

REFERENTIAL CONSISTENCY AS A CRITERION OF MEANING

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ABSTRACT

This paper describes a logically compelling criterion of meaning—that is, a necessary condition of meaning, one which is non-arbitrary and compelling. One cannot *not* accept the proposed criterion without self-referential inconsistency. This “metallogical” variety of self-referential inconsistency is new, opening a third category beyond semantical and pragmatistical forms of self-referential inconsistency.

It is argued that such a criterion of meaning can serve as an instrument of internal criticism for any theoretical framework that permits reference to a class of objects. The paper combines the concern of the logical empiricists to formulate a rigorous meaning criterion, with the analytical interest in identifying and eliminating self-defeating statements through an analysis of the referential structure of theories.

The paper is followed by a list of other publications by the author that further develop and extend the ideas presented here.



REFERENTIAL CONSISTENCY AS
A CRITERION OF MEANING*

Criteria of meaning which have been proposed in the past have failed to persuade general acceptance. They have usually endorsed then-current scientific practice, or have favored the adoption of a special, usually empirical, framework. The historical failure of criteria of meaning has been due to their apparently arbitrary status as standards external to the sets of statements to which they would apply. Often, such criteria have also failed to qualify as meaningful in the test of self-application.

It is my purpose here to show that there is available to us a criterion of meaning which must be satisfied in order for individual claims, concepts, and frameworks to qualify as "meaningful". The criterion I shall recommend is that of "referential consistency". It is proposed as a criterion of meaning in the largely negative sense that non-satisfaction of the criterion involves a certain type of meaninglessness that has received little attention. The criterion developed here therefore does not express a sufficient condition of meaningfulness. One may indeed seriously doubt whether a sufficient condition can be formulated. As a result of this limitation of focus, little will be found here about the nature of meaning. On the other hand, the criterion proposed defines an important *lower limit* of meaning, below which claims, concepts, and frameworks become self-undermining. It is in this latter sense that the criterion proposed can provide a useful tool for internal analysis and criticism.¹

The criterion I shall suggest has these rather unique properties: Acceptance of the criterion is non-arbitrary or compelling in a sense we shall explore briefly. And applications of the criterion avoid begging the question in a way in which appeals to external standards do not.

Logical criteria for evaluating, e.g., the validity of an argument, or for assessing the consistency of a theory, define for us the limits of acceptability which argumentation or theory construction endorses. To a large degree, such criteria are arbitrary in the sense that they can be changed if our purposes are served by such a change. Seen as conventions we accept in the light of our objectives,² the criteria

which delimit what we will accept are seldom, if ever, absolute. That is, we are not normally compelled, on pain of incoherence, to accept certain particular criteria rather than certain others, although it is often the case that, if we are to hold to our purposes, we must abide by these or related criteria if we are to accomplish what we intend.³ In general, then, I shall call a criterion *non-arbitrary* or *compelling* if non-satisfaction of that criterion precludes achieving the task at hand. We shall look at this claim in more detail in a moment.

The criteria which define what we mean, e.g., by 'validity' and 'consistency' are "logically arbitrary" in several ways. If we detect that a criterion, or equivalently here, a rule, has been broken, we are free to amend the rule (and perhaps in so doing change the ends which the rule may serve), or correct the violation, or leave things as they are, or shift our perspective, perhaps to a more general point of view, and perceive the breaking of the rule as conforming to a more general rule in relation to which it is no longer identified as a violation. And we may have other options. But whatever the special nature of the case may be, criteria of the sort used to assess the validity of arguments and the consistency of theories constitute logically arbitrary rules for playing certain games: rules are the logical features of practical activity; the control which they make possible is a control which we choose to have, and we are free to choose otherwise.

In relation to our chosen purposes, then, logical criteria seldom compel us by reason of logic alone to accept these criteria and no others. There is, often and in general, a sense of "open-texture" about our objectives. The formal constraints we do accept may be selected because they reinforce other ends we intend: economy, comprehension, concinnity, etc. *How* we do or should make selections from among alternative, logically arbitrary criteria will not be examined here.

From the standpoint of the criteria we accept, our purposes are underdetermined or specified with a degree of vagueness to just the degree that these criteria are logically arbitrary. It is perhaps fair to say that attempts to delimit meaning by means of a necessary and sufficient criterion have failed because of this logical arbitrariness. The numerous criteria that have been recommended for detecting meaningless concepts and statements have very much the same status as do criteria which permit evaluations of validity, consistency, etc.

Criteria of meaning have come to be considered in the same game-relative light as have rules of logical evaluation.

For example, Hume, Schlick, Ayer, and Carnap have proposed these as criteria of meaning:

For Hume: expression of abstract or empirical reasoning.⁴

For Schlick: association of conditions with a proposition or question which define what experience(s) would make that proposition true, or which would if satisfied answer that question.⁵

For Ayer: verifiability, reflecting an individual's knowing how to verify a proposition which is factually significant to him.⁶

For Carnap: ability to give rules according to which observable effects can be deduced,⁷ or alternately, expression of factual content.⁸

These criteria, not exhaustive of those proposed in the literature, nor yet mutually exclusive, share two characteristics: First, from a non-partisan viewpoint, it may be fair to say that acceptance of one or more of these criteria is a function of one's purposes. Second, neither Hume, nor Schlick, nor Ayer, nor Carnap, nor any other proponent of a criterion of meaning apparently has been able to show that acceptance of a certain criterion of meaning compels assent, i.e., is non-arbitrary in the sense we have sketched.

