuclear scientists in disguise," "Even if the baseball whether or not," "This stone is an hour," "Cyanide sandwiches are nourishing," "The Pythagorean Theorem elapsed," and countless others that can be adduced, render it extremely improbable that an operational test of sentencehood could be devised. Notice that the present considerations are as pertinent to the other criteria, which also appeal to the notion of sentencehood, as they are to

C(2). Thus none of the criteria are purely behavioral.

So much, then, for the suggestion that C(2) is restricted to truth functions because such idioms are subject to purely behavioral tests. C(2) is itself not purely behavioral; thus the objection against extending it, in ways easily imagined, to impose constraints on additional logical particles cannot be that the expanded criterion would fail to be purely behavioral.

We come now to the third criterion. This one can be formulated as follows:

> C(3). If *t* is a translation manual that correlates the sentences of an alien language with those of English, then it must satisfy the following condition:
>
> For all alien sentences σ, if σ is stimulus analytic (stimulus contradictory) in the alien community, then the translation of σ under *t* must be stimulus analytic (stimulus contradictory) in our community.

At first sight, this criterion may strike the reader as wildly implausible. If the alien community consists solely of flatlanders, it might be suggested, we should not be astonished to discover them invariably assenting to a sentence most plausibly translated as "The Earth is flat." Thus we would find ourselves translating a sentence which is stimulus analytic for the aliens into one which, so far from being stimulus analytic for us, is stimulus contradictory in our community. Now Quine explicitly allows for this sort of departure from C(3) (and, indeed, from the other criteria as well).

> Analytical hypotheses are not strictly required to conform to (l)-(4) with respect to quite every example; the neater the analytical hypotheses, the more the tolerance.
>
> Tolerance is bound to have been exercised if a native sentence, believed by the whole community with a firmness that no stimulus pattern of reasonable duration would suffice to shake, is translated as "All rabbits are men reincarnate." To translate a stimulus-analytic sentence thus into an English sentence that is not stimulus-analytic is to invoke translator's license. I think this account gives such a translation quite the proper air: that of bold departure, to be adopted only if its avoidance would seem to call for much more complicated analytical hypotheses. For certainly, the more absurd or exotic the beliefs imputed to a people, the more suspicious we are entitled to be of the translations; the myth of the prelogical people marks only the extreme. For translation theory banal messages are the breath of life [1, p. 68].

Thus we see that the present criterion, though perhaps not as compelling as C(2), is very much in the same spirit of "charity."

The fourth criterion involves a new notion. This is the notion of "intrasubjective stimulus synonymy." More explicitly, it is the notion of *socialized* intrasubjective stimulus synonymy. A pair of sentences are stimulus synonymous for a person if their stimulus meanings with respect to him are identical. That is, any stimulation which would prompt him to assent to one would also prompt him to assent to the other; similarly, any stimulatory condition which would prompt him to dissent from one would also prompt him to dissent from the other. Thus, for example, the sentences (a) "There's a bachelor" and *(b)* "There's an unmarried man" could be expected to be stimulus synonymous for any speaker of English. Since these two sentences are probably intrasubjectively stimulus synonymous for *all* English speakers, they illustrate what Quine calls *socialized* intrasubjective stimulus synonymy. The fourth criterion lays it down that analytical hypotheses must map pairs of alien sentences which exhibit socialized intrasubjective stimulus synonymy into pairs of domestic sentences which exhibit socialized intrasubjective stimulus synonymy. That is:

> C(4). If *t* is a translation manual that correlates the sentences of an alien language with those of English, then it must satisfy the following condition:
>
> For all alien sentences $\sigma_1$and σ_2, if σ_1 and σ_2 are intrasubjectively stimulus synonymous for all members of the alien community, then their translations under *t* should be intrasubjectively stimulus synonymous for all members of our community.

