

PSYCHOLOGISM AND THE PRESCRIPTIVE FUNCTION OF LOGIC

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I. Introduction

Psychologism, as a view on the nature and epistemology of logic, is rejected by most modern philosophers. But the grounds for its dismissal may vary, and the question which grounds are the correct ones is not altogether immaterial. For the answer to this question often betrays the conception of logic one holds oneself. Husserl and Frege are usually praised for having finally refuted the doctrine of psychologism. Sometimes, however, reasons for doing so are attributed to them which they themselves would have thought to be misleading. In this paper I shall discuss an example of such a reason.

A common view of the matter is expressed by Herbert Feigl in the following observation:

Ever since Frege's and Husserl's devastating critiques of psychologism, philosophers should know better than to attempt to reduce normative to factual categories. It is one thing to describe the actual regularities of thought or language; it is an entirely different sort of thing to state the rules to which thinking or speaking *ought* to conform.¹

Similar quotations can easily be found. So G.Radnitzky writes:

Thanks largely to the pioneering work of Frege and Husserl, psychologism in logic and metamathematics is largely a thing of the past: the attempt to reduce the norms of logic to laws of thought is now merely a historical curiosity.²

According to these authors, it seems, Husserl and Frege considered psychologism as a special case of the naturalistic fallacy, as an attempt to deduce *ought* from *is*. Such an interpretation rests on the assumption that they would have conceived logic as an *essentially* normative or prescriptive discipline. In the following pages it is argued that Husserl explicitly (and Frege implicitly) rejected such a view. Neither Husserl nor Frege conceived of logic as an *essentially* normative discipline. As a consequence they

would have considered the idea that psychologism is incorrect because it commits the naturalistic fallacy as fundamentally mistaken. The 'fork' they use in combatting psychologism did not consist of the dichotomy between the factual and the normative, but, in the case of Husserl of the distinction between the factual and the ideal or, in Frege, the distinction between the subjective and the objective or between the objectively real and the objectively non-real. To make this historical point is, of course, not to say that Husserl and Frege were right, and I shall briefly discuss to what extent they were.

II. Theoretical Laws and Practical Prescriptions

Of course, neither Frege nor Husserl denied the possibility of logical prescriptions or norms. But they both thought that the norms of logic are somehow derived from non-normative laws, the theoretical laws of pure logic. These theoretical laws would express an *is* rather than an *ought*. On the basis of such a view, one clearly cannot refute psychologism by saying that it commits the naturalistic fallacy, for one presupposes that it is legitimate to derive logical norms from non-normative propositions, i.e. the laws of pure logic.

What justifies this idea of the nature of logic? Husserl's *Logical Investigations* are on this point more revealing than the work of Frege. It is an integral part of this picture of logic that in general normative disciplines stand in need of theoretical foundations, a thesis Husserl tries to justify by his analysis of normative propositions in Chapter Two of the first volume of the *Logical Investigations*, the "Prolegomena zur reinen Logik."³ I shall first summarize and discuss this analysis, and argue later that Frege must have held a similar view.

Husserl's analysis of normative propositions serves several purposes. It not only purports to settle the question, much debated at the end of the nineteenth century, whether logic is a theoretical or a practical discipline,⁴ it also enables Husserl to define more precisely what psychologism is. In fact, he conceives both psychologism and his own conception of logic as 'pure' logic as two distinct answers to one and the same question, a question which he thinks of as being neutral in relation to all possible positions in the philosophy of logic.

To elucidate the nature of norms, so Husserl seems to presuppose, is to define norms in terms of something else. The customary observation that norms express what ought to be the case (a *Seinsollen*) whereas theoretical laws express what *is* the case, is not sufficiently precise. A reduction of norms to commands leaves many occurrences of *ought* unexplained, for a command presupposes an authority who issues it, and often there is no such authority.⁵ Rather, Husserl attempts to define norms in terms of value judgments. Apparently inspired by syllogistic logic, he enlists four 'forms'

of normative propositions, accompanied by the value-judgments in terms of which they may be defined:

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|--------------------------------|----------------------------------------------------------------------------------|
| 1) 'An A should be B' = | 'An A which is not B is a bad A', or 'Only an A which is a B is a good A' |
| 2) 'An A should not be B' = | 'An A which is a B is a bad A', or 'Only an A which is <i>not</i> B is a good A' |
| 3) 'An A may be (is allowed) = | 'An A which is B is not, for that reason, a bad A' |
| 4) 'An A need not to be B' = | 'An A which is not B is not, for that reason, a bad A' |

Apart from slight modifications to account for the distinction between necessary and sufficient conditions for being good or bad, Husserl is convinced that this list of the 'forms' of normative propositions is exhaustive.⁶ Clearly, the four forms constitute the deontic Square of Opposition.

