For example, I have suggested that Wittgenstein's rather casual application of the notion of family resemblance to "our concepts in aesthetics or ethics" [Pl, 77] is probably a mistake, since evaluative terms do not express a loose cluster of descriptions but perform a different role in our language—roughly, to commend or prescribe. Though this still strikes me as being correct, I would put less weight on it now than I originally did, since the rules governing commending, assessing, evaluating, et cetera, often seem to be loose or indefinite in just the way Wittgenstein has in mind. If that is correct, then the right view of the function of evaluative terms would simply be a modulation of Wittgenstein's stated view. For my original reflections on these matters, see Fogelin, *Wittgenstein*, pp. 136–8.


This example was suggested to me by a passage in the RFM, III-77: "Let us suppose, however, that the game is such that whoever begins can always win by a particular simple trick, but this has not been realized, so it is a game. Now someone draws our attention to it—and it stops being a game." I remember discussing this passage and its extension to inconsistent games with Ruth Marcus in the early 1970s. She later cited it in her now-famous "Moral Dilemmas and Consistency" [*Journal of Philosophy* 77 [3], pp. 121–36]. I was quite persuaded by her use of examples of this kind for dealing with moral dilemmas, but, as I recall, she was not persuaded by my use of them in dealing with logical paradoxes. I first ventured ideas along these lines—both as a reading of Wittgenstein and a position of independent interest—in an essay entitled "Hintikka's Game Theoretic Approach to Language," *Philosophy of Logic: Proceedings of the Third Bristol Conference on Critical Philosophy* (1974), ed. Stephan Körner (Oxford: Basil Blackwell, 1976).

This is not an isolated passage expressing a view otherwise absent from Wittgenstein's writings. Just as strikingly, at RFM, V-28 he remarks:

If a contradiction were now actually found in arithmetic—that would only prove that an arithmetic with such a contradiction in it could render very good service, and it will be better for us to modify our concept of the certainty required, than to say that it would really not yet have been a proper arithmetic.

Wittgenstein's enigmatic conception of sentences as pictures and his attempt to recast logic in essentially truth-functional terms have long fascinated readers of the *Tractatus*. I hope in this essay to clarify the content and motivation of Wittgenstein's view of sentences as pictures and to relate this conception to his views on logic. At the beginning of the foreword to the *Tractatus*, Wittgenstein tells his readers that the *Tractatus* is not a textbook, that perhaps only someone who has had the thoughts it expresses will understand it. The foreword also suggests that the *Tractatus* is in large measure a response to and critique of Frege's and Russell's views. My strategy then is to examine how aspects of the *Tractatus* emerge against the backdrop of problems that Frege's and Russell's views posed for Wittgenstein.

I THE OLD LOGIC

Wittgenstein rejected Frege's and Russell's universalist conception of logic—what he disparaged as the old logic—while retaining their inchoate but guiding assumptions first that logic frames all thought, and second that it is possible to give a clear, completely explicit, and unambiguous expression to the contents judged true or false. To begin with, let us survey some of the leading features of the old logic and then consider briefly some of Wittgenstein's dissatisfactions with it.

On the universalist conception of logic, the logical laws that mediate demonstrative inference are maximally general truths. That is, they are laws that generalize over all objects, properties, and relations; and their formulation requires only the topic-universal vocabulary needed to make statements on any topic whatsoever—for
example, sign for conjunction and negation as well as quantifiers to express generality. This topic-universal vocabulary is the proprietary vocabulary of the science of logic and symbolizes the indefinably simple notions of logic, the logical constants. The quantifiers and variables in logical laws generalize without restriction over logical types. Thus, on a universalist view, there are no different universes of discourse for quantifiers; and no use is made of varying interpretations of a language. Indeed, Frege scorns talk of varying interpretations of sentences as a confused way of expressing what is properly said by the use of quantification, including quantification into predicate positions. As a result, contemporary semantic conceptions of logical truth and consequence are completely absent from the universalist view. On the universalist view, then, logic is thus a science in its own right, one that is directed at reality in the same way that physics is, but at reality's more general features.

Laws of logic should mediate demonstrative inference in every science whatsoever. On the universalist conception, the maximal generality of logical laws secures their universal applicability. For example, to prove All cats are warm-blooded, from "All cats are mammals," and "All mammals are warm-blooded," the universalist logician first proves the generalization:

For all F, G, and H, if all F are G, then if all G are H, all F are H.

Here Frege understands the letters "F," "G," and "H" to be quantified variables over concepts. Three applications of the logical inference of substitution to this generalization yield an instance of it that contains designations for the three specialized concepts that figure in the premises and desired conclusion. Two applications of modus ponens to this instance and the premises then yield the conclusion. The science of logic, by dint of the generality of its fundamental laws, thus provides a framework that encompasses all the sciences. And for Frege, truth is scientific truth — there are no truths outside of this framework, no truths not subject to logic.

Frege aimed to formulate logical principles in such a way that their application would force the fully explicit statement of the premises on which any logically inferred conclusion rests. He found that the irregularity and ambiguity in the colloquial expression of topic-universal logical notions to be an obstacle to this enterprise. He thus devised his logical notation, his begriffsschrift, as an alternative to everyday language. Having devised the begriffsschrift, Frege formulates logic along the lines of a formal system via axioms and inference rules. Frege's axioms are a selection of maximally general truths. The axioms should not themselves stand in need of proof: they should be self-evident in that anyone who understands them should simply recognize them to be true. The inference rules are self-evidently truth-preserving, notationally specified manipulations of begriffsschrift sentences. Although the begriffsschrift itself contains just the vocabulary required for the science of logic, it can, by the addition of the requisite specialized vocabulary, be expanded to incorporate any science and any line of demonstrative reasoning. The begriffsschrift is thus a framework for a language in which to say everything that can be said. Its limits are the limits of sense.

Before proceeding to use logic to state proofs, Frege and Russell alike find themselves compelled to talk about logic, about their fundamental logical notions, and about the intended construal of their notations. In thus erecting logic, they face what Henry Sheffer, in his review of the second edition of Principia Mathematica, calls the logocentric predicament: "In order to give an account of logic, we must presuppose and employ logic." Every statement setting forth an alleged fact must be subject to logic, including those that communicate the fundamental ideas required fully to understand logic. All of Frege's and Russell's instruction and foundational explanations, to the extent that they indeed communicate truths, must have a place in the framework that logic, on the universalist conception, provides for every statement.

Just here Frege and Russell encounter a difficulty or awkwardness that emerges most starkly in their discussions of type-theoretic distinctions. Both Frege and Russell adopt type-theoretic formulations of logic in which quantificational generality, while intrinsically unrestricted, is also intrinsically stratified. Loosely speaking, in a type-theoretic formulation of logic there is one vocabulary of variables for generalizing over individuals, another for properties of individuals, still another for properties of these properties, and so forth, but there are no variables that generalize over all entities, individuals and properties alike. As a consequence, it is impossible to describe this type-theoretic hierarchy within a type-theoretic formulation of logic. For the description of this hierarchy requires the use of variables ranging
Wittgenstein early on rejects a universalist conception of logic. In one of his first letters to Russell, he writes, "Logic must turn out to be of a TOTALY different kind than another science." In the Tractatus, Wittgenstein underlines his rejection of the universalist conception by calling the sentences of logic tautologies that say nothing [6.1; 6.11]. For Frege, even if the basic axioms of logic are self-evident, the laws of this science are not trifling, nor do they lack content. Furthermore, both Frege and Russell, explicitly rejecting Kant's view, believe that logical proof is a source of new knowledge. Let us consider some of Wittgenstein's dissatisfactions with Frege's and Russell's old logic.

Wittgenstein rejects generality as the mark of the logical: "The mark of logical propositions is not their general validity [Allgemeingültigkeit]" [6.1231]. Frege has no overarching conception of logical truth or logical consequence. The closest he comes to the latter is to say that one truth is logically dependent on another, if it is provable from it and logical axioms by logical inferences. Frege gives no general explanation of what makes an axiom or inference logical beyond generality. Indeed, Frege himself feels no need to provide a wholesale criterion of the logical. For his purposes, it is enough to display the logical on a retail basis via his particular axiomatic formulation of logic, a formulation he never claims to be exhaustive. The inadequacy of generality as a sufficient condition of the logical becomes salient after Russell's paradox. For consideration of logicism within the framework of Principia Mathematica highlights the existence of maximally general statements that are neither provable nor refutable from self-evident maximally general axioms. The axioms of choice, infinity, and reducibility are examples. Faced with the question unob­vious, unprovable maximally general statements pose concerning the extent of logic, the universalist logician can draw a boundary only by supplementing generality with a brute appeal to self-evidence as a mark of a logical axiom, an appeal Wittgenstein finds lame [6.1271].