Here it is important to notice that the concept of socialized intrasubjective stimulus synonymy is immune from difficulties which beset the notion "observation sentence." The reader will recall that an aspect of stimulus meaning which creates difficulties for the notion of "approximating stimulus meanings" was the fact that stimulus meaning is a function of a vast number of variables. In consequence of its dependence on a vast number of variables whose values vary widely from person to person, stimulus meaning can be expected to vary drastically from speaker to speaker in an unpredictable manner. It would be a fantastic coincidence, one we would almost certainly never discover, if it turned out that there was a sentence which had the same stimulus meaning for two distinct persons. It would be an equally fantastic coincidence if the first of a pair of sentences had a stimulus meaning for one speaker identical with that which the second sentence had for another speaker. But it is trivially true that any sentence has with respect to a given person a stimulus meaning which is identical with the stimulus meaning it has with respect to that person. And it is not trivially, but quite naturally, true that there are pairs of distinct sentences which do have identical stimulus meanings with respect to one person. It is naturally true because when we confine our attention to an individual almost all the variables in the gigantic set of variables which govern stimulus meanings are fixed. As one would want to say intuitively (Quine indulges from time to time in intuitive semantic idiom; and it should be clear that this in no way conflicts with his reservations against serious theoretical appeal to the notion of meaning), once all of the vast number of variables involving the person (sensory acuity, body condition, personality, belief, knowledge, set, attention level, etc.) are *fixed,* the crucial variables governing stimulus meaning become properties of the sentence,

such as its meaning. No wonder that two sentences we would intuitively describe as having the same meaning should have the same stimulus meaning with respect to one person. There is a qualification that deserves to be noticed here: two sentences may agree, as some writers impressionistically say, in cognitive meaning and yet differ in stimulus meaning for a particular person. Any one of a number of conditions could result in this circumstance. If, for example, one of two synonymous sentences contained a vulgar or crude expression that might shock delicate sensibilities, that sentence could fail to command assent or dissent from some persons under all stimulations; yet the other sentence with which it is synonymous might still command the assent or dissent of those same sensitive persons under a wide range of stimulations. But when two sentences do, intuitively speaking, agree in meaning, and when there are no extenuating differences, such as the inclusion of a vulgar expression in one of them, then it is natural to expect that their stimulus meanings with respect to a given individual will be identical.

We now have before us the four criteria that constitute Quine's first set. After considering a question about two of them, in the next section, we will formulate the fifth criterion and then argue for the conclusion announced at the outset, namely, that the analysis of translation we are considering presupposes its own incompleteness.

Do C(l) and C(4) Apply to Idiolects?

The motivation of the present question will become apparent after we have seen the second set of criteria. As the reader no doubt will recall, that set consists of two criteria from the first set (C[2] and C[3]) and a fifth completely new criterion.

Let us consider C(l) first. Does it apply to an idiolect? That is, does it apply to the language of an individual? Well, are there observation sentences in an idiolect? A moment's reflection is all that is required to see that all occasion sentences of an idiolect are observation sentences of the idiolect. Whatever "significant approximation of stimulus meaning" is, the identity relation must count as a special instance of it. But consider what follows. If, for example, the English-speaking individual whose idiolect we were studying happened to have caught a rabbit when he was twelve years old, then the two sentences (1) "Lo, a rabbit!" and (2) "Lo, an animal of the sort I caught when I was twelve years old" would presumably have identical stimulus meanings for him. Apply C(1) to the process of constructing a "translation manual" *from* his idiolect *to* his idiolect. That is, apply C(l) to a paraphrase map for his idiolect. It then turns out that (1) and (2) are perfectly acceptable paraphrases of one another. But (1) and (2) are *not* acceptable paraphrases of each other in any idiolect. Notice that as soon as we turn our attention from a single idiolect to a language shared by various speakers, the difficulty just illustrated fades. Thus, ignoring difficulties in the notion "observational," (1) but not (2) could be expected to be observational in an English-speaking community.

In brief then, sentences which are not mutual paraphrases for anyone can nonetheless have identical stimulus meanings for a single person. This fact excludes the possibility of applying C(l) to idiolects. It also rules out the application of C(4) to idiolects.