This observation would not reflect a negative judgment if, as could be claimed, we wish a criterion of meaning to function with the same measure of arbitrariness in the framework of a set of concerns as does a rule-based convention of logical evaluation.⁹ But this state of affairs would clearly not satisfy authors of meaning criteria.

Criteria of meaning, then, have functioned in an *external* capacity: When they are applied, they are used to evaluate statements, concepts, or frameworks, as it were, from the outside. Criteria of meaning, understood as stipulative, normative conventions, can only be recommended in a manner which seeks to persuade our acceptance, since they do not, in and of themselves, compel assent.¹⁰

One of the most persuasive cases that can be made on behalf of the choice of a certain criterion of meaning is that its meaningfulness follows from its self-application.¹¹ If the criterion recommends that meaning be identified with expression of factual content, for example, it may be argued that 'factual content', understood in terms of operations which define the criterion, itself expresses factual content.

However, the self-applicability of a criterion of meaning, when

assured, at most insulates the use of the criterion from internal inconsistency, and may strengthen the *feeling* that its choice is not totally arbitrary. Beyond this, self-applicability does not do much: The decision to adopt a particular criterion of meaning remains external to the class(es) of statements and concepts to which it is to apply.

REFERENTIAL CONSISTENCY AS AN INTRINSICALLY
DETERMINED CRITERION OF MEANING

In the view I have attempted to represent, rules for evaluating logical validity and consistency and criteria of meaning share the property of arbitrariness as game-relative conventions. The selection of such rules and criteria hence may be considered predominantly to be a function of our practical concerns. With respect to the decision to adopt a particular criterion, there is little that can be said if more than practical justification is desired. In a given field of study, rule-based evaluative conventions of one kind or another may be convenient, expedient, or necessary in practice. If one chooses to work in that field, he may have need of some externally imposed evaluative conventions. But the use of such external standards of evaluation cannot, as we have seen, be expected to be non-arbitrary and compelling.¹²

Fortunately, *there does exist a logically compelling basis for evaluation, a basis which one cannot not accept.* I have called this basis for evaluation 'referential consistency'.¹³

Referential consistency does not represent an externally imposed convention, a normative stipulation, an arbitrarily endorsed special rule or criterion. The approach to referential consistency described here rather has the character of a *metalogic*, in terms of which "preconditions of reference" in special contexts can be studied. In rough terms, initially, referential consistency is a metalogical criterion or rule of evaluation which addresses, *intrinsically*, the context-relative use of expressions, statements, or concepts. A special set of evaluative rules or criteria is not applied across the board in an external way, but rather *attention is given to those conditions which must be satisfied in a given context in order for references made in that context to be possible at all.* The results of applying such a metalogical criterion of referential consistency are non-arbitrary, both

because a special criterion is not imposed externally, and because these results compel assent – one cannot reject them in a given context of reference.

A short account of the proposed metalogic of reference will be given here. A complete formulation of the general theory will be found elsewhere,¹⁴ as are illustrations of certain applications of the metalogic.¹⁵

A METALOGIC OF REFERENCE

For the sake of simplicity, I limit my treatment here to the set of *referring sentences* (alternatively, *propositions*) $\mathcal{P} = \{p_1, p_2, \dots, p_n\}$ where p_i may refer to any one or more o_i of a set of objects of reference $\mathcal{O} = \{o_1, o_2, \dots, o_n\}$, and may possess any truth-value of a set of possible values $V = \{0, 1, \dots, n\}$, where $n \geq 3$.¹⁶ By the 'significant range of V ' is meant $\{0, 1, \dots, n-1\}$. (A discussion of the value v_n follows below.) It is clear that the significant range of V is bivalent when $n-1=1$, with '0' and '1' representing the values 'false' and 'true', respectively.

Some definitions are called for.

(D1) A *particular* is a possible object of identifying reference.

Alternatively,

(D2) An *identifying reference* is such that an ascription to that which can be the subject of an ascription (namely, a particular) establishes that what is ascribed (one or more properties, relations, a description, etc.) and that that to which the ascription is made are one and the same (identification).

D1 contains the there undefined concept of identifying reference, while D2 leaves undefined the concepts of particular, description, property, relation, identification, and ascription.

In the interests of simplicity we will retain D1, permitting the concept of identifying reference to be primitive. However, it may be useful to introduce an interpretation concerning the use of 'identifying reference'.