The expressions 'good' and 'bad', as used in the *forms* of the value-judgments which are, according to Husserl, equivalent to forms of normative propositions, have a general meaning. 'Good' in the analysing expression means: what is somehow valuable. But in the substitution-instances of these forms, 'good' and 'bad' will acquire the particular meaning determined by a certain evaluation (*Werthaltung*) which is presupposed, so Husserl thinks, by the corresponding form. Accordingly, in some value-judgments 'good' will mean useful, in others agreeable, in others beautiful, etc. From this Husserl infers that each norm presupposes an evaluation, by which specific notions of good and bad are defined for a certain domain of objects. Such an *evaluative definition* may be of two kinds. If we define, for example, 'good' as what is a means to pleasure and 'bad' as what causes pain, the objects of the domain can be ordered along a scale, and good and bad are relative or polar opposites. If however, we define 'good' as deductively valid and 'bad' as deductively invalid, good and bad are absolute opposites.⁷ Husserl's definition of normative propositions incorporates the idea that all forms in this way presuppose an evaluation:

In relation to a general underlying valuation, and the content of the corresponding pair of value-predicates determined by it, every proposition is said to be 'normative' that states a necessary, or a sufficient, or a necessary and sufficient condition for having such a predicate.⁸

Moreover, this idea of an 'underlying valuation' or an evaluative definition enables Husserl to explain what the unity of a normative science or discipline consists in. A normative science contains all the norms which presuppose one and the same normative definition. Fundamental to such a

normative science, so Husserl says, is the norm which states that the objects of the domain should possess the characteristics of the defined Good (in the highest degree, if the evaluative definition leaves room for degrees of goodness). He calls this norm the basic norm (*Grundnorm*) of the normative discipline. The answer to the question what differentiates the norms belonging to a normative science from each other is implied by Husserl's definition of normative propositions. Assuming certain evaluative definitions of 'good' and 'bad', we shall want to know what circumstances or properties of objects belonging to the domain of the definition guarantee, contribute to, or exclude goodness or badness in the defined sense. In short, we shall want to know what are the necessary and sufficient conditions for something's being good. If, for example, one accepts, for a certain domain of objects, the hedonistic definition of 'good' as what is a means to pleasure, the question will be what circumstances or properties are required for a particular thing, event, or action to be a means to pleasure. Accordingly, there will be in relation to each kind of object of the domain a number of norms stating what these circumstances or properties are. Having discovered that salted soup in general tastes better than soup without salt, we shall affirm the norm 'One should put salt in the soup'. The equivalent valuation reads: 'Only a soup which is salted is a good soup'. By substituting the hedonistic definiens for 'good', we get: 'Only a soup which is salted is a means to pleasure'.

For Husserl, the possibility of these substitutions shows that each norm contains a purely theoretical propositional content, which can be stated without normative or evaluative overtones. We may abstract the theoretical content from each particular norm by first substituting for the norm the value-judgment which is, according to Husserl, equivalent to it, and then substituting the definiens of the evaluative expression for that expression. Husserl affirms this conclusion of his analysis with complete generality: each normative proposition of the form 'An A should be B' contains a purely theoretical proposition of the form 'Only an A which is B has the properties C, where 'C' represents the descriptive content of the relevant evaluative predicate 'good'.' This would hold *mutatis mutandis* for all forms of normative propositions: all norms incorporate a theoretical content, which states that certain conditions are necessary or sufficient for something having the properties C specified in the relevant normative definition. Conversely, every purely theoretical proposition may be transformed into a norm if we assume an evaluative attitude towards the properties C. The norm can be deduced from the theoretical proposition to the effect that the presence or absence of certain conditions is necessary or sufficient for something to be C, together with the basic norm that the objects of the domain should have the properties C. Husserl summarizes his analysis by saying that each normative science has one or more theoretical sciences as its basis.

III. Psychologism and Pure Logic

This idea of the theoretical basis of normative propositions is then used by Husserl to clarify the discussion between the proponents of psychologism and of pure logic, a discussion which, during the last half of the nineteenth century, suffered from great confusion. According to Husserl, a large part of the muddle was due to the fact that champions of pure logic like Drobisch and Bergmann grounded their case mainly on the argument that logic is a normative discipline. To this, the psychologistic logicians would reply that they did not deny the normative or practical character of logic, but only contended that the practical science of logic is, as it were, a technology based on theoretical psychology. This way of putting the problem suggests that the core of the debate between psychologism and the proponents of pure logic is the issue whether logic is a normative discipline. But both parties affirmed this, so that one was tempted to conclude that the dispute is merely verbal. In Chapter One of the "Prolegomena," Husserl discusses the idea of logic as a normative discipline in order to clear the ground for a more correct construction of the dispute. He argues that this conception of logic is so obviously justified that it cannot be at stake in the conflict about psychologism. The central question is rather, so he says at the beginning of Chapter Two, whether the definition of logic as a normative or practical science captures the *essential nature* of logic, i.e., whether logic is *nothing else* than a normative discipline, the theoretical basis of which is to be found in other, familiar and established sciences like psychology, or rather a distinct theoretical and non-normative science itself.¹⁰ In the remainder of the "Prolegomena," Husserl attacks the former and defends the latter view. The theoretical content of the norms for correct deduction belongs not to psychology but to 'pure logic'; its validity is *a priori* and does not, like the laws of psychology, depend on facts. The issue is not whether logic is a normative discipline, but what kind of science provides normative logic with its theoretical basis. And the mistake of psychologism is not that it tries to deduce *ought* from *is*, for psychologism might assume, apart from psychology, a basic norm as a premise for the deduction of logical prescriptions. Its mistake is that it conceives this *is* as a factual *is*, and thus makes the norms of logic dependent on facts.¹¹

We are now in the position to see clearly what is correct and what is misleading in the interpretation of Husserl's position given by Feigl. The way in which Husserl reconstructed the issue of psychologism implies a certain view of psychologism itself. Psychologism does not necessarily identify the description of regularities of thought with stating the rules to which thinking ought to conform, as Feigl suggests. Rather, it distinguishes the two and then affirms a relation between them, viz. that the former is the theoretical basis of the latter. Nor does psychologism necessarily 'reduce normative to factual categories'. If Husserl's account of norms is correct, we can define normative (or evaluative) categories in *non-normative* terms.