The Fifth Criterion

It is instructive and indeed necessary to follow the introduction of the fifth criterion quite closely. Its presentation is marked by an inexplicitness which, in my opinion, hinders the reader from gaining a clear comprehension of its content. "Section 10 left the linguist unable to guess the trend of the stimulus meaning of a non-observational occasion sentence from sample cases. We now see a way, though costly, in which he can still accomplish radical translation of such sentences. *He can settle down and learn the native language directly as an infant might. Having thus become bilingual, he can translate the non-observational occasion sentences by introspected stimulus synonymy"* [1, p. 47; my italics]. The suggested picture of a linguist taking the time and trouble to acquire a full-bodied mastery of some alien language and then proceeding to translate various sentences into his native language by *introspected stimulus synonymy* is so implausible that it is difficult to construe this passage literally. The implausibility of this picture stems, I think, from several sources. It is not obvious that anyone could translate any sentences by collating stimulus meanings; the relevance of stimulus meaning to the study of language or translation is, for us, so far, unestablished. And the suggestion that a bilingual, that is, a person who possesses what amounts to native fluency in two language, might translate from one of his languages into the other by appeal to stimulus meanings strikes one as strained. Further, even if it had been established that collating stimulus meanings is relevant to the process of translation, that would do nothing toward establishing that "introspected stimulus meanings" were in any way relevant to the process. Stimulus meanings cannot be introspected; they are not mental events; they are not denizens of the fugitive realm of consciousness. One can no more introspect a stimulus meaning than one can introspect his height or weight.

Now I claim that the passage we just looked at is elliptical, that its implausibility when literally construed is a reliable indication that it ought not be so construed. I claim further that it is not easy to see clearly what is said elliptically in that passage until one has read page 217 of *Word and Object,* because it is there that a genuinely valuable clue to the passage's interpretation emerges.

The passage quoted above occurs in section 11 of *Word and Object.* There is no further mention of the

bilingual until section 15 of the book. There we encounter the following passage:

> Not that (l)-(4) themselves cover all available evidence. For remember that we stated those only with reference to a linguist whose gathering of data proceeded by querying native sentences for assent and dissent under varying circumstances. A linguist can broaden his base, as remarked in § 11, by becoming bilingual. Point (1) is thereupon extended to this: (1') All occasion sentences can be translated. Point (4) drops as superfluous. But even our bilingual, when he brings off translations not allowed for under (1')-(3), must do so by essentially the method of analytical hypotheses, however unconscious. Thus suppose, unrealistically, to begin with, that in learning the native language he had been able to simulate the infantile situation to the extent of keeping his past knowledge of languages out of account. Then, when as a bilingual he finally turns to his project of a jungle-to-English manual, he will have to project analytical hypotheses much as if his English personality were the linguist and his jungle personality the informant; the differences are just that he can introspect his experiments instead of staging them, *that he has his notable inside track on non-observational occasion sentences,* and that he will tend to feel his analytical hypotheses as obvious analogies when he is aware of them at all. Now of course the truth is that he would not have strictly simulated the infantile situation in learning the native language, but would have helped himself with analytical hypotheses all along the way; thus the elements of the situation would in practice be pretty inextricably scrambled. What with this circumstance and the fugitive nature of introspective method, we have been better off theorizing from the more primitive paradigm: that of the linguist who deals observably with the native informant as a live informant rather than first ingesting him [1, pp. 70-71; my italics].

The picture commented on above appears again in the present passage. The intended meaning is still unobvious. We have the linguist becoming bilingual. We are told that he now possesses a "notable inside track on non-observational occasion sentences." Few people would deny that a bilingual has a "notable inside track" on the translation of a vast number of sentences. But that is because most people are inclined to view language acquisition as a fairly straightforward process of acquiring a set of complicated skills. In an exposition which defends the thesis that language acquisition involves implicit hypotheses that are to a large extent arbitrary and unverifiable, it is not clear what "notable inside track" can be allowed the bilingual. In what sense, then, is the bilingual here credited with a "notable inside track"? One advantage of the bilingual suggested by the present passage is this: the bilingual can ask himself, "Would I assent if confronted with a rabbit and the simultaneous query 'Gavagai?'?" Thus, according to this suggestion, the bilingual can have the English half of his personality assume the role of a linguist who proceeds to administer a questionnaire (of the sort discussed, e.g., by Carnap) to an informant played by the jungle half of his personality. The results of the interior dialogue are then presumably assessed along the lines proposed on page 35 of *Word and Object,* where Quine suggests that Carnap's questionnaire procedure is best regarded as a shortcut technique of guessing stimulus meanings (a technique available only *after* the investigating linguist has acquired a certain amount of facility with the alien tongue). But *this* cannot be the bilingual's "inside track." The ability to "introspect his experiments" and the "inside track" appear to be two *distinct* items in a list of three differences between the monolingual and bilingual investigator. What *is* the bilingual's "inside track"?