In what follows, 'R' is used to express a ternary relation between a person, whose proper name may be assumed as a value by a variable

' α ' ranging over a set of proper names for persons, and a space-time coordinate which is a value of a variable ' σ ' taking as its values specific space-time coordinates. When identifying reference (hereafter simply called 'reference') to an object obtains, $Rm\alpha_i s$ uniquely determines o_i in relation to a person m , at a certain space-time coordinate s :

$$(1) \quad (x)(Rmxs \ \& \cdot \ x \in \{o_1, o_2, \dots, o_n\} : \supset \\ -(\exists y)(Rmys \ \& \cdot \ y \in \{o_1, o_2, \dots, o_n\} : \& \ x \neq y)).^{17}$$

From this point of view, the concept of reference is used to address the metalogical properties of identification; that is to say, possession of an identity is presupposed in connection with any particular, and all particulars are possible objects of reference, i.e., can be identified.¹⁸ (It is important, then, to observe that the term 'reference' is *not* used in a way that entails the existence of psychological processes, intentions, etc., although these dimensions of referring need not be excluded if we wish to talk about them.)

Let $p_i \supset R\alpha o_i \sigma$ express the claim that the use by a person α at a space-time position σ of a referring sentence p_i entails reference to an o_i , if p_i has a value in the significant range; in other words, $R\alpha o_i \alpha$ follows from p_i whether the value of p_i is T or F.¹⁹ The claim that is implicit here is that referring sentences of \mathcal{P} are such that reference obtains to some o_i provided only that the p_i of \mathcal{P} have truth-values in the significant range: hence, even when a $p_i = F$, reference is considered to obtain to some o_i which can serve to justify the claim to the effect that $p_i = F$.

A p_i is said to be *self-referentially inconsistent* in three cases which we distinguish here. (1) When $p_i \supset R\alpha o_i \sigma$ and $o_i = p_i$, then p_i exhibits *sentential* or *propositional self-reference*, depending upon whether p_i is considered as a sentence or as the expression of a proposition. If p_i is self-referential in either of these two ways and p_i claims of itself that it is false, then, when V is bivalent, p_i is true iff it is false. Such a p_i comprises a *paradox-generating* self-referential inconsistency. Many of the semantical paradoxes are clearly of this form.

(2) When $p_i \supset R\alpha o_i \sigma$ and $o_i = P_{p_i}$, where 'P' designates a pragmatic (or performatory) aspect of the use made of p_i by α at space-time position σ , then p_i is termed *pragmatically* (or *performatively*) *self-referential*. If p_i is pragmatically self-referential and p_i is such that if p_i is asserted or otherwise is used in a manner such that P_{p_i} falsifies

p_i , then, when V is bivalent, p_i is said to be *self-refuting*. The assertion, for example, "This assertion does not refer to an x such that Fx ", for interpretations of ' x ' and ' F ', expresses a self-refuting self-referential inconsistency. Ramsey's familiar example, "I can't say 'cake'", when uttered by anyone, accordingly may be seen to be self-refuting.

(3) When $p_i \supset R\alpha o_i \sigma$ and $R\alpha o_i \sigma \supset R\alpha M_{p_i} \sigma$,²⁰ where ' M_{p_i} ' designates a "precondition of reference" which must be satisfied in order for p_i to have a value in the significant range, then p_i is termed *metalogically self-referential*. If p_i is metalogically self-referential and p_i is such that p_i denies one or more conditions which must be satisfied in order for it to be possible to assert, or otherwise use, p_i significantly, then p_i is said to be *projective*, or \bar{p}_i .²¹

The expression 'precondition of reference' is associated with the following equivalent senses: ' M_{p_i} ' designates a "precondition of reference" if, in order for reference to be possible in a particular context of reference, M_{p_i} must be satisfied; M_{p_i} is a necessary condition of possible reference; M_{p_i} qualifies as a "precondition of reference" iff it designates a condition the non-satisfaction of which in a particular context of reference results in projection.

When V is bivalent, a metalogically self-referentially inconsistent p_i makes, with a putative value T or F, an ascription a of some object of reference o_i . If $p_i = T$, then a applies to o_i , or $a(o_i)$; if $p_i = F$, then $\neg a(o_i)$. In either case, possible reference to o_i is presupposed.

$$(2) \quad a(o_i) \vee \neg a(o_i). \supset \diamond R\alpha o_i \sigma$$

In short, when V is bivalent,

$$(3) \quad \bar{p}_i \equiv a(o_i) \vee \neg a(o_i). \ \& \ \neg \diamond R\alpha o_i \sigma,$$

where $\neg \diamond R\alpha o_i \sigma$ is implied by the projective denial of one of the conditions which must be satisfied in order for it to be possible significantly to assert p_i .

$$(4) \quad \begin{array}{l} \vdash \neg p_i (T \vee F), p_i \supset R\alpha o_i \sigma, R\alpha o_i \sigma \supset \diamond R\alpha o_i \sigma, \diamond R\alpha o_i \sigma \supset M_{p_i}, \\ p_i \supset \neg M_{p_i} \parallel \neg \diamond R\alpha o_i \sigma \end{array}$$

The self-referential inconsistency of a projection is rendered explicit when the consequent of (2) and the conclusion of (4) are conjoined.