More is at stake here than the nominal demarcation of the subject of logic. For Frege, the ability to reason, to draw demonstrative inferences, plays a regulative role in thinking, inquiry, and communication. Frege aims to make explicit in his axiomatization of logic the principles that are in some sense implicit in the exercise of this abil­ity. As a consequence of this status, logical principles are rationally undeniable – their falsity cannot be coherently thought. In contrast, the falsity of other claims, even of evident truths, can be coherently thought. The universalist logician represents this by using logic to prove conditionals whose logically irrefutable antecedents contain as a conjunct the counterfactual assumption. This procedure is not applicable to whatever principles the universalist logician identifies as the principles of logic. However, nothing intrinsic to these logical axioms, as the universalist logician construes them, explains their special status. Their generality cannot explain this status, especially once it is conceded that there are maximally general statements that are neither logically provable nor refutable. Nor can self-evidence explain this status, as the falsehood of evident nonlogical truths can be entertained. Indeed, when we reflect on the way the ability to draw inferences frames any inquiry and is a precondition for thinking itself, it begins to look as if there can be no principles of inference, no logical truths on a par with other truths as the universalist logician puts them.

Frege's problematic conception of logical inference points toward this conclusion as well. Frege is fully aware that his presentation of logic as a formal system requires, in addition to logical axioms stated in begriffsschrift, inference rules that are set forth extra­systematically. He believes that inference rules in a rigorous formula­tion of logic should be kept to a minimum and that basic modes of inference should be captured by logical axioms so far as possible. As illustrated above, typically inference from one nonlogical statement to another will be mediated by a general logical law. However, among Frege's inference rules is modus ponens, a rule that permits the inference of a singular statement from two singular statements. Wittgenstein believes that all logical inference has the immediate character of applications of modus ponens. He thinks that it is neither necessary nor desirable that logical inference be mediated by general truths. Indeed, he thinks there are no general laws that jus­tify individual inferences. After all, if there were, then these justifications should be added to the premises for the inference, leading either back again to immediate inferences unjustified by general laws or to the vicious regress Lewis Carroll observed.

Wittgenstein wants an understanding of the logical connectedness
of sentences and the thoughts they express that makes this connectedness intrinsic to them. Sentences, and the thoughts they express, represent a reality outside of them either correctly or incorrectly. Moreover, sentences represent what they do independently of their truth or falsity. That a sentence implies some others, contradicts others, and is independent of still others, and so forth, must somehow be rooted in the nature of the sentence as a representation of reality. This approach to logical connectedness leads Wittgenstein to deny that there are logical principles like those Frege and Russell identify, to deny indeed that there is any body of theory that sets forth the logical connectedness of sentences (see 6.13). On his view, the task of the logician is rather to make perspicuous the logical connections intrinsic to statements via a clear rendition of those statements.

II RUSSELL’S MULTIPLE RELATION THEORY OF JUDGMENT

In the Tractatus, Wittgenstein maintains that sentences represent reality by modeling it. This view of sentences as models or pictures can be motivated as a reaction to the inadequate conception of representation that lies at the heart of Russell’s multiple relation theory of judgment. Wittgenstein’s alternative to Russell’s theory, nevertheless, shares with it a commitment to a correspondence conception of truth.

Russell did not hold to a correspondence view of truth before 1910. After his break with idealism in 1900, Russell espoused and elaborated G. E. Moore’s metaphysics of propositions as a foundation for logic. Russell thus embraced an atomism in which independently subsisting ontological atoms are combined into nonlinguistic, nonmaterial complexes, Moore’s and Russell’s propositions. These propositions are either true or false. On this view, judgment is a dyadic relation between minds and propositions. For Iago to judge that Desdemona loves Othello is for Iago to bear the relation of judging to a proposition that, for this example, we may take to be a complex in which the relation of loving joins the individual Desdemona to the individual Othello. This proposition is true. Similarly, for Othello to judge that Desdemona loves Cassio is for Othello to bear the judging relation to the proposition that Desdemona loves Cassio, a complex in which the relation of loving joins Desdemona to Cassio. In this case, however, the proposition is false.

For our purposes, what is noteworthy about this view of judgment is the absence of any fundamental notion of representation. There is no further realm of facts that inflicts truth or falsity on propositions. Instead, Moore and Russell take truth and falsity to be unanalyzably simple properties of propositions. True and false propositions thus subsist on an ontological par; a fact – if we wish to use the word – is just a proposition that is true.

Russell became dissatisfied with this understanding of truth. He wanted an explanation of the difference between the truth and falsity of judgment in terms of “the presence or absence of a ‘corresponding entity’ of some sort.” His leading idea was that Iago’s judgment that Desdemona loves Othello is true, if there is a fact corresponding to it, and false in the absence of a corresponding fact. Such an account of truth promises to avoid the posit of false propositions on a par with true ones. For with it, Russell can identify the complex in which the relation of loving joins Desdemona to Othello with the fact that Desdemona loves Othello, while denying that there is any complex in which the relation of loving joins Desdemona to Cassio. Russell thus exchanged the metaphysics of propositions for one of facts.

This metaphysical shift obviously requires a new theory of judgment. The multiple relation theory is the alternative Russell proposed. There are two parts to the theory: the analysis of judgment and the characterization of the correspondence of judgments so analyzed with facts that inflicts truth on some of them. The characterization of correspondence provides Russell’s account of representation: it explains what makes a given judgment the judgment that such and so is the case. Russell’s theory changes considerably from 1910 through 1913. On the 1910 and 1912 versions of the multiple relation analysis, the relation of judging is a multiple (as opposed to dyadic) relation that holds among a mind and other ontological items. For example, for Iago to judge that Desdemona loves Othello is for a tetradic relation of judging to hold among Iago, Desdemona, the relation of loving, and Othello respectively. The sentence “Iago judges that Desdemona loves Othello” can thus be perspicuously rewritten as “Judges (Iago, Desdemona, Loving, Othello).” Judgments are thus facts formed by a relation of judging. Notoriously, Russell never extended the multiple relation analysis to nonatomic judgments.
The multiple relation analysis must capture the difference between the judgment that aRb and the judgment that bRa. To this end, Russell must explain why a's bearing R to b, not b's bearing R to a, is the possibility whose obtaining would verify the judgment that aRb. In 1912, Russell proposed the following theory:

It will be observed that the relation of judging has what is called a “sense” or “direction.” We may say, metaphorically, that it puts its objects in a certain order, which we may indicate by means of the order of the words in the sentence. . . . Othello’s judgment that Cassio loves Desdemona differs from his judgment that Desdemona loves Cassio, in spite of the fact that it consists of the same constituents, because the relation of judging places the constituents in a different order in the two cases. . . . This property of having a “sense” or “direction” is one which the relation of judging shares with all other relations.

So, on this view, the difference between s's judging that aRb and s's judging that bRa is the difference between J(s,a,R,b) and J(s,b,R,a):19 two arguments of the same logical type are permuted in these judgment-facts. What makes this difference the difference at issue must be the exploitation of the intrinsic ordering of argument positions in relations to characterize the correspondence that makes a judgment true: a judgment-fact of the form

J(x,y,ϕ,z)

is true, if the relation occupying the third argument position relates the individual occupying the second argument position to the individual occupying the fourth argument position. That is, there is a fact in which y occupies the first argument place of ϕ, and z the second.

A sweeping change in Russell’s conception of relations forces him to give up this 1912 account of correspondence. In particular, in 1913, Russell became persuaded that the argument places in relations are not intrinsically ordered: one cannot speak generally of the first, the second, etc. argument position in a relation or in a complex formed by a relation. Let us consider the reasons for this shift and how Russell modifies his theory of judgment to attempt to accommodate it.