The answer to this question, and the first clear indication of what the fifth criterion actually is, appears on page 217 of *Word and Object.* The answer appears, strangely enough, in the form of a sentence which has the air of a casual summary of a matter that has been discussed in detail earlier. The relevant sentence is this: "We know from § 11 that stimulus synonymy can be used as a standard of translation not only for observation sentences but for occasion sentences generally, thanks to the devices of socialized intrasubjective synonymy and bilinguals." It is the last part of this sentence which contains the valuable clue: "thanks to the devices of socialized intrasubjective synonymy and bilinguals." (It is, of course, clear that "socialized intrasubjective *stimulus* synonymy" is intended by the words "socialized intrasubjective synonymy," since otherwise the sentence fails to refer to any concept previously discussed or defined.) We can now attempt to state clearly and explicitly the criterion that has been coyly resisting our efforts to unveil it. Socialized intrasubjective stimulus synonymy is involved. Bilinguals are involved. And *additional* information, information not available to the linguist querying monolingual natives, is forthcoming. Now criterion C(4) of the first set already mentions socialized intrasubjective stimulus synonymy. That criterion, it will be recalled, stipulated that if $\sigma_1$and σ_2 are two sentences which are intrasubjectively stimulus synonymous for all the members of the alien community, then $t(\sigma_1)$ and $t(\sigma_2)$, their respective translations, must also be intrasubjectively stimulus synonymous for all members of our English-speaking community. But the fifth criterion cannot be a mere repetition of C(4), both because Quine interprets it as yielding *additional* information, information not provided by any of C(1)-C(4), and because it obviously involves bilinguals in some way or other, whereas C(4) does nothing of the sort. The natural suggestion is that the new criterion depends on the socialized intrasubjective stimulus synonymy of sentence pairs $<\sigma_j, S_j>$, where σ_j is an alien sentence and S_j is an English sentence, or, more generally, where σ_j belongs to one language and S_j to another. Now, quite clearly, we can speak of the *intra*subjective stimulus synonymy of an alien sentence σ_j and an English sentence S_j only if we are referring to a *bilingual.* What the criterion seems to require then is that *analytical hypotheses must not conflict with the socialized intrasubjective stimulus synon-*

ymies which obtain among bilinguals. More explicitly, the criterion appears to be the following:

> C(l'). If *t* is a translation manual that correlates the sentences of an alien language with those of English, then it must satisfy the following conditions:
>
> For all alien sentences σ, if σ is an occasion sentence, then σ and its translation under *t* must be intrasubjectively stimulus synonymous for all persons fluent in both the alien language and English.

Several considerations reinforce the conclusion that this is the criterion actually intended by the passages that puzzled us. For one thing, it is plausible to suppose the present criterion is in fact capable of performing the job that criterion is claimed to perform. For another, adoption of the present criterion would in fact render C(4) superfluous. Notice that one feature of the present criterion seems to conflict with a suggestion present in the passages from sections 11 and 15 of *Word and Object.* The criterion we have before us requires that only *socialized* stimulus synonymies among bilinguals be respected by translation manuals. Yet the passages in sections 11 and 15 seem to suggest that *one* bilingual has himself access to or can provide all the relevant information. Now, despite this hint in those passages, I want to defend the present criterion as the one actually intended. For it would be wrongheaded to require that manuals respect *all* the intrasubjective stimulus synonymies of any single bilingual. The relevant point is precisely the one that ruled out the application of C(l) and C(4) to idiolects: sentences utterly disparate in meaning can, despite their semantic divergence, have identical stimulus meanings with respect to a single person. In the bilingual case, "Gavagai" and "Lo, an animal of the sort I captured when I was twelve years old" might be stimulus synonymous for a lone individual.