But these definitions have a partial character: they merely express the descriptive content of the defined expression. As we shall see, Husserl himself was aware of the special nature of his evaluative definitions. Accordingly, the mistake of psychologism is not that it *defines* evaluative categories in *descriptive* terms. Its error rather consists in thinking that the defining expression of the evaluative definition relevant to logic contains *factual* categories. Although its categories are non-normative, they are not factual. In this sense the mistake of psychologism *did* consist in the attempt to reduce normative to *factual* categories.¹²

Husserl's conception of psychologism and its corollary, the rejection of the argument that psychologism is incorrect because it commits the general error of deducing *ought* from *is*, both depend upon his analysis of normative propositions. This is equally true for Husserl's conception of pure logic. What champions of pure logic like Kant, Drobisch, Bergmann or Herbart were confusedly aiming at, so Husserl claims, is the view he himself defends in the "Prolegomena" and which he expresses as follows:

...That it is the true sense of our supposed pure logic to be an abstract theoretical discipline providing a basis for a technology just as the previously mentioned disciplines do, its technology being logic in the ordinary, practical sense.¹³

Accordingly, psychologism and the conception of pure logic Husserl proposes have an important element in common. They both conceive normative logic – or rather logic as a practical discipline (*Kunstlehre*)¹⁴ – as a kind of *technology*, founded on one or more sciences. For Husserl, the apodictic validity of the norms of logic is to be explained by the idea that the theoretical basis of these norms is to be found in a non-empirical or 'pure' science, which is *a priori* and has a theoretical unity of its own, irrespective of the unity of normative logic which depends on its underlying normative definition.

As the comparison of (normative) logic with a technology might be seriously misleading, it is important to examine more closely Husserl's analysis of normative propositions. Is it in general correct to say that each normative proposition states a necessary, or a sufficient, or a necessary and a sufficient condition for having the characteristics 'C' which are good or bad according to an underlying valuation or evaluative definition? And if this is not true in general, does Husserl's analysis perhaps apply to logical norms, notwithstanding its incorrectness as a general analysis of normative propositions?

Let me first soothe possible qualms concerning Husserl's claim that in a normative definition words like 'good' or 'bad' are defined by means of defining expressions which do not have any normative or evaluative connotation. The hedonist who defines 'good' as what is a means to pleasure does not try, as G.E. Moore thought, to define by some kind of real definition the universal essence of goodness. Rather, the words 'good'

and 'bad' express a positive or negative evaluation (*Werthaltung*) in relation to certain possible characteristics of objects of some kind. Such an evaluation is reflected by a normative definition in Husserl's sense. The only *general* connotation of the word 'good' is that something good is valued positively. But in most contexts, the word 'good' has a definite descriptive meaning as well; there are criteria or standards saying what characteristics some F should have in order to be a good F. And these characteristics are listed in a specific *normative definition* of the word 'good'. Husserl himself stresses that such a definition is not a definition in the sense of the 'usual logical concept of definition'.¹⁵ What he probably means is that the evaluative connotation of the *definiendum* 'good' is absent from the defining expression, so that the defined expression and the defining expression are not altogether equivalent.

A more serious objection to Husserl's analysis of norms concerns the generality of his reduction of normative propositions to value judgments and of the idea that a normative science is based on a normative definition. Husserl assumes that in general it is possible to state the normative definition underlying a normative discipline without adverting to the specific norms of that discipline. For the content of these norms is in principle independent of the normative definition; it belongs to a theoretical science, and the reduction of norms to value-judgments would be circular if it were otherwise. But often this is not possible. If we define, for instance, a 'good Christian' as someone who sincerely tries to practice the Ten Commandments and the rules given in the Sermon on the Mount, then the properties of 'C', which according to Husserl would constitute the descriptive content of the Christian concept of good, logically certain descriptions of all the norms of the relevant normative discipline, i.e. of Christian morality. In such a case, there is no room for a theoretical science which provides the norms with theoretical contents of the form 'Only an A which is B has the properties C' and the like, for the properties C are *defined* as the properties which an A has only if it is B. So Husserl is wrong to claim complete generality for his reductive analysis of normative propositions.

One might argue that this objection is relevant to the case of logic as well. Husserl nowhere tries to define what is 'good from the logical point of view', but he makes it clear that normative logic essentially consists of the norms for valid deductions.¹⁶ Could one not say that what is good from a logical point of view is to infer correctly, and that to infer correctly *is* just to follow the norms for valid inference? But such an argument would be confused. For although we certainly infer correctly if we follow the rules of deductive logic, this does not imply that it is impossible to give a definition of deductive validity, that is, a definition of what is good from a logical point of view, without invoking all particular norms of deductive logic. In general, a deductive argument is said to be valid if, assuming the truth of all the premises, it is conceptually or logically impossible that the conclusion is false. And confining ourselves to those arguments the

(in)validity of which can be brought to light by formal analysis, we say that an argument is valid if one of its logical forms has no substitution instances with true premises and a false conclusion, and invalid if its *specific* logical form has at least one substitution instance with true premises and a false conclusion. As these definitions do not contain any particular norm of logic, the objection we are discussing does not invalidate Husserl's analysis of logical norms, although it refutes his general analysis of normative propositions.