Russell holds that the central error of idealism is its denial of the reality of relations; and throughout his career, he maintains that

Among independently subsisting ontological atoms, there are asymmetric relations. Now given any relation R, there is a converse relation S such that ySx if and only if xRy. Thus, the relation child of is the converse of parent of. In Principles of Mathematics, Russell had asked whether the proposition

a is a child of b

is distinct from the proposition

b is a parent of a.

He concluded there that they are, appealing in effect to the ordering of the argument positions that is intrinsic to relations.20 Russell thus became committed to the thesis that if an asymmetric relation R is among the ontological primitives, its converse is as well.21

In the 1913 Theory of Knowledge manuscript, Russell reversed himself, deciding that the sentences “a is a child of b” and “b is a parent of a” are synonymous after all, that they express the same judgment, that if true they correspond to the same fact.22 He does not, however, maintain that one of these sentences should be analyzed as a definitional abbreviation of the other, thus selecting one of the relations child of or parent of as the genuine ontological primitive. There can be no basis for choice here. Instead, Russell maintains that there is only one relation here, not two: the relational predicates “is a child of” and “is a parent of” name the same asymmetric relation. However, the sentences “a is a child of b” and “a is a parent of b” express distinct judgments. Russell accommodates this fact by denying what he had affirmed in Principles, that the sense of a relation is intrinsic to it:

In a dual complex, there is no essential order as between the terms. The order is introduced by the words or symbols used in naming the complex, and does not exist in the complex itself. . . . We must therefore explain the sense of a relation without assuming that a relation and its converse are distinct entities.23

He continues on the next page:

Sense is not in the relation alone, or in the complex alone, but in the relations of the constituents to the complex which constitute “position” in the complex. But these relations do not essentially put one term before the other, as though the relation went from one term to another, this only
appears to be the case owing to the misleading suggestions of the order of words in speech or writing.24

Russell's idea here is that there are two ways an asymmetric dyadic relation can combine individuals into a complex. These two ways can be symbolized linguistically by the order in which the relata are mentioned in a sentence. But in denying that sense is intrinsic to asymmetric relations, that asymmetric relations are essentially "from" one relatum "to" the other, Russell denies that there is a general distinction between the first and second argument position of an asymmetric relation. We cannot, for example, speak of the first argument positions in the relation named by "is a child of" and "envies," asking whether in two facts formed respectively by these two relations the first argument position is filled by the same individual.

This revised conception of relations blocks Russell's 1912 characterization of correspondence truth for judgments involving asymmetric relations. For this account had specified the corresponding complex by matching ordered argument places in judgment-facts and other facts, as illustrated a few paragraphs back.25 Russell thus needs a new analysis of the judgments that aRb and bRa and a new account of how one of these judgments can be true and the other false. Very briefly, Russell proposes that, where R is asymmetric, the judgment that aRb is a complicated existential generalization asserting the existence of a complex with certain features. This existential generalization does not involve the relation R, but nevertheless is, Russell argues, true just in case it is a fact that aRb. There is then, on this analysis, no atomic judgment that aRb, only a molecular surrogate.26 However Russell might extend the multiple relation theory to generalizations, one problem appears insuperable. The reasoning Russell uses to go from the premise that the existentially general surrogate for the judgment that aRb is true to the conclusion that a really bears R to b is, on the theory's own telling, inaccessible. For according to Russell's theory, there is no judgment-fact with which to identify Russell's conclusion, since there is no atomic judgment that aRb. Russell's revised conception of relations in the context of the multiple relation theory thus leads him to a desperate expedient that makes asymmetric relations inaccessible to cognizers as objects of judgment.

In the October 1913 "Notes on Logic," Wittgenstein repeatedly criticizes Russell's multiple relation theory of judgment.27 Summarizing his critique in the opening section of NL, he says:

When we say A judges that etc., then we have to mention a whole proposition which A judges. It will not do either to mention only its constituents, or its constituents and form, but not in the proper order. This shows that a proposition itself must occur in the statement that it is judged... (NL, p. 94 [1])

Wittgenstein does not mention the problem that asymmetric relations pose for the theory. However, on 20 May 1913, immediately before Russell drafted the chapter in Theory of Knowledge in which he identifies relations and their converses, Wittgenstein in conversation presented Russell with objections to a previous version of the multiple relation theory. This chronology combined with Russell's reversal of a position that had been stable since 1903 leads me to suspect that Wittgenstein was the source of the synonymy argument against the 1912 characterization of correspondence-truth.28 My purposes here do not require examination of other features and difficulties with the 1913 version of the multiple relation theory. Early in 1913 Wittgenstein was moving in a very different direction.

III THE CONCEPTION OF SENTENCES AS PICTURES

Unlike Russell, Wittgenstein concentrated, not on a theory of judgment, but on a theory of symbolism, of the linguistic representations we use to express thoughts. The problem I have exposed for Russell's multiple relation theory infects a Russellian view of language as well. On this view, atomic sentences at the bottom level of analysis are combinations of names of ontological atoms of different types — individuals, properties of individuals, dyadic relations of individuals, et cetera. Names are merely labels for ontological atoms with which we are acquainted. Somehow combinations of names of the atoms into sentences (express judgments that) are rendered true or false by the subsistence of facts involving the named atoms. Asymmetric relations pose problems for this crude view of language parallel to those they pose for the multiple relation analysis. If predicates are nothing but labels for relations whose argument places are not ordered, then it is difficult to explain how "a is a child of b" and
“b is a child of a” would correspond if true to different facts, while the formally parallel pair “a is a child of b” and “b is a parent of a” would correspond to the same fact.

In his January 1913 letter to Russell, Wittgenstein announced a new approach to a theory of symbolism, one in which “Qualities, Relations (like Love), etc. are all copulae!” Here Wittgenstein breaks with the Russellian view of language by ceasing to treat unary and relational predicates as names of ontological atoms combined by a copula with names of individuals. This, I maintain, is the root of the conception of sentences as pictures. “Notes on Logic” presents Wittgenstein’s new approach in some detail.

The crude Russellian view of language treats sentences as collections or mixtures of names. Wittgenstein rejects such a conception of sentences [3.141]. In NL as in the Tractatus, Wittgenstein emphasizes the difference between sentences and names. Unlike names, sentences are true or false because they agree or disagree with the facts, because they have sense [see 3.144 and NL, p. 101 [8]]. Sentences can agree or disagree with facts, because they are themselves facts. “In aRb it is not the complex that symbolizes but the fact that the symbol ‘a’ stands in a certain relation to the symbol ‘b.’” Thus facts are symbolised by facts, or more correctly: that a certain thing is the case in the symbol says that a certain thing is the case in the world” [NL, p. 96[4]]. The basic indefinably simple elements of atomic sentences are names and forms, forms being the linguistic correlates of the copulae of the January 1913 letter. Wittgenstein says:

The indefinables in “aRb” are introduced as follows:

“a” is indefinable;
“b” is indefinable;
Whatever “x” and “y” may mean, “xRy” says something indefinable about their meaning. [NL, p. 99[5]]

In NL, Wittgenstein continues to follow Russell in treating names as unproblematic labels for objects. Forms are not labels; they symbolize differently.

But the form of a proposition symbolizes in the following way: Let us consider symbols of the form “xRy”, to these correspond primarily pairs of objects, of which one has the name “x,” the other the name “y.” The x’s and y’s stand in various relations to each other, among others the relation R holds between some, but not between others. I now determine the sense of “xRy” by laying down: when the facts behave in regard to “xRy” so that the meaning of “x” stands in the relation R to the meaning of “y,” then I say that the [facts] are “of like sense” [gleichsinnig] with the proposition “xRy”; otherwise, “of opposite sense” [entgegengesetzt]. I correlate the facts to the symbol “xRy” by thus dividing them into those of like sense and those of opposite sense. To this correlation corresponds the correlation of name and meaning. Both are psychological. Thus I understand the form “xRy” when I know that it discriminates the behaviour of x and y according as these stand in the relation R or not. In this way I extract from all possible relations the relation R, as, by a name, I extract its meaning from among all possible things. [NL, p. 104[6]. See also NL, p. 95[3].] Consider then the form “x envies y.” Pairs of objects may or may not be related in various ways. One individual may envy a second or not, may esteem a second or not, may love a second or not. Our form symbolizes in that it is fixed when two individuals are so related as to agree with the form. We can think of this determination in terms of a general rule for comparing sentences of that form with the facts. A sentence itself is a fact, and a sentence of the form “x envies y” is a fact in which a name in the x-position ENVY-leftflanks a name in the y-position. Such a sentence agrees with the facts just in case the individual designated by the name in the x-position envies the individual designated by the name in the y-position. Otherwise, the sentence disagrees with the facts. That is: that “a” ENVY-leftflanks “b” says that a envies b. There is an arbitrariness in the use of names to designate objects: for example, “Iago” might have been used instead of “Othello” as a name for Othello. There is a similar arbitrariness in connection with forms: that one name ENVY-leftflanks another might have been used to say that one individual esteems another. That a name labels a particular individual and that one dyadic form symbolizes a particular dyadic relation over objects are both psychological contingencies in the establishment of a particular symbolism.