Besides, C(4) requires that manuals respect *socialized* stimulus synonymies by mapping alien sentences that stand in the relation into English sentences that stand in the relation; C(4) could not be rendered superfluous by C(l') if C(l') did not itself involve *socialized* stimulus synonymies.

A Premise Underlying C(l')

Now let us consider C(l'). It appears that, if C(l') is indeed a workable control over the translation of occasion sentences, then a particular claim concerning occasion sentences and bilinguals must be true. That claim is the following:

> (P). Given any alien occasion sentence σ, there exists an English occasion *S* such that σ and *S* are intrasubjectively stimulus synonymous for all alien-English bilinguals.

Now we do not have to try to decide whether or not this claim is true. It does, in fact, seem plausible, but a reliable determination of its truth or falsity would require empirical investigation. What is significant for our present discussion is that the claim appears to function as a premise underlying Quine's analysis. We shall *assume* the premise is true and then attempt to discover what consequences its truth would have for the rest of Quine's analysis. Very well then, suppose (P) true. A question naturally suggests itself: *Why* is (P) true? How does it happen that for any alien occasion sentence there is an English occasion sentence which is stimulus synonymous with it for all alien-English bilinguals? Is this something we can account for or explain?

Before we attempt to answer this question let us try to understand a bit better what it involves. Observe, first, that when two sentences diverge in stimulus meaning for a person, they must diverge in meaning for that person in any reasonable or ordinary sense of "meaning." For, if they diverge in stimulus meaning, then there are occasions when the person will dissent from the one but not from the other or assent to the one but not to the other, and this would be queer behavior indeed if they were equivalent in his idiolect. A very slight qualification is relevant here, namely, the one we had occasion to notice in the course of our discussion of criterion C(4) (see pp. 31-32 above), but the divagation is minor, and the present generalization can be relied on in most instances. It certainly makes itself felt in Quine's analysis if we understand that analysis correctly. For, if our account of the fifth criterion is correct, then whenever an alien occasion sentence diverges in stimulus meaning from a domestic one for any bilinguals, neither is an acceptable translation of the other.

We can now see that premise (P) says something about the analytical hypotheses tacitly constructed by bilinguals. If two sentences are not stimulus synonymous for a person, then they are not mutual paraphrases under the analytical hypotheses he has internalized. This fact provides us with a method of showing that the implicit analytical hypotheses of two bilinguals diverge or disagree. Suppose we have two bilinguals before us. If we can discover an alien occasion sentence S such that there is no domestic sentence which is stimulus synonymous with o- for both of the bilinguals, then we know that their implicit analytical hypotheses conflict. For in that case there is no domestic paraphrase of o- acceptable to both sets of analytical hypotheses. Yet, if (P) is true, the test must always fail. Thus (P) says, in effect, that there are limitations on the possible divergences among the implicit analytical hypotheses of bilinguals. It says that they will always agree to the extent that, for any alien occasion sentence, there is at least one English translation compatible with them all. Our question concerning the explanation of (P) is therefore the question why the tacit analytical hypotheses of bilinguals conform in this way.

Notice that C(1)-C(4) provide no reason whatever to anticipate this conformity. Quine takes pains to explicitly state that the first four criteria do not enable us to translate non-observational occasion sentences. Thus,

for example, he writes on page 68 that "questions of intrasubjective stimulus synonymy of native occasion sentences even of non-observational kind can be settled if raised, *but the sentences cannot be translated*" [1; my italics]. This means that translation manuals can satisfy the first four criteria and yet not handle non-observational occasion sentences correctly. That is, accepting Quine's analysis, a translation manual can satisfy *every* objective test formulable short of appealing to the behavior of bilinguals and yet botch non-observational occasion sentences in the sense that it treats them in a way that conflicts with the tacit analytical hypotheses of bilinguals. But surely it is possible to become a bilingual without the aid or guidance of other bilinguals, and when a person achieves bilinguality in *this* way he is not influenced in the construction of his tacit analytical hypotheses by the behavior of other bilinguals. Yet, still accepting Quine's analysis, the only objective evidence our aspiring bilingual has to guide him is exactly that which is summarized by the first four criteria, and it is possible to satisfy those four criteria with analytical hypotheses that diverge from the analytical hypotheses actually constructed by bilinguals. What accounts for the conformity of bilingual analytical hypotheses?