There are, however, other difficulties in Husserl's analysis of normative propositions as applied to logical norms. In order to detect them it is necessary to carry through the application, a thing Husserl does not try to do. The *Grundnorm* of deductive logic will be the prescription that 'all deductive arguments should be valid'. *Grundnormen* (basic norms) in general must be an exception to Husserl's analysis of norms in terms of value-judgments. For if one translates the *Grundnorm* 'all deductive arguments should be valid' into the value-judgment 'Only a deductive argument which is valid is a good deductive argument', one gets the tautology that 'Only a deductive argument which is valid is a valid deductive argument', because 'good' in relation to deductive argument just *means* valid. As a consequence, the 'should' in basic norms is irreducible, and the only way to elucidate the basic norm is to substitute the defining expression of the relevant 'good' for it: 'all deductive arguments should be such, that if their premises are all true, it is conceptually impossible that their conclusion is false'. Husserl seems to have perceived that basic norms are an exception to his analysis of norms, for he says:

The basic norm is the correlate of the definition of 'good' and 'bad' in the sense in question. It tells us on what basic standard or basic value all normativization must be conducted, and does not therefore represent a normative proposition in the strict sense.¹⁷

The principal difficulties, however, concern Husserl's assimilation of normative logic to a technology which is based on a theoretical science. Apart from the *Grundnorm*, all specific norms of logic of, say, the form 'An A should be B' would contain a theoretical proposition of the form 'Only an A which is B is such that if all premises are true, then necessarily the conclusion is true as well'. But how are we supposed to specify the class A? Husserl seems to assume that this is possible without mentioning the properties B or C (C is the 'descriptive' content of 'deductively valid', i.e. the property that if all premises are true, then necessarily the conclusion is true). A first objection against this assumption would be, that there is, in the case of logic, an internal relation between the concepts A and C. If we specify the class A as the class of deductive arguments, we are already using the property C. One might even say that all the elements of the class A will have the property C. For surely a deductive argument is precisely an argument such that, if its premises are true, then necessarily its conclusion

is true as well. Consequently, there is no room for a property B which is a necessary condition for A's to be C, and the comparison of logic with a technology turns out to be altogether wrong.

This version of the objection, however, is too strong. Although there is certainly an internal relation between the properties A and C, we nevertheless speak of 'invalid deductive arguments', so that it must be possible to specify a class A such that not all A's are C. This will be done by means of the distinction between a claim and its correctness: a deductive argument is an argument whose conclusion is *claimed* to follow from its premises with necessity. Only if the claim is correct, the argument really has the property C, and now we might try to find out under what conditions it is correct, that is, to find the properties B. Of course the assimilation of logic to a technology is misleading still. For in the theoretical content of technological rules, the properties A and C are typically *not* internally related¹⁸.

A problem concerning the possible candidates for property B is solved by Husserl himself. One might think that a property is a candidate for B only if its presence would be a (necessary or sufficient) condition for *any* A to be C. But there are no specific requirements which deductive arguments of *all* kinds have to meet in order to be valid, even though one can sometimes formulate general requirements for the validity of a *subset* of deductive arguments (e.g., having defined syllogisms as arguments with two premises and a conclusion of the S-P form, all of which may be general or particular and affirmative or negative, we require that a syllogism must contain exactly three terms, that the middle term must be distributed in at least one premiss, that at least one of the premises is affirmative, etc). Interpreting logic as a theory of science, that is, of deductive theories, Husserl states in section 68 of the "Prolegomena" that a given theory is not required to conform to all 'conditions for formal validity' at the same time. Rather, the laws of logic constitute a 'fund' from which, as Husserl says, a valid theory draws 'the ideal grounds of its essential validity'.¹⁹ And in section 11 he accordingly specifies the form of the rules of the theory of science as follows: "Every (soi-disant) methodical procedure of the form M₁ (or M₂...) is a correct one."²⁰

Quotations of the former kind draw our attention to the main way in which Husserl's comparison of logic with a theoretically backed technology is misleading. Like Frege, Husserl was anxious to rescue the 'objectivity' of logic from the danger of subjectivism and scepticism presented by the psychologistic doctrine. As the psychologistic conception of logic, at least according to Husserl, was the view that normative logic is a technology based on theoretical psychology, Husserl saw no other way of explaining the objective validity of logic than by substituting another theoretical science, pure logic, for psychology. Pure logic is conceived very much like psychology, although it is said to be different at crucial points. Its laws are *about* a domain of objects and are verified by a special kind of perception of these objects (namely, categorical intuition).²¹ Whereas in psychology the

general law is said to 'explain' a particular fact, the laws of pure logic 'justify' their instances.²² However, pure logic is not a science of facts; its objects are 'ideal', they exist independently of space and time and independently of our knowledge of them. As far as pure logic is concerned with deduction, these objects are ideal meanings, Platonic Essences, and not the mental acts of meaning-intention, which are supposed to be their instances.²³ Although the purely logical laws of deduction are *theoretical* laws (in contradistinction to normative) and are *about* ideal meanings (propositions, concepts), they are *purely conceptual* as well. The laws of deduction "have their whole foundation in the 'sense', the 'essence' or the 'content', of the concepts of Truth, Proposition, Object, Property, Relation...etc."²⁴ And Husserl interprets conceptual laws as laws *about* concepts, concepts being Platonic Essences, which we can know by 'eidetic intuition'. Thus, Husserl's Platonism is in various ways 'the main foundation of pure logic and of epistemology'.²⁵