P. W. Bridgman's hypothesis to the effect that the entire physical universe is shrinking homogeneously, i.e., in a manner such that all

operations of measurement are correspondingly affected, may be seen to be projective. In order for the hypothesis to be significant in a bivalent system, in order for reference to be made to "universal homogeneous shrinkage", Bridgman argues that it must be presupposed possible to detect relevant changes in relative size of the physical universe. This is essential to the meaning of the concept of shrinkage. However, by hypothesis, universal homogeneous shrinkage rules out that the precondition of reference, possible detection of the alleged change in relative size, can be satisfied. Hence the hypothesis is projective.²²

In an intuitive sense, $p_i \supset \bar{p}_i$ will hold when p_i conflicts self-referentially with preconditions which must be granted in order for the value of p_i to fall in the significant range. A projective assertion consequently involves a special kind of self-referential inconsistency. Our main interest here is in projective forms of reference.

For a bivalent range of significance, $p_i = T$ when

‘ p_i ’ is true iff p_i (Tarski’s definition);

and $p_i = F$ when

‘ p_i ’ is false iff $\neg p_i$.

When p_i is projective, p_i is said to have value μ

‘ p_i ’ has value μ iff \bar{p}_i .

Here, ‘ μ ’ represents the value ‘projective meaninglessness’ which lies outside the significant range of values $\{0, 1, \dots, n-1\}$. It should be clear from the nature of a projective assertion that its value cannot be identified with any of the values in its putative significant range since one or more conditions are denied which must be satisfied in order for p_i to have *any* value in the significant range. The self-referential inconsistency of a projective assertion is of a kind which literally and logically precludes that the assertion *can* possess a value in the significant range. In some contexts there may be some latitude of choice whether to consider an assertion to be meaningless or false: e.g., in the case of the infamous ‘The present king of France is bald’. From the standpoint of metalogic of reference, however, no other option is available: The value of a projective assertion must fall outside the significant range, hence it is appropriate to identify its value μ with meaninglessness.

A p_i is said to be *self-validating* in the case where $\neg p_i$ is metalogically self-referentially inconsistent. Conversely, p_i is said to be metalogically self-referentially inconsistent in the case where $\neg p_i$ is self-validating. I.e.,

- $$(5) \quad (x)(x \in \mathcal{P} \cdot \& Fx : \supset \cdot G - x) \quad \text{and}$$
- $$(x)(x \in \mathcal{P} \cdot \& Gx : \supset \cdot F - x),$$

where F is the property ' \dots is self-validating' and G is the property ' \dots is self-referentially inconsistent'.

It follows that for any $p_i \supset \bar{p}_i$, and hence when p_i has value μ , the equivalent claims 'the value of p_i does not fall in the significant range', ' p_i is not significant', ' p_i is meaningless' self-validate since the denial of any one entails self-referential inconsistency. *For this reason, referential consistency, as a metalogical criterion of meaning, cannot not be accepted.* Referential consistency is, in other words, a self-validating criterion which must be satisfied in order for claims to be meaningful.

It may be noted that the significant range of the set V of possible values of a p_i has been left unspecified, although in general we have defined the significant range to coincide with $\{0, 1, \dots, n - 1\}$. Leaving the significant range unspecified in this way has the advantage of flexibility, since, in some contexts of reference, we may wish to be able to assign values representing indeterminacy, statistical probabilities, etc., to a p_i (for example, in quantum logics). Although no decision has been made, then, in favor of bivalence in V , the following metametalanguage formulation is implied by the principle of bivalence, without implying it:

- (i) Every referring sentence of \mathcal{P} either has a value in the significant range, or it does not.

Adoption of this metalogical version of the principle of bivalence entails that all metalogical statements assigning values from $\{0, 1, \dots, n - 1, n\}$ - (from the range of possible values from falsity (0) to a designated value (1 in a bivalent system) to μ) - to a p_i are themselves true or they are not. In fact, (i) entails

- (ii) There exist in principle possible procedures which yield a yes or no determination for any metalogical value-assigning statement about members of \mathcal{P} .

It will be evident to the reader that the assertion of (i) conjoined with the rejection of (ii) constitutes a projective assertion. Consequently, we shall regard (ii) as entailed, in a self-validating manner, by (i).²³

By way of illustration, let us assume V is bivalent; hence the significant range comprises values T (1) and F (0) with μ representing the value of projective assertions. In effect, then, the set of sentences or propositions $\mathcal{P}' = \{p_1, p_2, \dots, p_n\}$ ²⁴ will be, for the purposes of assessing referential consistency, three-valued within a bivalent metalanguage. (Such a three-valued representation can be reduced, as we shall see, to a two-valued representation, with $T, F = \Psi$, where ' Ψ ' simply indicates a value in the significant range.)

Matrices for conjunction and negation suitably take the form proposed by Bochvar:²⁵

-		&	T	F	μ
F	T	T	T	F	μ
T	F	F	F	F	μ
μ	μ	μ	μ	μ	μ

Where μ is the value of a projective assertion, the above matrices make clear that the negation of a projection remains projective, while the conjunction of a projection with a significant assertion infects the compound statement, so to speak, with meaninglessness. The projective character of one conjunct may undermine the referential consistency of the other conjunct. The matrix for conjunction avoids this eventuality.