Hereditary Dispositions and Language Learning

In the history of Western thought, one encounters various attempts to account for human cognitive performances in terms of information that is, so to speak, built in at birth. Examples of such attempts are Plato's Doctrine of Remembrance and Leibniz's Theory of Innate Ideas. It is easy to ridicule or caricature such efforts. The picture of an infant springing from the womb sprouting Latin poetry or differential equations might suggest itself to an unsympathetic spectator. Recently, however, Chomsky has suggested a charitable interpretation of what might be intended by a defender of "innate ideas" [4, chap. i]. The suggestion is, briefly, that our neural organization may determine in advance, in a highly specific way, the form of the theories we are capable of constructing. Chomsky was led to this proposal in the course of considering the process of human language acquisition. He conjectures that the form of grammar we are capable of internalizing may be restricted to the transformational variety he has studied.

Nor is Chomsky the only contemporary writer to suggest that innate mechanisms play a significant role in language acquisition. G. E. M. Anscombe has pointed out to me that the theme of inborn mechanisms plays an important role in Ludwig Wittgenstein's philosophy. She observes (in a private communication) that, on Wittgenstein's analysis, language learning involves a "catching on" not at all "dictated" by the training or examples to which the learner is exposed. This theme occupies a number of paragraphs in *Philosophical Investigations* [5, cf. pars. 206-42]. Surprisingly, there is even explicit discussion of innate mechanisms at one point in Wittgenstein's writings: in the discussion of language game 40 in *The Brown Book* [6]. Just before game 40, Wittgenstein considers various imaginary communities in which the inhabitants perform dances (or draw ornamental designs) upon being given written orders. The written orders he imagines are strings of letters; each letter signifies a movement (line segment) in a given direction: thus *a* might signify a step to the right. In one case (game 33), the inhabitants consult a table of letters and arrows each time they undertake to obey a command. In another (game 38), after being trained to follow a written order, the inhabitants are shown the table of letters and arrows once and thereafter successfully obey orders without further use of the table. In game 40, Wittgenstein imagines a case where training is not necessary,

> where, as we should say, the look of the letters *abcd* naturally produced an urge to move in the way described. This case at first sight looks puzzling. We seem to be assuming a most unusual working of the mind. Or we may ask, "How on earth is he to know which way to move if the letter *a* is shown him?". But isn't B's reaction in this case the very reaction described in 37) and 38), and in fact our usual reaction when for instance we hear and obey an order? For, the fact that the training in 38) and 39) *preceded* the carrying out of the order does not change the process of carrying it out. In other words, the "curious mental mechanism" assumed in 40) is no other than that which we assumed to be created by training in 37) and 38). "But *could* such a mechanism be born with you?" But did you find any difficulty in assuming that *that* mechanism was born with B, which enabled him to respond to the training in the way he did? And remember that the rule or explanation given in [the] table ... of the signs *abcd* was not essentially the last one, and that we might have given a table for the use of such tables and so on [6, p. 97].

(I am indebted to Robert C. Coburn for drawing my attention to this passage and for references to relevant passages in *Philosophical Investigations* [5].)

Now, if (P) were true, could we account for its truth by appealing to invariable traits of our neurological organization? On the face of it, this seems a cheap dodge. Whatever attraction or plausibility innate ideas may have in other contexts, here they seem to have none. Here they smack of *deus ex machina.* Still, there are passages in Quine's writings that suggest he might find innate ideas congenial. Thus, for example, in Essay III of *From a Logical Point of View,* we find the following comment:

> What provides the lexicographer with an entering wedge is the fact that there are many basic features of men's ways of conceptualizing their environment, of breaking the world down into things, which are common to all cultures. Every man is likely to see an apple or a breadfruit or a rabbit first and foremost as a unitary whole rather than congeries of smaller units or as a fragment of a larger environment, though from a sophisticated point of view all these attitudes

are tenable. Every man will tend to segregate a mass of moving matter as a unit, separate from the static background and to pay it particular attention [3, pp. 61-62],