There clearly is an intimate connection between Husserl's analysis of normative propositions and his conception of logic. The norms of logic belong to a technology. They have a theoretical content which in itself is not normative. This theoretical content can be expressed in the proposition of pure logic, and the objective validity or truth of these propositions is due to their correspondence with certain objects, the ideal objects of pure logic. Thus, pure logic is like any other theoretical science, except for the nature of its laws: they are necessary, *a priori*, and not contingent. Within the framework of such a picture, the difference between the laws of logic and the laws of physics or psychology can be accounted for only in one way: by postulating a difference between the respective *objects* of these sciences. So Husserl affirms that the objects of logic are not *facts*, like the objects of the empirical sciences. They are *ideal* objects, existing outside space and time. The fundamental mistake of psychologism was, that it confused judgments as mental acts in time with judgments as ideal entities or propositions, and laws about facts with ideal laws.²⁶

Such a picture of logic is, however, hardly more satisfactory than psychologism. It is an explanation of the obscure by the more obscure. What is the nature of 'ideal objects'? To say that ideal propositions are the 'meanings' of declarative sentences, or the 'ideal species' of certain mental acts does not help us very much.²⁷ And it will not do to persuade the reluctant reader to accept the existence of ideal objects by minimalizing the claim, saying that he should take it at first as an indication that propositions of logic and mathematics are valid.²⁸ If so, the claim is trivial, whereas it was meant to be a non-trivial explanation of the validity of such propositions. Elsewhere, Husserl says that it is out of the question that one may prove the existence of universals without solving the problem how we can know them or how we can become acquainted with them.²⁹ But there is no serious attempt to solve this problem in the *Logical Investigations*,³⁰ and Husserl's endeavor to prove the similarity between perception and categorical intuition, necessary for giving some plausibility to the idea that

we can 'perceive' supra-sensible entities, is rejected in the second edition.³¹ Finally, Husserl's later theory of 'eidetic variation' does not support the thesis that we can 'intuit' ideal entities, nor is it a correct description of the procedures by which we test the validity of proposed laws of logic.³²

Husserl's picture of logic, so we might say with the later Wittgenstein, is a product of misleading features of our grammar. Admittedly, we sometimes assert that arithmetic is about numbers and the theory of propositional logic is about propositions, that certain formulae are 'true' or 'correct'. But this *about* is different from the sense in which descriptions are about, and true of, the described object. We can always imagine that an object is not as the description says it is, but we cannot imagine that a proposition is not either true or false: it would simply not be a proposition. The traditional law of the excluded middle is rather like an implicit definition of what propositions are. It is not a descriptive truth, but the corollary of a rule for the use of the expression 'proposition', a rule by which we delimit the range of applicability of traditional (two-valued) logic. And a law of logic like ' $((p \rightarrow q).p) \rightarrow q$ ' (or: 'for all propositions p, q : $((p \rightarrow q).p) \rightarrow q$ ') is not true in the sense that it somehow corresponds to a reality which we would have to 'perceive' in order to test the law. Calling a formula like ' $((p \rightarrow q).p) \rightarrow q$ ' a law of logic means that the formula is a tautology, that whatever propositions we substitute for 'p' and 'q', we get the result 'true' if we carry out the operations indicated by the definitions of the logical constants. These tautologies may be called 'laws of logic' because there is an equivalence between tautologies of a certain form and valid inference-schemata. An inference schema is valid if it has no substitution instances whose premises are true and whose conclusion is false. The definition of the material implication shows that a conditional whose antecedent consists of the conjunction of the premises of a valid schema and whose consequent is its conclusion must be a tautology: the only case in which the conditional is false is the case in which the consequent is false and the antecedent is true, but this case is excluded if the conditional corresponds to a valid inference schema in the way explained. Now inference schemata are certainly not descriptions of some reality, nor are they expressions of general laws about propositions. A correct schema is rather a rule for constructing valid arguments. Consequently, it is a mistake to interpret the laws of logic, which are nothing but reformulations of such schemata, as laws about some independent reality.

As I said, there is a sense in which one might say that something 'corresponds to' a law of logic like the *Modus Ponens*. The law has the form of an implication. It corresponds to an inference-schema because its antecedent consists of the conjunction of the premise-forms of the schema and its consequent is identical with the conclusion-form. This 'correspondence' is clearly not the kind of correspondence that a true description bears to the reality of which it is a description. Now of course the inference-schema itself 'corresponds to' something else as well: It

corresponds to arguments in ordinary language. The schematic letters 'p' and 'q' correspond in a certain way to statements and the logical constants correspond in quite another way to expressions like 'if...then' and 'not'. To interpret these relations of 'corresponding to' in terms of the correspondence between a description and reality would be equally mistaken. The correspondence between the logical constants and the relevant expressions of common language, for instance, is rather a correspondence between the two sets of rules for the use of these respective signs. This correspondence is governed on the one hand by a requirement of adequacy, which has to guarantee that the logical system may be used in evaluating arguments in common language, and on the other hand by requirements of the system, like truth-functionality and simplicity. The tension between these two kinds of requirement admits of various solutions. One logical system may be further removed from common language than another, but easier to operate. However, although in a sense a formal system is a better instrument for assessing the validity of arguments the closer the rules for the use of its constants correspond to the rules of common language, it would be completely misguided to think that this correspondence is the correspondence of truth, that one system of logic is 'true' or 'nearer to the truth than other systems'.