Not only may we use the holding of a dyadic relation over names to symbolize the holding of various dyadic relations over individuals; we can use a dyadic relation over individuals in different ways to symbolize the same facts. For example, that one name ENVY-leftflanks another might have been used to say that the second named individual envies the first named, rather than the other way around. The problems relations pose for the Russellian view of lan-
language now vanish. Consider the following two forms, \( xRy \) and \( xSy \). Sloughing over use-mention niceties, suppose that we have the following two rules:

1. that \( xR \)-leftflanks \( y \) says that \( x \) is a child of \( y \).
2. that \( xS \)-leftflanks \( y \) says that \( y \) is a child of \( x \), i.e., says that \( x \) is a parent of \( y \).

These are different rules of agreement for our two forms in that a sentence of the form “\( xRy \)” does not say what the corresponding sentence of the form “\( xSy \)” says. Nevertheless, both “\( aRa \)” and “\( bSb \)” say that “\( a \) is a child of \( b \)” Indeed any sentence of the form “\( xRy \)” says what the corresponding sentence of the form “\( ySx \)” says. There is then nothing that can be said using the one form that cannot be said using the other one. There is no more point to having sentences of both forms in the language than there is for having multiple names of the same object.

The Russellian view of language assimilates the correlation of relational predicates to relations to the use of proper names to label individuals. On Wittgenstein’s alternative view, forms of sentences symbolize via a general rule setting forth when sentences of that form agree and disagree with the facts. The general rule depends on a structural similarity between sentences and the facts that verify them if they are true. In my examples above, the rule depends on sentences of the form \( x \) envies \( y \) being themselves facts in which a name bears an asymmetric dyadic relation to another name.

So, do “child of” and “parent of” designate the same relation, or do they designate different relations? For Wittgenstein, the question is misconceived. Russell takes relations to be a type of thing – they are constituents of facts, objects of acquaintance, and the designata of names; they may themselves have properties and be the relata of still further relations. All this is what the reality of relations comes to for him. So conceived, Wittgenstein rejects the reality of relations, Russell’s most cherished ontological thesis.

The \( \text{Tractatus} \) on its face presents a very different conception of atomic or elementary sentences than NL. Here Wittgenstein no longer describes elementary sentences in terms of names and forms. Instead he says: “The elementary proposition consists of names. It is a connexion, a concatenation of names” (4.22). And he maintains that sentences are pictures. These changes are, I shall argue, more terminological than substantive. The \( \text{Tractarian} \) conception of sentences as pictures is more a natural deepening than a revision of the NL conception of sentences and representation.

At the very opening of the \( \text{Tractatus} \), Wittgenstein says that the world is all that is the case, the totality of facts. Remark 2 states that what is the case is in turn fixed by the obtaining of atomic facts or states of affairs (\( \text{Sachverhalt} \)). Wittgenstein explains picturing in the 2.1’s. A picture is a determinate arrangement of pictorial elements. In the case of elementary sentences, these pictorial elements are the names. At 2.15, Wittgenstein says: “That the elements of the picture are combined with one another in a definite way, represents that the things are so combined with one another” (see also 4.0311). Wittgenstein calls the way the elements are arranged in a picture the structure of the picture, and the possibility of this arrangement of these elements the picture’s form of depiction or modeling (\( \text{Abbildung} \)).

The 2.15’s elaborate this idea of picturing. According to 2.1514, it
is in virtue of the coordinations or correlations between names and objects that the configuration of names into elementary sentences represents a configuration of objects into a state of affairs. Just here Wittgenstein’s conception of picturing becomes mysterious. How does a correlation of pictorial elements with objects insure a correspondence between the ways that the elements can be arranged in pictures and the ways that objects can be arranged in states of affairs? Applying the conception to language, we might suppose that somehow the names must have the very same possibilities of arrangement into sentences as the objects they designate have into states of affairs. However, on this interpretation, elementary sentences are very unlike ordinary sentences. For the ways in which words are related to each other in ordinary sentences are not the ways in which things are related in the facts described. Indeed the phrasing of 3.1432 recognizes as much: “that ‘a’ bears a certain relation to ‘b’ says that aRb.” And Wittgenstein does conceive of ordinary sentences as pictures [see 4.011–012 and 4.016]. In addition, Wittgenstein’s contrast in the 2.16’s between form of representation [pictorial form] and logical form suggests that strict identity between the ways that pictorial elements can combine into pictures and objects into states of affairs is not necessary for a picture to present a state of affairs. But if we abandon the supposition of identity between the ways that pictorial elements may be arranged in pictures and things arranged in reality, it seems that something more than a mere correlation of pictorial elements and objects is required to make an arrangement of names into a representation of a state of affairs.

The answer to this dilemma is that the correlations Wittgenstein speaks of in the 2.15’s are not “mere correlations.” In NL, Wittgenstein explains how atomic sentences have sense in terms of the different ways in which names and forms symbolize, in terms of rules of designation for names and rules of agreement for forms. In NL, Wittgenstein says nothing about names and designation, following Russell in treating names as unproblematic labels for objects. Just here the Tractatus improves on the treatment of NL. Rules of designation and rules of agreement presuppose each other in the following fashion. Rules of agreement presuppose the possibility of correlating names with objects: that one name ENVY-leftflanks another says that the bearer of the first name envies the bearer of the second. A less obvious presupposition runs the other direction. It is only within sentences after the erection of rules of agreement that names symbolize, designate, or mean objects. There is no giving of names, no dubbing, apart from the erection of these rules.

In the Tractatus, then, Wittgenstein fully appreciates these points and rejects Russell’s conception of names as simple labels for objects of acquaintance. This is indeed the significance of Wittgenstein’s invocation of Frege’s context principle at 3.3: “Only the proposition has sense; only in the context of a proposition has a name meaning.” The Tractatus employs two intertwined notions of representation distinguished in German by the verbs “vertreten” and “darstellen.” Names in sentences represent (vertreten) objects in that the names go proxy for objects in sentences [2.131, 3.203, 3.22]. Sentences in which names go proxy for objects represent (darstellen) situations in logical space, the holding and not holding of atomic facts [2.201–202]. In order for names to go proxy for objects in sentences, it must be fixed what possibilities of combinations of names into sentences present what possibilities of combinations of objects into states of affairs. No mere correlation of names with objects makes those names into representatives of the objects in sentences in the absence of such a coordination of possibilities of combination. In the Tractatus, then, there are not separate rules of designation and rules of agreement. There is for a language only the single rule that projects the sentences of that language onto reality, onto states of affairs [see 4.0141]. The rule does this by coordinating names and the ways that names can form sentences with objects and the ways that objects can form states of affairs. The coordinations spoken of in the 2.15’s are thus thick, nonextensional correlations made by the rule of projection for a language. It is these thick correlations that constitute sentences as models of reality, that give names feelers so that sentences composed of those names are laid like measuring sticks against reality.