Other connectives are easily defined:

$$A \vee B \text{ for } \neg(\neg A \ \& \ \neg B)$$

$$A \supset B \text{ for } \neg(A \ \& \ \neg B)$$

$$A \equiv B \text{ for } (A \supset B) \ \& \ (B \supset A),$$

so that the following matrices are determined:

\vee	T	F	μ	\supset	T	F	μ	\equiv	T	F	μ
T	T	T	μ	T	T	F	μ	T	T	F	μ
F	T	F	μ	F	T	T	μ	F	F	T	μ
μ	μ	μ	μ	μ	μ	μ	μ	μ	μ	μ	μ

From these matrices it can readily be seen that once part of an expression assumes the value μ , the expression automatically assumes the value μ . (The same rationale applies here as in the case of conjunction.) It is also evident that if all μ -rows and -columns are *eliminated*, the matrix is reduced to the normal two-valued one. If one sets $T, F = \Psi$, then it is clear that the elimination of statements of value μ leaves a set of statements having the value Ψ , statements which are in the significant range. This is an obviously desirable property of a necessary, not sufficient, criterion of meaning: its application will lead to the elimination of certain meaningless statements, leaving untouched all candidates which may be significant (and perhaps to which other necessary conditions of meaning may be applied.)

The metalogical criterion of meaning which emerges from this discussion is both *non-arbitrary* and *compelling*. It is *non-arbitrary* because the criterion is intrinsically informed by the special character of individual contexts of reference. It is *compelling* because one cannot at one and the same time consistently use expressions, sentences, or concepts referringly yet undermine their capacities to refer. Finally, a metalogical criterion of meaning which is defined in terms of referential consistency is *self-validating*: rejecting its application leads to projection.

In such a metalogical understanding of meaning, criteria for evaluating consistency and significance are determined as a function of one's needs and interests in making reference to certain kinds of objects. Within any specific context of reference, with these needs and interests in view, intrinsically determined criteria for evaluating internal consistency and significance *merge*, from the standpoint of a general metalogic of reference. They provide critical tools for appraising the meaningful use of expressions, sentences, or concepts in that context. Referential consistency is, in short, a contextually determined, yet non-arbitrary, compelling, and self-validating criterion of meaning.

In conclusion, it may be of interest to consider the relationship between a metalogical conception of meaning as a function of referential consistency, and the problem of putative meaningfulness.

THE PROBLEM OF PUTATIVE MEANINGFULNESS

Let p_i be a sentence or proposition in the context of a system SI which permits unambiguous identifying and re-identifying reference²⁶ to a set $\mathcal{O} = \{o_1, o_2, \dots, o_n\}$ of objects. Let it further be agreed that a p_i is asserted to have a truth-value in the significant range, i.e., $\neq \mu$.

Upon analysis, it is determined that $p_i \supset \bar{p}_i$, because $p_i \supset R\alpha o_i \sigma$, while $M_{p_i} \supset \neg \diamond R\alpha o_i \sigma$. From a metalogical frame of reference, M , then, we associate with p_i a truth-value μ not in the significant range. Note that *this* claim is an assertion about p_i -in-SI, and hence is a metalogical claim whose truth-value is determined on a bivalent metalogical basis.

It will be evident that the problem of putative meaningfulness is resolved. This problem has been pointed to by opponents to the use of meaning criteria. They have argued that, on the one hand, we have an expression, sentence, or concept which is used in various contexts, and in what is considered to be a meaningful fashion. Yet, upon application of a criterion of meaning, the alleged meaning is supposed to be given up, and the matter closed. The initially perceived meaning is not according to this view, "really meaningful". Such a suggestion runs counter to belief, i.e., is literally (not logically) paradoxical. This counter-intuitive character of results that stem from the application of meaning criteria decidedly has not promoted the popularity of criteria of meaning.

However, the quasi-paradoxical appearance of the problem of putative meaningfulness is simple to dispel: From the standpoint of SI, p_i is used to refer to an o_i so that o_i is uniquely determined. From the standpoint of M , reference is made to p_i -in-SI and reveals, through an analysis of p_i 's referential preconditions, that the assertion of p_i -in-SI undermines p_i 's capacity to refer to o_i .

If we associate a "meaning spectrum" V' with p_i such that $V' = \{0, 1, \dots, n\}$, where $n = \mu$, then for any $0 \leq v_i < n$, v_i falls in the significant range V of V' . While the assignment of any v_i up to and including v_{n-1} may be made from the standpoint of SI, μ -assignments require recourse to a metalogical frame of reference M . In short, the possibility of detecting that a p_i has value μ is essentially a function of M 's referential capacity. A metalogical statement S asserting that p_i is projective in SI, independently of M , itself is projective, as the reader may confirm.