Finally, expressions like 'if...then', 'and', 'or', and 'not' do not 'correspond to' anything. Contrary to what Husserl thought, they are not referring expressions and we do not need a special kind of intuition, categorical intuition, to grasp the aspects of states of affairs to which they presumably refer.

These considerations show still another way why the dualistic conception of logic as a normative science and a purely theoretical discipline which provides the former with its theoretical basis, is misleading. This conception presupposes that there is a basic norm telling us to reason correctly, which is completely separated from, and external to, the theoretical content of the norms of logic. Conversely, the laws of pure logic in themselves would be free from any normative connotation. Now it is of course possible to express the laws of logic without explicitly using normative or evaluative words, e.g. the *Modus Ponendo Ponens* as ' $((p \rightarrow q, p) \rightarrow q$ '. And one might formulate a corresponding logical norm, e.g., 'it is permissible to infer from premises of the form ' $p \rightarrow q$ ' and ' p ' a conclusion of the form ' q '. But this does not prove that the technology-conception of logic is correct. The validity of the formula of the propositional calculus is in fact nothing but the necessary outcome of a certain way of combining schematic letters, brackets and logical constants: it is exhaustively explained by the *rules* for the use of these signs. These rules correspond in various ways to the rules of use for the expressions of common languages. Rules of language, however, possess an inherent 'normative import': if one wants to use the expression 'if...then', one has to use it correctly. Otherwise, what one says just does not make sense. Here it is artificial to distinguish between a basic norm (to use language correctly) and a theoretical content specifying the

means which we may use in order to conform to this norm. Moreover, in the process of learning a language we *eo ipso* learn to reason correctly. For to reason correctly is nothing but to apply the rules of language in an argumentative context, especially the rules for the use of expressions like 'all', 'some', 'if...then', 'and', etc. As the rules for correct reasoning are on par with the rules of language, we do not need a separate and external basic norm which prescribes that we should reason correctly. This norm is inherent in the use of language. So we come to the conclusion that Husserl's application of his analysis of normative propositions to logic, his assimilation of logic to a technology, and his contention that there is a purely theoretical logic, whose non-normative propositions are 'true' of an ideal world and provide normative logic with its 'theoretical content', is fundamentally misleading.

IV. Husserl and Frege: a coda

In one of the first comparative studies on Husserl and Frege, Dagfinn Føllesdal came to the conclusion that Husserl's conception of the normative character of logic is different from that of Frege, and that Husserl improved on Frege by his clear distinction between normative and theoretical sciences.³³ If what I have argued is correct, Husserl at most 'improved' on Frege in the wrong direction. His 'clear distinction' between normative and pure, theoretical logic was the product of a mistaken application of the distinction between a technology and its theoretical basis in logic. But the historical part of Føllesdal's conclusion is no more correct than its philosophical aspect. In fact, Frege, like Husserl, embraced the conception of logic as a theoretical science, constituting the basis of the norms for valid thinking.

Føllesdal's opinion to the contrary rests on a mistaken interpretation of pages XV-XVII of the "Vorwort" to Frege's *Grundgesetze der Arithmetik*. According to Føllesdal, Frege considered the normative character of logic to be a decisive argument against psychologism,³⁴ and asserted that the laws of logic are essentially prescriptive.³⁵ In fact, Frege states on page XV of the "Vorwort" that the laws of logic should be prescriptions for thinking. But Føllesdal's interpretation misses the point (as well as the letter of the text: Frege says that the laws of logic *should be* prescriptions!) of this passage by abstracting from its argumentative context. Frege is attacking here a specific argument in favour of psychologism, the argument that logic is a part of psychology because the laws of logic are laws of thought (*Denkgesetze*). Frege's rejoinder is that the argument contains a fallacy of ambiguity. If one takes 'law' in the sense of prescription, it is true that the laws of logic are the 'laws of thought', for they prescribe according to Frege how we should think if we want to attain the truth. But in this sense of 'law', it is not true that the laws of thought belong to psychology. If it were, even the

laws of physics would belong to psychology, for "each law which says what is the case may be taken as a prescription, viz. to think in accordance with it, and is in this sense a law of thought." The only special claim of the laws of logic to the title of 'laws of thought' is that they are the most general laws, so that they would prescribe how one should think in all domains of thinking. If, however, one takes the word 'law' in the descriptive sense, it is simply false to say that the laws of logic are laws of thought, and the argument in favour of psychologism collapses for this reason.³⁶

One cannot read into this passage any support for the claim that the laws of logic are essentially normative according to Frege. On the contrary, the laws of logic are classified as 'laws which state what is', which, like all such laws, should be taken as prescriptions for our thinking. Frege indicates only one difference between logical and other descriptive laws: the logical laws are the most general laws there are.³⁷ Moreover, the laws of logic are *Gesetze des Wahrseins* and not *psychologische Gesetze des Fürwahrhaltens*. As a proposition is true or not true independently of our believing it to be true, the laws of being-true are not psychological laws, but "boundry-stones, set in an eternal foundation.... And because they are such, they set the norms for our thinking, if it wants to attain the truth." The comparison of the laws of logic with the rules of grammar is explicitly rejected.³⁸ Føllesdal was of course right that Husserl proposed an elaborate analysis of the distinction between normative and theoretical sciences and the interrelations between them, Whereas Frege was not interested in the issue. But Frege probably would have accepted Husserl's view on this point, so that it might be used to elucidate what Frege meant by his rather lapidary remarks on the subject.