Now this passage tempts one to impute a doctrine of innate ideas to Quine, and a few of his other remarks (such as the one about "natural groupings" at the top of p. 68 [3]) have the same effect. Yet, I hesitate to succumb to this temptation. In the first place, when Quine refers back to the "entering wedge" described above, he characterizes it as an instance of "exploiting the overlap of our cultures." If he regarded the cultural overlap as inevitable given our underlying neurology, then it would have been more natural and informative for him to have described the entering wedge as an instance of exploiting our common neurology. In the second place, if Quine were to embrace the view that basic ways of conceptualizing our environment, of breaking the world down into things, are automatic outcomes of our congenital endowment, then he would discredit his thesis that alien terms are inscrutable. If the manner in which the (human) aliens break the world down into things is determined in advance by their neurology, if they are bound to conceptualize in terms of rabbits rather than rabbit stages or fusions or other imaginable entities, then the linguist is spared the irresolvable indecision with which he would be saddled by the inscrutability doctrine.

The second difficulty is an instance of a broader one. To "explain" (P) by appealing to a neurological X common to all men is doubly unhelpful, because this easy move provides no clue as to the form of the mechanism involved and, more gravely, because it fails to specify what it is that the conjectured mechanism *does.* We can endure the first lack. It is not essential that we be given the neurological details of the conjectured mechanism. But the second lack would be unforgiveable. We must know what any conjectured mechanism is supposed to be *doing* before we can decide whether it could give rise to the uniformity claimed by (P). And it will not do to be told that what the mechanism is doing is giving rise to the uniformity described by (P). We require to know how the uniformity comes about. The specific suggestion that the uniformity arises from an agreement in the way we break the world down into "things" conflicts with Quine's thesis that alien terms are inscrutable. That is, the suggestion secures the agreement claimed by (P) at the cost of abandoning a divergence Quine claims at the other end of his analysis. More generally, any inborn mechanism which gives rise to the uniformity claimed by (P) threatens, on the face of it, to rule out the perpetual possibility of conflict claimed by the indeterminacy thesis. It is, I suppose, *logically possible* that there exists a mechanism which would be just strong enough to keep bilingual sentence correlations enough in line so that (P) would come out true but at the same time would be sufficiently weak so that the indeterminacy thesis would also be true. One would not, however, want to rest any important conclusions or views on the hope that that bare logical possibility is actually realized.

Conclusion

Let us review our present situation. We have examined Quine's theory of translation and decided that its elliptically presented fifth criterion is identical with the criterion formulated above as C(l'). If, however, C(l') is a usable criterion, then a certain empirical claim concerning bilinguals must be true. This is the claim, (P), that corresponding to any alien occasion sentence there is always a domestic one that is stimulus synonymous with it for all bilinguals. Now either this claim is true or it is not. If it is not, then the criterion governing all occasion sentences is based on a false assumption, and Quine's theory of translation must be rejected. If it is true, then we require an explanation of the regularity it records. The suggestion that the regularity is the outcome of hereditary dispositions to pattern information is initially implausible, does not accord with Quine's exposition, and threatens the doctrine of translational indeterminacy with incoherence.

Where does this leave us? It leaves us asking whether there is a way of accounting for (P) that is less implausible than the inborn-mechanism suggestion considered in the previous section. The answer is that there is a way: for we can infer that people, when acquiring a language, pay attention to and are guided by evidence and information ignored by the criteria we are examining. (This paying "attention" to and being "guided" by need not be deliberate processes, of course.) This evidence and information steers bilinguals into the uniformity that the criteria presuppose but cannot explain. Surely, if (P) were true, this would be the most plausible explanation to offer in the context of Quine's framework.

But what is the consequence of this for Quine's theory of translation? Assuming the soundness of the preceding discussion, the consequence is that the theory is, at best, an incomplete account and, thus, that the doctrine of translational indeterminacy does not follow from the analysis intended to support it. The fact that a fragment of the relevant evidence in a given domain underdetermines theory leaves open the question whether theory there is underdetermined when all the relevant evidence is taken into account.

This has a broader consequence for Quine's general philosophical position. For, if the doctrine of translational indeterminacy does not follow from the analysis intended to support it, then one of the most elaborate and detailed expositions offered in defense of Quine's misgivings over the analytic-synthetic distinction fails to make those misgivings finally plausible.

Received March 15,1967

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