There is, then, no problem with respect to putative meaningfulness from this viewpoint. What opponents to the use of meaning criteria very likely have in mind falls appropriately in this view under the heading of "making mistakes" and "detecting errors". When one makes a mistake without realizing it at the time, and later discovers his error, the passage of time provides what is, in effect, a metasystem which permits reference to what is retained in memory: From this vantage point, one compares what one remembers having thought earlier with what one now knows, and claims, in retrospect, that a mistake was made at the earlier time. The same may be said in the present case: The use of p_i to refer to o_i in SI was erroneous because p_i can be shown to be projective in M .²⁶ Hence, making an assertion which can be shown to be projective and hence meaningless in the sense developed, is simply to make one of many different kinds of possible mistakes.²⁷

To remind us of this, it is convenient to view μ -assignments as involving, in a very literal sense, a *shift of significance*. Assumption of a metalogical frame of reference with respect to a projective assertion p_i results in a shift in p_i 's putative truth-value (in SI) to μ (in M). Such a shift in significance is essentially a function of the metalogical frame of reference used. It is clear that a more comprehensive account of results proceeding from applications of a metalogic of reference would reveal many such *shifts to the value μ* of expressions, sentences, and concepts erroneously believed to be significant.²⁸

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NOTES

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¹ The general concern, to identify and eliminate meaningless statements and concepts from technical and/or ordinary discourse reflects a long tradition in which logic and philosophy together have sought to clarify our conceptual structure, and exhibit departures from sense. For example, Kant made mention of the need for a "negative science", a *phaenomenologia generalis*, which would undertake what might now be construed as a kind of "meaning-sorting", to insure that only meaningful propositions remain as the subject for subsequent analysis. (In a letter to Lambert, dated September 2, 1770.) The list of names in this tradition could be expanded almost indefinitely.

² For a statement of the view that logical rules essentially comprise conventions we

agree upon, and for additional references, see, e.g., Haskell B. Curry, *Outlines of a Formalist Philosophy of Mathematics* (Amsterdam: North-Holland 1957). See below, Note 12.

³ Wittgenstein has given considerable attention to the relationship between using rules and achieving practical ends. See, e.g., his *Remarks on the Foundations of Mathematics*, edited by G. H. von Wright, R. Rhees, and G. E. M. Anscombe, trans. by G. E. M. Anscombe (Oxford: Basil Blackwell 1956): I – 9, 20, 131, 162; V – 31ff; and passim.

⁴ Hume, *Enquiry*, sec. XII, iii.

⁵ Moritz Schlick, 'Positivism and Realism', in A. J. Ayer (ed.), *Logical Positivism* (New York: Free Press 1959), pp. 82–107.

⁶ A. J. Ayer, *Language, Truth and Logic* (London: Gollancz 1936; rev. ed. 1946), p. 35.

⁷ Rudolf Carnap, *Philosophy and Logical Syntax* (London: Kegan Paul 1935), pp. 13–14.

⁸ Carnap, *The Logical Structure of the World and Pseudoproblems in Philosophy*, trans. by R. George (Berkeley: University of California Press 1967), pp. 325ff and passim.

⁹ There is certainly this sociological difference: Certain logical rules are "hard-programmed" in our culture, so that their rejection is counter-intuitive, as, for example, in the proposed use of non-distributive lattices in quantum theory. The matter is the other way around when it comes to criteria of meaning, since violations of the criteria heavily populate the domains of ordinary, and of some technical, discourse. And, to this extent, acceptance of certain of the proposed criteria of meaning frequently results in a counter-intuitive reaction in our culture.

¹⁰ Carnap's introductory sentences in his *Logical Structure of the World* (come to mind: "What is the purpose of a scientific book? It is meant to convince the reader of the validity of the thoughts which it presents.")

¹¹ On the requirement that a theory of meaning be self-referentially meaningful, see R. J. Richman, 'On the Self-Reference of a Meaning Theory', *Philosophical Studies* 4 (1953), 69–72, and Paul F. Schmidt, 'Self-Referential Justification', *Philosophical Studies* 8 (1957), 49–54.

¹² I hasten to say, so as not to be misunderstood, that I am not principally concerned in this paper to recommend the formalists's thesis regarding the conventional nature of logical rules. However, viewing such rules in this way serves to highlight the contrast between them and the non-arbitrary and compelling criterion proposed here.

¹³ See the author's 'The Idea of a Metalogic of Reference', *Methodology and Science: Interdisciplinary Journal for the Empirical Study of the Foundations of Science and their Methodology* 9 (1976), 85–92. Cf. also 'Phenomenology of the Implicit', *Dialectica* 29 (1975), 174–188, in which, from a phenomenological point of view, referential consistency permits both the identification of "projections" (see below in the text) and their elimination by means of a method of "de-projection", in a logically compelling manner. (For Polish readers, see 'Fenomenologia Tego, Co Implikowane', *Roczniki Filozoficzne* 22 (1974), 73–89.)

¹⁴ A book is now in preparation, supported in part by the Max-Planck-Gesellschaft.

¹⁵ For individual analyses which make use of referential consistency as a criterion of meaning, cf. the author's 'A Metatheoretical Basis for Interpretations of Problem Solving Behavior', *Methodology and Science* 11 (1978), 59–85, specifically §§10, 12;

'Towards a Unified Concept of Reality', *ETC.: A Review of General Semantics* 32 (1975), 43-49; 'Self-Reference, Phenomenology, and Philosophy of Science', *Methodology and Science* 13 (1980), 143-167.

A group of analyses in terms of referential consistency is detailed in *A Relativistic Theory of Phenomenological Constitution: A Self-Referential, Transcendental Approach to Conceptual Pathology* (English and French, 2 vols., Université de Paris 1970 - *Diss. Abs. Internatl.*, No. 79-05.)