On this interpretation, then, relations are not among the simple objects of the 2.0’s. Elementary sentences represent (darstellen) atomic facts. An atomic fact is a combination of objects in which the objects are related in a definite way, in which the objects “hang together in each other like the links of a chain” (2.03). In the analogy between atomic facts and chains, Wittgenstein rejects Russell’s view of relations as ontological atoms that have the role of joining.
other ontological atoms together into complexes. Nor is there any ontological glue linguistically symbolized by the copula that binds individuals and relations into atomic facts. Nothing joins objects together into states of affairs. Instead, they have their intrinsic possibilities of combination with each other into states of affairs. Pretending still that “a envies b” is an elementary sentence, this sentence represents one of the possibilities in which a and b can hang together. These possibilities are not “purely formal.” Two objects a and b can also hang together in that the second envies the first, or the second esteems the first, or the first loves the second, etc. Nothing in a sentence goes proxy for or names a relation. This is the lesson which Wittgenstein extracts from the difficulties Russell lands in over asymmetric relations. Rather the atomic sentences in which names are representatives (vertreten) of objects represent (darstellen) those objects as related in a particular way. There is no vertreten of relations, but only the darstellen in atomic sentences of the holding of relations, the modeling of objects as combined in a particular way. Thus, the role played in NL by Wittgenstein’s distinction between the way that names symbolize and the way that forms symbolize is taken up in the Tractatus by the distinction between vertreten and darstellen.

Can we think of elementary sentences on the model of “a envies b,” as I have been urging? 4.22 states that an elementary sentence consists of names. I have insisted that “a envies b” has only two names. There thus are more than names in this putative elementary sentence. Is my interpretation consistent with 4.22? Here we must remember that sentences are facts: the sentence in question is “a”’s ENVY-leftflanking “b.” This fact is a chaining together of names in a way entirely analogous to the way in which the state of affairs of a’s envying b is a combination of objects.35

Examination of Wittgenstein’s distinction between form of representation or modeling (Form der Abbildung) and logical form illuminates his conception of sentences as pictures. In NL, Wittgenstein assumes the correlations that give atomic sentences their sense. In the Tractatus, he inquires after the preconditions for these thick correlations. Pictures are themselves facts. Wittgenstein says that for a picture to model reality in the way it does, it must, as a fact, have something in common with the reality it models. Wittgenstein calls this common something the form of representation (Form der Abbildung, of modeling) [2.17]. He goes on to say that in order for a picture to model reality in any way at all, there is a shared minimum it must have in common with reality, what Wittgenstein calls logical form [2.18]. I have already rejected the idea that shared representational form plus thin, extensional correlations of names and objects explain how pictures represent, an interpretive approach that makes representational form entirely mysterious. To understand Wittgenstein’s view here, let us take the advice that 3.1431 proffers:

The essential nature of the propositional sign becomes very clear when we imagine it made up of spatial objects [such as tables, chairs, books] instead of written signs.

The mutual spatial position of these things then expresses the sense of the proposition.

3.1431 calls to mind the following sort of model or representation: the use of arrangements of blocks on a surface to represent the relative spatial positions of some group of things, say cars at the scene of an accident, to adapt an example from Wittgenstein’s pre-Tractatus notebooks [NB, 29.9.14, p. 7]. We can specify a general rule that projects arrangements of blocks onto the scene of the accident by assigning blocks to cars and stipulating that the relative spatial positions of the blocks are to represent that the cars they name at the time of the accident had the same relative spatial positions. For example, that block 2 is twice as far to the right of block 1 as block 3 is to the left along a straight line says that car 2 is twice as far to the right of car 1 as car 3 is to the left along a straight line. Although this rule of projection is salient, it is not the only one. We might use an arrangement of blocks to represent cars to stand in the mirror image of this arrangement. For example, that block 2 is twice as far to the right of block 1 as block 3 is to the left along a straight line says that car 2 is twice as far to the right of car 1 as car 3 is to the left along a straight line. Both of these two rules for projecting arrangements of blocks onto the scene of the accident exploit the same precondition: namely each block can stand to the other blocks in the same relative spatial positions that each car can stand to the other cars. Thus, any general rule that uniquely associates every relative spatial arrangement of blocks with a relative spatial arrangement of cars can be used to project arrangements of blocks onto the scene of the accident. The possibility of common relative spatial arrangements is the form of representation
that enables arrangements of blocks, via either of our two projection rules, to model the relative spatial positions of the cars. Shared representational form does not then fix how a picture is to be compared with the depicted reality. Rather, it is the condition for the picture modeling the reality in the way it does – it is the condition for the erection of one of a family of rules of projection.

Modeling does not require that the pictorial elements and the represented objects share the very same possibilities of combination. It only requires a formal “isomorphism” between the possible configurations of pictorial elements into pictures and of objects into facts. For example, consider a twenty-note melody, each produced at one of eight given pitches. The melody can be [correctly or incorrectly] represented by a score that consists of a series of twenty dots, each placed on or below one of four parallel lines, a staff. Here the spatial order of the dots represents \( \text{darstellen} \) the temporal order of the notes; the position of the dots on the staff, the absolute pitch of the notes; the relative position on the staff, the relative pitch. There are eight pitches and eight positions on the staff. The temporal ordering of the notes is a discrete series, and so is the spatial ordering of the notes. These are the formal similarities between scores and melodies that are the shared form of representation, the “isomorphism-type,” that enable scores to represent melodies. As in the previous case of the arrangements of blocks, there are alternative projection rules exploiting these formal similarities. For example, the left-to-right order of the dots might represent the earlier-to-later order of the notes; but the right-to-left order of the dots could represent this equally well.

The form of representation common to a picture and the reality it depicts thus guarantees that possible configurations of things can be modeled by possible configurations of pictorial elements. It thus secures that any projection rule that exploits it uniquely associates possibilities for pictorial elements with possibilities for the represented things. 2.172 states: “The picture, however, cannot represent \( \text{abbilden} \) its form of representation [Abbildung]; it shows it forth” (see 4.041). In the two examples of pictures I have presented, some relationships among the depicted objects are not separately represented but are built into pictures by the common form of representation exploited by the rule of projection by means of which the picture represents some reality in the particular way that it does. For example, if an arrangement of blocks represents car 1 to the right of car 3 and car 2 to the right of car 1, then it automatically represents car 2 to the right of car 3. This is so, regardless of which of our two sample rules is used to project the blocks. Any projection rule erected on the basis that the blocks and cars share the same possibilities of relative spatial position will use a transitive spatial relation among blocks to represent a transitive spatial relations among cars. This feature of the way arrangements of blocks represent arrangements of cars reveals that these arrangements of blocks do not represent, do not model, the transitivity of \( \text{to the right of} \). For it is impossible to arrange the blocks, for example, to represent car 1 to the right of car 3, car 2 to the right of car 1, but car 2 not to the right of car 3. What a picture cannot incorrectly model, it does not model.

Shared representational form (typically) guarantees that there are several ways of projecting arrangements of pictorial elements over the reality depicted. Furthermore, a domain of facts may be represented in different ways by pictures whose form of representation differs. For, as we have seen, pictures may have more or less in common with what they represent. Logical form is that minimal formal similarity between the possibilities for pictorial elements and possibilities for things necessary to coordinate unambiguously the former with the latter: “What every picture, of whatever form, must have in common with reality in order to be able to represent it at all – rightly or falsely – is the logical form, that is, the form of reality” [2.18].

How does this conception of representational and logical form apply to familiar sentences? Here we encounter a problem. I noted how the transitivity of the relation \( \text{to the right of} \) is built into the representation of the accident scene by the spatial models. Here a transitive relation represents \( \text{darstellen} \) a transitive relation. However, the syntactic relation of \( \text{RIGHT-leftflanking} \) over words is not transitive. Suppose we were to project sentences onto the accident scene via the rule: the one name RIGHT-leftflanks another says that the car represented by the first name is to the right of the car named by the second. Then, using these sentences, it seems that we could represent car 1 to the right of car 3, car 2 to the right of car 1, but car 2 not to the right of car 3. But this is not a possible arrangement of the cars. Hence, our sentences don’t share a form of representation with the reality they represent [2.151].

Wittgenstein’s answer to this problem will draw on his conception of logic and analysis. Briefly, sentences can represent one car to
the right of another without use of a transitive relation. However, the attempt to represent car 1 to the right of car 3, car 2 to the right of car 1, but car 2 not to the right of car 3 will be a sentence that represents nothing, a sentence that is a sinnlos contradiction (see the 4.46’s). This in turn will require that the sentences that represent one car to the right of another be molecular sentences. These sentences do not model one car’s being to the right of another. Instead, they represent this situation by modeling some underlying state of affairs, by analyzing to the right of in terms of some more basic way that things can be combined. It is a condition of this analysis that the sentence that, so to speak, asserts an instance of the transitivity of to the right of be a tautology.