ENDNOTES

This is a revised version of a paper read at the University of Oxford during Trinity term 1984. I thank Professor M.A.E Dummet (New College), Dr. P.M.S. Hacker (St. John's College), and Dr. B. Smith (University of Manchester and Erlangen) for their stimulating comments on an earlier version.

1. Herbert Feigl, "Physicalism, Unity of Science and the Foundation of Psychology," in P.A. Schipp, ed., *The Philosophy of Rudolph Carnap* (La Salle: Open Court, 1963), p. 250

2. G. Radnitzky, "Popperian Philosophy of Science as an Antidote Against Relativism," in R.S. Cohen et al., eds., *Essays in Memory of Imre Lakatos* (Dordrecht: Reidel, 1976), p. 505.

3. See: Edmund Husserl, *Logische Untersuchungen*, Band I, "Prolegomena zur reinen Logik" (Halle: M. Niemeyer, 1900). As the considerable differences between the first edition (1900) and the second edition (1913), on which all later editions are based, are irrelevant for the subject of this paper, I will quote from the fifth edition (Tübingen: M. Niemeyer, 1968). For the English reader I add references to the pages of *Logical Investigations*, trans. J.N. Findlay (New York: Humanities Press 1970).

4. Cf., Husserl, *Logical Investigations*, Vol. I, sec. 3.

5. See: *Ibid.*, sec. 14.

6. See: *Ibid.*, Vol. I, pp. 83-84; *Logische Untersuchungen*, Band I, p. 43.

7. Cf., *Ibid.*, Vol. I, sec. 14.

8. *Ibid.*, Vol. I, sec. 14, p. 84; *Logische Untersuchungen*, Band I, p. 44.

9. See: *Ibid.*, Vol. I, sec. 16.

10. See: *Ibid.*, Vol. I, sec. 13; cf., Vol. I, sec. 41.

11. Husserl tries to give a *reductio ad absurdum* of psychologism by arguing, e.g., that if it were true, factual mistakes in reasoning would falsify logical laws, it would be possible to deny logical laws without contradiction, the laws of logic would be vague and merely probable, psychological research would be relevant to logic, and that, in short, psychologism is a kind of skepticism in the strict sense, i.e. a theory which denies or questions certain conditions for the possibility of theories in general. Cf., *Ibid.*, Vol. I, Ch. 4-7.

12. So psychologism is incorrect, not because it overlooked the normative character of logic, but because it assumed that a factual science can be the theoretical basis of logical norms. The crucial argument against psychologism is not the normative character of logic, but the 'ideal' character of the theoretical basis of normative logic. Cf., *Ibid.*, Vol. I, sec. 43; *Logische Untersuchungen*, Band I, pp. 164-165. Cf., *Ibid.*, Vol. II, "Investigation I," sec. 32.

13. *Ibid.*, Vol. I, sec. 13, p. 80; *Logische Untersuchungen*, Band I, p. 38.

14. Husserl distinguishes between normative disciplines in general and practical disciplines or technologies (*Kunstlehren*). A practical discipline is a normative discipline the *Grundnorm* of which states that we should aim at performing certain actions in a certain manner. Cf., *Ibid.*, Vol. I, sec. 11, 15.

15. See: *Ibid.*, Vol. I, sec. 14 *in finem*.

16. Pure logic, however, comprises much more than the theoretical basis of the norms for valid deduction. The principle of unity of a theoretical science is essentially independent and different from the principle of unity of a theoretical science. Pure logic, in Husserl's sense, embraces all the 'formal' or 'categorical' sciences. Cf., *Ibid.*, Vol. I, sec. 14, 16, 62-64.

17. *Ibid.*, Vol. I, sec. 14, pp. 85-86; *Logische Untersuchungen*, Band I, p. 45.

18. For example, in 'Only a soup which is salted is a means to pleasure', there is no internal relation between the concept of soup and the concept of being a means to pleasure. I assume, in this objection, that it is impossible to define what arguments are, or, *in casu*, what deductive arguments are, without using the concept of (deductive) validity. In other words, the concept of an argument belongs to pragmatics. An argument essentially embodies a claim to be correct (inductively or deductively); it is not just an ordered set of propositions and statements.

19. See: *Ibid.*, Vol. I, p. 239; *Logische Untersuchungen*, Band I, p. 246.

20. *Ibid.*, Vol. I, p. 71; *Logische Untersuchungen*, Band I, p. 27.