¹⁶ The convention is followed whereby False = 0, and the designated truth-value is $n - 1$; the value n is reserved for a purpose described later.

For generality, p_i s with variable truth-value may be included: e.g., p_i s for which value assignments are a function of time, as may be the case for future contingent statements, "So-and-so is alive", etc.

¹⁷ It follows from this formulation that a person can refer identifyingly to only one object, of a set of possible objects of reference, at a time. The object referred to may be single or it may be compound, as when reference is made to a set having more than one member, or to a set of sets of objects, etc.

From the perspective presented here, when reference to an object o_i is uniquely determined, o_i is unambiguously identified in the sense of (1) in the text. The identity of o_i will essentially be a function of o_i 's identifiability - hence, ultimately of frameworks relative to which reference to o_i can obtain.

A good deal must be omitted in this brief treatment: The possibility of re-identification would, for example, as Strawson has pointed out, need also to be assured.

¹⁸ This recalls Quine's dictum, "no entity without identity." (Cf. Leonard Linsky, *Referring* (New York: Humanities Press 1967), p. 27.

¹⁹ On the nature of ' \supset ' in such expressions as ' $p_i \supset R\alpha o_i \sigma$ ', see Note 23 below.

²⁰ I.e., reference is made by α at σ to the (compound) object of reference $\{o_i, M_{p_i}\}$.

²¹ The expression 'metalogical self-referential inconsistency' need not be restricted to the case in which reference obtains to $\{o_i, M_{p_i}\}$ at a single space-time σ . If $R\alpha o_i \sigma$, and $R\beta M_{p_i} \sigma'$, σ' is later than σ , and β_i , then we have the case where α realizes in retrospect that a p_i endorsed by him is projective, i.e., that in endorsing p_i at σ he was metalogically self-referentially inconsistent. Analogously, we may have the case where $R\alpha o_i \sigma$, $R\beta M_{p_i} \sigma'$, and σ' is later than σ : i.e., one man's commitments can be the basis of another man's metalogical analysis.

It is sometimes important to make a similar distinction in connection with pragmatic self-referential inconsistencies. Statements are sometimes and even frequently made by some individuals who are not aware at the time, and may never become aware, of the pragmatic self-referential inconsistencies they involve.

²² For more detailed illustrations of projective forms of reference, see Note 15.

²³ The reader may be interested in contrasting the variety of entailment in question in this paper with "virtual implication" described by Hintikka, in which ' $p \supset q$ ' is "self-sustaining": See J. Hintikka, *Knowledge and Belief: An Introduction to the Logic of the Two Notions* (Ithaca, N.Y.: Cornell University Press 1962), pp. 32, 57, and *passim*.

²⁴ \mathcal{P}' includes \mathcal{P} as a subset; \mathcal{P}' contains in addition to p_i s which fall in the significant range, p_i s which have the value μ .

²⁵ A three-valued logic, in which the third value is 'meaninglessness' or 'undefined', is

used by Bochvar to stand for the value of paradox-generating propositions. Although his three-valued system is without a theory of types, it is nevertheless consistent. See D. A. Bochvar, 'Ob odnom trézhznačnom isčislénii i égo priménénii k analizu paradoksov klassičeskogo rassírénnoho funkcional'nogo isčisléniiá' [On a three-valued logical calculus and its application to the analysis of contradictions], *Matématičeskij sbornik* 4 (1939), 287-308; and D. A. Bochvar, 'K voprosu o néprotivoréčivosti odnogo trézhznačnogo isčisléniiá' [On the consistency of a three-valued calculus], *Matématičeskij sbornik* 12 (1943), 353-369; as well as Alonzo Church, 'Review of D. A. Bochvar's "On a three-valued logical calculus and its application to the analysis of contradictions"', *Journal of Symbolic Logic* 4 (1939), 98-99; with a correction in *Journal of Symbolic Logic* 5 (1940), 119.

Patrick Suppes makes use of Bochvar's three-valued system (without, however, crediting Bochvar for his truth-matrices) in connection with a formal representation of operationally meaningless statements. Cf. P. Suppes, 'Measurement, Empirical Meaningfulness, and Three-valued Logic', in P. Suppes, *Studies in the Methodology and Foundations of Science: Selected Papers from 1951 to 1969* (Dordrecht-Holland: D. Reidel 1969), pp. 65-79. (Reprinted from C. W. Churchman and P. Ratoosh (eds.), *Measurement: Definitions and Theories* (New York: John Wiley 1959), pp. 129-143.)

Several other authors have proposed three-valued systems in which the third value is 'meaninglessness'. For example: Sören Halldén, *The Logic of Nonsense* (Uppsala: Universitets Årsskrift II, 9 (1949)); Moh Shaw-kwei, 'Logical Paradoxes for Many-valued Systems', *Journal of Symbolic Logic* 19 (1954), 37-40; Lennart Åquist, 'Reflections on the Logic of Nonsense', *Theoria* 28 (1962), Part I, 138-157. For various reasons, however, special properties of these proposed systems make them unsuitable in the present context.