IV LOGICAL INTERCONNECTEDNESS

"A sentence is a sentential sign in its projective relation to the world" (3.12). We have seen what this projective relation comes to in the case of elementary sentences. Names together with their possibilities of combination into sentential signs are correlated with things and their possibilities of combination into states of affairs. The possibility of such a correlation is secured by the form of representation the sentential signs share with reality. This correlation projects the sentential signs onto reality, making them models of reality. Each sentence, like a tableau vivant (4.0311), presents a possible state of affairs. The sentence agrees with reality, if the state of affairs it presents actually obtains. It disagrees with reality, if the presented state of affairs does not actually obtain.

The conception of elementary sentences as pictures makes their agreement or disagreement with reality— their possession of true–false poles, of sense–intrinsic to them. These intrinsic true–false poles make it possible to form other sentences that are truth-functions of elementary sentences. A truth-function of elementary sentences arises from a truth-operation on the true–false poles of elementary sentences: the sense of the truth-function, its conditions for agreement with reality, are fixed by the truth-operation in terms of the obtaining or not of the states of affairs presented by the elementary sentences. So, for example, negation is a truth-operation that reverses the sense of a sentence: the negation of a sentence agrees with reality just in case the negated sentence disagrees. And the conjunction of several sentences agrees with reality just in case each of the conjoined sentences does. As these formulations make evident, truth-operations are not restricted in application to elementary sentences. Truth-operations can be iterated to obtain from truth-functions of elementary sentences further truth-functions of those elementary sentences (see 5.31). In this way, then, the conception of a sentence as a sentential sign in its projective relation to the world is extended from elementary sentences to truth-functions of these so that, as Wittgenstein puts it in NL, "Molecular propositions contain nothing beyond what is contained in their atoms; they add no material information above that contained in their atoms" (NL, p. 98 [11]).

Wittgenstein’s use of the now familiar truth-table notation in the 4.4’s is designed to bring out this conception of truth-functionally compound sentences. Wittgenstein does not introduce truth-tables as a metalinguistic device to calculate the logical properties of object language sentences. Wittgenstein’s truth-tables are object language expressions—they are expressions of truth-functions of elementary sentences, an alternative to Russell’s or Frege’s notation. Wittgenstein believes that Russell’s notation misleads, for it notionally tempts us to think of the sentential connectives “¬” and “∨” as representing a property of or relation over items signified by sentences (see NL, p. 98[10]). The truth-table notation does not carry any such temptation with it (4.441). Letting “p” and “q” stand in for elementary sentences, Russell expresses the disjunction of p with the negation of q by “p ∨ ¬q.” Using the truth-table notation, Wittgenstein replaces this sentential sign with the sentential sign:

\[
\begin{array}{ccc}
p & q & \text{T}\text{T}\text{T} \\
\text{T} & \text{T} & \\
\text{T} & \text{F} & \\
\text{F} & \text{T} & \\
\text{F} & \text{F} & \\
\end{array}
\]

A row of “T”’s and “F”’s underneath the elementary sentences indicates a truth-possibility of these sentences. For example, the second row indicates the possibility that the state of affairs presented by “p” obtains and that presented by “q” does not obtain. The four rows of “T”’s and “F”’s then exhaust the truth-possibilities of these sentences. Marking a row with “T” in the rightmost final
column signifies that the truth-functionally compound sentence agrees with the indicated truth possibility. So, in the example, the truth-function agrees with reality if the second truth-possibility is realized, if "p" is true and "q" false. Marking a row with "T" indicates agreement and disagreement with the truth-possibilities of "p" and "q" (§4.4: 4.43). The complex of "T" 's and "F" 's in one of Wittgenstein's tabular sentential signs - or Russell's sentential connectives with scope demarcating parentheses - are used to express a particular truth-function of the contained elementary sentences. Signs for logical operations do not then symbolize as the expressions in elementary sentences do. In particular, their use requires no coordinations of names and objects in addition to those that project elementary sentences onto reality. Signs for logical operations are thus a sort of punctuation (§5.46).

Suppose we have a body of elementary sentences and the sentences that are truth-functions of these. We can characterize a notion of sense over all these sentences that provides an overarching notion of logical consequence. The truth-grounds or truth-conditions of a sentence are those truth-possibilities of elementary sentences that would verify the sentence. When all the truth-grounds of one sentence q are also truth-grounds of another sentence p, then (the truth) of p follows from (the truth) of q and we can say that the sense of p is contained in the sense of q (§5.11–5.12's). Furthermore, if p and q have the same truth-grounds, they are the same truth-function of the same elementary sentences. They thus stand in the same projective relation to reality and so have the same sense. They are notational variants of the same sentence (§5.141).

On this view of consequence, there is no call to appeal to general laws - to the universalist logician's maximally general, topic-universal truths - to justify the inference of one sentence from another. All inference has the immediate character that, for Frege, characterizes applications of modus ponens. Moreover, the justification for any inference is not stated by any generalization. Rather, inference is grounded in the sentences themselves, in the structures of the sentences that ensure that the truth-grounds of all the premises are also truth-grounds of the conclusion.

If p follows from q, I can conclude from q to p; infer p from q.

The method of inference is to be understood from the two propositions alone.

Only they themselves can justify the inference.

Laws of inference, which - as in Frege and Russell - are to justify the conclusions, are senseless [sinnlos] and would be superfluous.

All inference takes place a priori. (§5.132)

Among the truth-functions of a group of elementary sentences is the extreme case of a truth-function that is verified by all the truth-possibilities of the elementary sentences. Such a truth-function, being true under all conditions (unconditionally true), has no truth-conditions and represents no possibility of the obtaining or not of states of affairs. It thus lacks sense [sinnlos], without being nonsense [unsinnig] (§4.46's). These truth-functions are Wittgenstein's tautologies. The iterated applicability of truth-operations to elementary sentences sufficient to yield all truth-functions of them insures the existence of sentential signs that are thus unconditionally true. Tautologies then are sentence-like formations, notational artifacts, in which, as Wittgenstein puts it, the conditions for agreement with the world of the component sentences cancel each other (§4.462). Parallel remarks hold for contradictions, for a truth-function of elementary sentences that is falsified by all its truth-possibilities.

Tautologies are the sentences of logic, the truths of logic (§6.1). The distinction in the old logic between the self-evident logical axioms and their deductive consequences disappears; all logical truths are on a par (§6.127). On the universalist conception, logical laws are substantive generalizations that mediate inferences over the sentences of the various special sciences. In contrast, Wittgenstein's tautologies say [represent] nothing. Moreover, as we have seen, they play no essential role in proofs in mediating inferences among sentences with sense (§6.122). There is, though, this connection between inference and logical sentences: if p follows from q, then the material conditional

If q then p

is a tautology.

Wittgenstein's extension of the conception of sentences as pictures from elementary sentences to truth-functions of these thus
appears to contain at least a partial understanding logical connectedness. Intrinsic to elementary sentences are their true–false poles; and with this comes the possibility of forming sentences that are truth-functions of the elementary ones. Wittgenstein characterizes in truth-functional terms a notion of sense containment over these truth-functions that is simultaneously a notion of consequence. Here then is a notion of consequence grounded in an understanding of how truth-functions of elementary sentences represent reality. This notion of consequence does justice to the special status of logic, for it avoids the posit of logical laws, of a subject matter for logic.

Wittgenstein audaciously maintains that this understanding of logical connectedness is exhaustive: when one sentence follows from another, they are truth-functions of elementary sentences, and the sense of the second contains the sense of the first. To this end, Wittgenstein explains quantificational generality in truth-functional terms. Briefly and roughly, a universal generalization is the result of applying the truth-operation of conjunction to a class of sentences given by a sentential variable. An example of a sentential variable is a sentence in which an expression has been replaced by a blank, leaving a sentential form or function. The sentential variable has as values any sentence that would result from filling the blank with a syntactically admissible expression. So “(∀x)φx” is the conjunction of all sentences of the form “φx,” all sentences that result from uniformly filling the blank “x” with a syntactically admissible expression. Furthermore, Wittgenstein eliminates the identity sign from sentences that represent reality, using instead identity and difference of names to express identity and difference of objects. Wittgenstein thus construes the incontestable core of Frege’s and Russell’s logic – quantificational logic plus identity – in his truth-functional terms.