21. Cf., *Ibid.*, Vol. II, "Investigation VI."

22. Cf., note 19 above.

23. Cf., *Ibid.*, Vol. I, sec. 36, 39, 40, 42, 65; cf., also, Vol. II, "Investigation I," sec. 29. Husserl emphatically warns the reader against the idea that ideal entities are 'more perfect' than factual entities, that 'the ideal' is essentially normative, or that 'ideal species' are somehow the most perfect instances of themselves, a confusion which lies at the root of many objections against Platonism. Cf., *Ibid.*, Vol. II, "Investigation I," sec. 32. For Husserl's conception of ideal meanings in the *Logical Investigations*, see especially: Vol. II, "Investigation I," Ch. III, IV.

24. *Ibid.*, Vol. I, p. 144; *Logische Untersuchungen*, Band I, p. 122. Cf., Vol. I, sec. 23, 36, 39, 40, 42, 43, 50, 66.

25. See: *Ibid.*, Vol. II, "Introduction" to "Investigation II." Cf., however, Edmund Husserl *Indeen zu einer reinen Phänomenologie und phänomenologischen Philosophie I* (Halle: M. Niemeyer, 1913), sec. 5.

26. Cf., *Ibid.*, Vol. I, sec. 44-48.

27. Cf., *Ibid.*, Vol. II, "Investigation I," ch. 4. In his review of M. Palágyi, *Der Streit der Psychologisten und Formalisten in der modernen Logik*, ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANIE, 31 (1903), p. 290, Husserl tells us that the puzzling character of Bolzano's doctrine of *Sätze an sich* vanished as soon as he realized that *Sätze an sich* are just what we call the meaning of a statement, and that these meanings are *ideal species* of certain mental acts. The review is reprinted in volume XXII of the *Husserliana*, ed. and trans. Dallas Willard as "A reply to a Critic of My Refutation of Logical Psychologism," THE PERSONALIST, 53 (1972), pp. 5-13.

28. See: Husserl, *Logical Investigations*, Vol. II, "Investigation I," sec. 31, *in finem*.

29. See: *Ibid.*, Vol. II, "Investigation II," sec. 7, p. 351; *Logische Untersuchungen*, Band II, pp. 122-123.

30. Cf., *Ibid.*, Vol. II "Investigation II," sec. 14 and "Investigation VI," sec. 52.

31. This is the theory of categorical representation of chapter 7 of the "Investigation VI." It is rejected in the "Vorwort" to the second edition of "Investigation VI," *Ibid.*, Vol. II, p. 663; *Logische Untersuchungen*, Band II, p. V.

32. As I argued elsewhere. Cf., Herman Philipse, *De Fundering van de logica is Husserls 'Logische Untersuchungen'* (Leiden, 1983), ch. 1.7.

33. Dagfinn Føllesdal, *Husserl und Frege. Ein Beitrag zur Beleuchtung der Entstehung der phänomenologischen Philosophie* (Oslo: I Kommisjon hos Aschehoug, 1958), p. 49: "Husserl unterscheidet sich aber deutlich von Frege in seiner Auffassung von dem normativen Charakter der Logik. Es scheint als ob er durch seine klare Trennung zwischen theoretischen Wissenschaften und normativen Wissenschaften hier weiter gekommen ist als Frege."

34. See: *Ibid.*, p. 46.

35. See: *Ibid.*, p. 45. The passage in Føllesdal to which I am referring read as follows: "*Husserl findet, im Gegensatz zu Frege, dass der normative Charakter der Logik kein entscheidendes Argument gegen den Psychologismus sein kann.*" *Ibid.*, p. 46, and "*In seiner Kritik des Psychologismus in 'Grundgesetze der Arithmetik' legt Frege grosses Gewicht auf den normativen Charakter der Logik... Ihre Gesetze sind vorschreibend, und ausschliesslich dies, behauptet Frege (Gg, XV).*" *Ibid.*, p. 45.

36. The relevant passage reads as follows: "*Dass die logischen Gesetze Richtschnuren für das Denken sein sollen zur Erreichung der Wahrheit, wird zwar vorweg allgemein zugegeben; aber es geräth nur zu leicht in Vergessenheit. Der Doppelsinn des Wortes 'Gesetz' ist hier verhängnisvoll. In dem einen Sinne besagt es, was ist, in dem andern schreibt es vor, was sein soll. Nur in diesem Sinne können die logischen Gesetze Denkgesetze genannt werden, indem sie festsetzen, wie gedacht werden soll. Jedes Gesetz, das besagt, was ist, kann aufgefasst werden als vorschreibend, es solle im Einklange damit gedacht werden, und es ist also in dem Sinne ein Denkgesetz. Das gilt von den geometrischen und physikalischen nicht minder als von den logischen. Diese verdienen den Namen 'Denkgesetze' nur dann mit mehr Recht, wenn damit gesagt sein soll, dass sie die allgemeinsten sind, die überall da vorschreiben, wie gedacht werden soll, wo überhaupt gedacht wird.*" Gottlob Frege, *Grundgesetze der Arithmetik, begriffsschriftlich abgeleitet* (Jena: Hermann Pohle, 1893), Band I, p. XV).

37. Cf., Gottlob Frege, *Die Grundlagen der Arithmetik, eine Logisch-mathematische Untersuchung über den Begriff der Zahl* (Breslau: Wilhelm Koebner, 1884), sec. 14.

38. See: Frege, *Grundgesetze*, Band I, p. XVI.