It might be mentioned that some authors have felt that the matrix for negation given in the text precludes a satisfactory interpretation of three-valued logic. That A and $\neg A$ have the same value when A has the value 'meaninglessness' seems to them problematic. Andrzej Mostowski, for example, has remarked in this connection that he does not have "any hope that it will ever be possible to find a reasonable interpretation of the three-valued logic of Łukasiewicz [which has the same matrix for negation as in Bochvar's system] in terms of ordinary language." A. Mostowski, 'Review of Helen Rasiowa's "A dziedziny logiki matematycznej. II. Logiki wielwartościowe Łukasiewicza"', [From the domain of mathematical logic. II. The many-valued logic of Łukasiewicz], which appeared in *Journal of Symbolic Logic* 15 (1950), 223. Rasiowa's original paper appeared in *Matematyka* 3 (1950), 4-11.

It is, of course, my belief that Mostowski's pessimism was ill-founded.

²⁶ For an indication of the rationale behind the condition requiring that re-identification be possible in SI, see the text below, where this Note-number is repeated.

²⁷ Nothing need be said in any detail about what one's "intentions" may have been in using p_i in this way, since referring to what one had in mind but sees was not realized in actual expression, is in practice to orient oneself with respect to p_i -in-SI in the manner already described.

²⁸ Cf. Notes 13 and 15.

OTHER PUBLICATIONS BY THE AUTHOR RELATED TO THE TOPIC OF REFERENTIAL CONSISTENCY

1. *Metalogic of Reference: A Study in the Foundations of Possibility*, Max-Planck-Gesellschaft, 1974. A research monograph that formulates the author's approach to epistemology in terms of self-referential argumentation and self-validating proofs.
2. *Conceptual Therapy: An Introduction to Framework-relative Epistemology*, Studies in Theory and Behavior, Saint Louis, 1983. An introductory text describing the author's approach to epistemology in terms of self-referential argumentation and self-validating proofs.
3. *Self-Reference: Reflections on Reflexivity*, edited with Peter Suber, Martinus Nijhoff, 1987; now published by Springer Science. The first of two collections (see #4 below), consisting of invited papers by leading contemporary authors, published in the new area of research, the general theory of reflexivity, pioneered by the author.
4. *Reflexivity: A Source Book in Self-Reference*, Elsevier Science Publishers, 1992. The second collection, consisting of classical papers by leading contributors of the twentieth century, published in the new area of research, the general theory of reflexivity, developed by the author.
5. *The Pathology of Man: A Study of Human Evil*, published in 2005 by behavioral science publisher Charles C. Thomas, is the first comprehensive scholarly study of the psychology and epistemology of human aggression and destructiveness. The study includes original research by the author, such as a detailed description of the phenomenology of hatred and the psychology of human stupidity, and an extension and elaboration of the author's earlier published work dealing with the epistemology of human thought disorders (Part III).
6. "Philosophy as Conceptual Therapy," Educational Resources Information Center, National Institute of Education, Department of Health, Education, and Welfare, May, 1983, Document #ED 224 402.
7. "Hoisted by Their Own Petards: Philosophical Positions that Self-Destruct," *Argumentation*, Vol. 1, No. 2, 1988, 69-80.

8. “Roots of Human Resistance to Animal Rights: Psychological and Conceptual Blocks,” *Animal Law* (law review of the Northwestern School of Law, Lewis and Clark College), Vol. 8, 2002, pp. 143-76. The first comprehensive legal study of the psychological and epistemological foundations of human resistance to the compassionate treatment of animals. Contains an application of the author’s self-referential argumentation to human conceptual blocks that stand in the way of the recognition of animal rights.
9. “Roots of Human Resistance to Animal Rights: Psychological and Conceptual Blocks,” electronically re-published October, 2002, by the Michigan State University’s Detroit College of Law, Animal Law Web Center, and maintained on an ongoing basis.
<http://www.animallaw.info/articles/arussbartlett2002.htm>
10. Also available in German: “Wurzeln menschlichen Widerstands gegen Tierrechte: Psychologische und konzeptuelle Blockaden,” German translation of the preceding paper by Gita Y. Arani-May. Electronically published on the following website; accessed October, 2013:
http://www.simorgh.de/animallaw/bartlett_33-67.pdf
11. Also available in Portuguese: “Raízes da resistência humana aos direitos dos animais: Bloqueios psicológicos e conceituais,” published in *Brazilian Animal Rights Review* (*Revista Brasileira de Direito Animal*), Vol. 2(3), July/December, 2007 [actually appeared in 2008], pp. 17-66. Portuguese translation available at the following website, accessed October, 2013: at:
http://www.animallaw.info/journals/jo_pdf/brazilvol3.pdf
12. *Normality Does Not Equal Mental Health: The Need to Look Elsewhere for Standards of Good Psychological Health*. Praeger, 2011. The first book-length scholarly critique of the widespread and unexamined presumption that psychological normality should be employed as a standard for good mental health. The book extends the perspective offered by Abraham Maslow, who observed that acceptable standards that define good mental health are to be found among exceptional people, and not among the average and psychological normal, who so often—as world history has amply proved, and as Milgram’s and Zimbardo’s studies offer experimental confirmation—will, when circumstances are right, subject others to abuse, cruelty, and, routinely, to murder in state- or group-endorsed wars, genocides, and terrorism (see publication #5 above).