Although Wittgenstein’s conception of elementary sentences as pictures makes their true–false poles intrinsic to them, nothing in this conception requires that elementary sentences be independent of each other. Indeed the spatial models he uses to communicate his conception are sentences that fail to be independent. For consider again the representation of the relative positions of five cars in an intersection by spatial arrangements of five blocks of wood: the truth of any such representation precludes the truth of any other.

There is another pressure shaping Wittgenstein’s conception of elementary sentences. On Wittgenstein’s conception of truth as agreement with reality, the sense of a sentence is the possible situation in logical space it represents. Wittgenstein’s talk of logical space alludes to the logical connectedness of sentences. On the universalist conception of logic, the basic laws of the maximally general science embrace every science – there is just one logic. Again, while Wittgenstein rejects the universalist account of the way in which logic frames every claim, he adheres to the idea of a single framework embracing every sentence. There is just one logical space in which every sentence with sense determines a location. Each sentence with sense is related to every other, if only by the relation of independence.

This theme underlies the so-called argument for simple objects. Every sentence with sense must have a fully determinate sense in order to determine a location in logical space. In particular, there can be no factual (statable) presuppositions for the truth or falsehood of a sentence, for the situation it represents to obtain or not. Any such alleged presupposition, being required for the truth of the sentence, is a part of the sense of the sentence. Once we count the presupposition as a part of the sense of the sentence, we are forced to recognize a scope ambiguity in what we had taken to be the negation of the original sentence.

Sentences of everyday language do carry with them apparent existential presuppositions: they say something, and so have a truth-value, only if the names occurring in them designate items. Indeed, the spatial models Wittgenstein calls to our attention have such
appears: apparent existential presuppositions. For example, a formulation of the rule projecting my envisioned spatial models to the accident scene will contain designations of the five cars there. Thus projected, these models seem to presuppose the existence of these cars. As Wittgenstein views matters, the five blocks of wood function as designations of complexes. The existence of these complexes is a matter of other relatively simpler items being related in a certain way. These facts, whose obtaining constitutes the existence of the complex, can be set forth in sentences. The sense of these sentences is contained in the sense expressed by the original model. If one of the putatively designated complexes does not exist—if one of these sentences is false—then the original model is simply false, not nonsensical (without truth-value) [3.24]. We can thus clarify what the original model says by use of a sentence that replaces designations of complexes by sentences describing their constitution. This clarifying replacement for the original model may itself carry further apparent existential presuppositions. These can be handled similarly. As the original model does represent a situation in logical space, does have a determinate sense, it must be possible to express that sense in an entirely explicit way without using a designation of any complex.

The existence of the objects meant by the names that occur in such fully analyzed expressions of the original sense [3.201] is not then a matter of other objects being related in some way. But why can’t there be sentences that assert the existence of these objects, sentences that would then express existential presuppositions of fully analyzed sentences? Such sentences would be like those Russell discusses in Principles of Mathematics that say that each term, each entity, has being. Russell notes the special status of such sentences:

If A be any term that can be counted as one, it is plain that A is something, and therefore that A is. A is not must always be either false or meaningless. For if A were nothing, it could not be said to be. A is not implies that there is a term A whose being is denied, and hence that A is. Thus unless A is not be an empty sound, it must be false—whatever A may be, it certainly is.

So, where “A” is a name that occurs in a fully analyzed sentence, could there be a sentence “A is” that asserts the existence of A?

As Russell argues, such sentences would presuppose their own truth. But for this very reason, the admission of such sentences violates Wittgenstein’s understanding of truth as agreement with facts. Sentences are pictures of reality that are true or false in virtue of their agreement or disagreement with reality. This view of representation underlies Wittgenstein’s insistence on the bipolar character of any representation, his identification of the possession of sense (representing a possible situation) with the possession of a truth-value. The true-false poles of a picture cannot be pulled apart: a picture that in fact agrees with reality might have disagreed, and vice versa. As I noted in the discussion of representational form in §3, what cannot be incorrectly modeled by a picture is not modeled by it at all:

The picture represents what it represents, independently of its truth or falsehood, through the form of representation. [2.22]

Wittgenstein’s view thus rules out representations that presuppose their own truth. For to admit a representation that presupposes its own truth is to admit a representation whose truth does not consist in its agreement with reality, a picture whose truth can be recognized without comparing it with reality [2.223–4; 3.04–5]. No subject-predicate sentence, no representation with true-false poles can then represent that a simple object exists and thus state a presupposition of a fully analyzed sentence.

In sum, on Wittgenstein’s view of sentences as logically interconnected pictures, a sentence—a sentential sign in its projective relation to the world—shows how things stand if it is true, and says that they do so stand [4.022]. In thus determining a location in logical space, with each sentence the whole of logical space must be given [3.42]. Logical space is given by what any sentence has in common with any other, by the general form of sentences. Wittgenstein announces with great fanfare at 4.5 that the general form shared by the sentences of any language, by sentences expressing any possible sense, is: such and such is the case [Es verhält sich so und so]. The sense any sentence expresses can be expressed by a truth-function of independent elementary sentences; this truth-function will stand in the same projective relation to the world. Such fully explicit representations make patent the logical relationships that bind the situations represented into one logical space. A sentence is then a truth-function of elementary sentences (see 5 and 6). This is what any representation shares with any other; this is their essence [5.47–472]. The iterated application of truth-
operations to the totality of logically independent elementary sentences thus fixes the limits of sense [4.51].

V THROWING AWAY THE LADDER

Wittgenstein’s thought in the *Tractatus* begins with the idea that our sentences are logically interconnected representations that are made true or false by what is the case. As I have presented it, the *Tractatus* is an attempt to work out what this idea requires of language on the one side and the world on the other. But what sort of understanding here does the *Tractatus* in the end deliver?

The *Tractatus* opens with a refinement of Russell’s metaphysics of facts. The i’s introduce a notion of fact: the world is all that is the case, the totality of facts. The metaphysics of objects and atomic facts sketched in the 2.0’s develops this notion of fact: what is the case is the obtaining of atomic facts, and atomic facts are combinations of objects. Let us consider briefly what Wittgenstein says by way of characterizing this combination. At 2.011 Wittgenstein tells us that it is essential to objects that they can be constituents of atomic facts. 2.012 repeats much the same idea: “In logic nothing is accidental; if a thing can occur in an atomic fact the possibility of that atomic fact must already be prejudged in the thing.” In contrast to what is essential to objects, what is accidental is whatever happens to be the case, the facts; and any fact about an object is a matter of its being combined with other objects into atomic facts. As 2.012 indicates, an object’s possibilities of combination with others – what Wittgenstein calls the form of the object [2.0141] – is not a matter of the object’s being combined with others. An object’s form is not a fact about it, rather “objects contain the possibility of all states of affairs [Sachlage]” [2.014].

Wittgenstein’s discussion of the simplicity of objects in the 2.02’s elaborates on this priority of objects to atomic facts. Wittgenstein calls objects the substance of the world [2.021], and at 2.027 he tells us: “The object is the fixed, the existent [Bestehende]; the configuration is the changing, the variable [Unbeständige].” This talk of change and instability, with its temporal connotations, should not be taken literally. 2.024 makes this clear: “Substance is what exists [bestehen] independently of what is the case.” The alterations Wittgenstein has in mind in 2.027 are the differences in configurations of objects that distinguish various conceivable worlds (gedachte Welt) from the actual (wirklich) one [see 2.022]. Traditionally, a substance is the subject of change, is what endures through change of properties. Behind various elaborations of this notion of substance lies the following idea: change can be intelligibly conceived only against a backdrop of something constant against which the change occurs. Wittgenstein’s talk of substance in the 2.02’s alludes to this philosophical theme. However, Wittgenstein’s point is that any conception of fact, of what is the case, requires as a backdrop a conception of what might be, even if it is not, the case. So, in the metaphysics limned in the 2.0’s we have necessities – the forms of objects – that determine the range of possibilities, possibilities of combination of objects into atomic facts. What is the case, the facts, the world, is then fixed by the atomic facts that obtain.

This discussion of the metaphysics of the 2.0’s, a discussion that draws heavily on Wittgenstein’s own rhetoric, is dangerously misleading. It ineluctably suggests by its very grammar that the determination of the range of possibilities by the forms of objects is itself some sort of fact. Furthermore, talk of atomic facts as obtaining or not obtaining – see 2, 2.04–2.06, and 4.21 – reifies possibilities and treats actualization as a property that some possibilities possess. We have already observed that, on the conception of fact presented in the 2.0’s, an object’s form is not any sort of fact about it. Moreover, it is clear that Wittgenstein does not countenance possibilia in his ontology. To do so would undermine the identification at 2.01 of atomic facts with combinations of objects: “In the atomic fact the objects are combined in a definite way” [2.031]. Their being related in a determinate way, their being configured thus and so, constitutes the obtaining of the atomic fact. The obtaining is not a property that the combination of objects has or lacks. So, if an atomic fact does not obtain, there is nothing, no entity, that fails to obtain. This conclusion is reinforced from another textual direction. The reification of possible atomic facts would make them independent of what is the case. They would then play the role that the 2.02’s unambiguously assign to objects. Indeed, Wittgenstein calls attention to the oddity of his talk of atomic facts obtaining by using the same word here, bestehen, as he uses in the 2.02’s to contrast objects with atomic facts.

Wittgenstein’s rhetoric in the 2.0’s is carefully calculated both to
limn a metaphysical picture and simultaneously to cancel the incompatible implicatures that any presentation of this metaphysics carries with it. What I have called careful calculation may, however, with equal justice, be labeled philosophical incoherence. True statements set forth facts. If there are no facts as to how objects, by virtue of their forms, contain the possibility of all situations, there is no description of the role that objects play in Wittgenstein's metaphysics. And no description means, after a fashion, no conception. We think that we have grasped the metaphysics Wittgenstein sketches in the 2.o's. When subsequently we reflect on Wittgenstein's words, on the view we take these words to convey, we realize that, on their own telling, they do not communicate a view at all. Wittgenstein's words pull themselves apart. We have then in the 2.o's a version of the difficulty I noted earlier in §1 in connection with Frege's and Russell's explanation of type-theoretic distinctions. Wittgenstein is acutely aware of this feature of his rhetoric. The rendition of the metaphysics of facts in the 2.o's is not intended to stand on its own as a piece of metaphysical theorizing.44

At the most general level, a view of truth as agreement with reality makes the notion of a sentence (representation) and of a fact interdependent: facts are what are representable in sentences and so are what make these sentences true or false. There is no conception of a fact, of something's being the case, that is not representable in sentences – this would be a fact that is not a truth. Our purchase on both these notions comes through the use of the logically connected sentences of language to make claims, to express thoughts. The rendition of the metaphysics of facts in the 2.o's is not intended to stand on its own as a piece of metaphysical theorizing.44

We have the ability to construct languages capable of expressing every sense, of representing every possibility (4.002). Each sentence with sense depicts a possible situation in logical space and says, correctly or incorrectly, that the represented situation obtains (4.022). To understand a sentence is to be acquainted with the situation it represents (4.021), to know what is the case, if the sentence is true (4.024). This understanding is not, however, itself a piece of knowledge, something that might be set forth in some further sentence. Rather, to understand a sentence is to be in a position to see what sentences follow from it and what ones are independent of it. To understand a sentence is thus to be able to discriminate the possibility it represents from other possibilities. To make these discriminations is not to discover anything to be the case. On the contrary, only against the backdrop of these discriminations is there such a thing as saying something, as identifying how things do stand.

Accordingly, there is no sentence that says that it is a possibility that Desdemona loves Othello. There is only the sentence that says that Desdemona loves Othello. But the sentence, "Desdemona loves Othello," in saying what it does, in making sense, displays the possibility of Desdemona's loving Othello. We have no purchase on the notion of possibility except that given in the discrimination of possible situations in logical space that constitutes the understanding of language. There is then no explanation for the possibility of Desdemona's loving Othello – for our sample sentence's making sense – that goes beyond translating this sentence by some other that perhaps gives more perspicuous expression to the same sense. 5.525 tells us:

Certainty, possibility or impossibility of a state of affairs [Sachlage] are not expressed by a proposition but by the fact that an expression is a tautology, a significant proposition or a contradiction.

That precedent to which one would always appeal, must be present in the symbol itself. [See also 3.4.]

The task of the logician is not to identify logical truths. Rather, it is to devise a perspicuous notation for the expression of the sentences of the sciences. When one sentence follows from another, then the sense of the former – the situation it represents – is contained in the sense of the latter. This relationship should be patent in the expression that each receives in a logical notation: "... we can get on without logical propositions, for we can recognize in an adequate notation the formal properties of the propositions by mere inspection" [6.22. See also 6.1233 and the 5.13's]. We saw §4 by how Wittgenstein's truth-functional understanding of logical connectedness articulates this theme. We find here, however, no theory of logical connectedness, no sentences that say one sentence follows from another. Beyond the development of the notation, there is merely what Wittgenstein takes to be the journeyman's labor of working out "mechanical expedient[s] to facilitate the recognition of tautology, where it is complicated" [6.1262].

The say-show distinction links the metaphysics of the 2.0's with
Wittgenstein’s view of sense and logic. We saw how the 2.0’s contrast what is essential to objects, their possibilities of combination, with what is accidental to them, their configuration into atomic facts. Wittgenstein calls what is essential to objects their internal properties, and what is accidental to them their external or material properties (2.01231). It is clear that in speaking of internal and external properties, Wittgenstein does not mean that there are two kinds of property possessed by objects, two sorts of facts concerning them. We have here another instance of Wittgenstein’s unavoidably deceptive rhetoric. An object’s possibilities of combination are not, properly speaking, properties possessed by objects. 2.0231 makes this point: “The substance of the world can only determine a form and not any material properties. For these are first presented [darstellen] by propositions – first formed by the configuration of objects.” 2.0232 tersely restates this point in a way designed to offset the lingering insinuation that forms are another sort of property: “Roughly speaking: objects are colourless.”

How then is the contrast between internal properties/form and external properties/fact to be understood? The mention of sentences in 2.0231 points toward the 4’s, especially the 4.12’s where Wittgenstein returns to this issue in his discussion of showing and saying. 4.1 states: “A proposition presents [darstellen] the existence and non-existence of atomic facts.” In the 4.11’s, Wittgenstein’s emphasis is on what sentences represent, the possibilities whose obtaining is investigated by the sciences. In the 4.12’s, the focus shifts to what sentences do not represent.

Propositions cannot represent the logical form: this mirrors itself in the propositions.

That which mirrors itself in language, language cannot represent [darstellen].

That which expresses itself in language, we cannot express by language. The propositions show the logical form of reality.

They exhibit it. [4.121]

I noted earlier how there are no sentences that represent the existence of simple objects. Just as there is no conception of a possible fact save as a situation in logical space representable by a sentence, there is no conception of a constituent of a possible atomic fact, of
"Twas brillig, and the slithy toves did gyre and gimble in the wabe"—sentence-like formations in which some signs have been given no significance [see 6.53].

There is no resolution of the incoherence of Wittgenstein's rhetoric of saying and showing parallel to the gloss that the say–show distinction offers of earlier talk of internal and external properties: the difference between what is said and what is shown is, as it were, neither sayable nor shown. In the context of the 4.1's, the incoherence in Wittgenstein's rhetoric here draws us away from the illusory goal of saying what can only be shown to the activity of saying clearly what can be said, the activity of philosophy [4.112]. In saying clearly what can be said, we serve the interests that had led us to aspire to a general description of the constitution of the world. In particular, by saying clearly what can be said, philosophy

...should limit the unthinkable from within the thinkable. [4.114]

It will mean the unspeakable [das Unsagbare] by clearly displaying [darstellen] the speakable. [4.115]

The Tractatus imagines an attempt to think through at the most general level what a conception of sentences as logically interconnected representations of reality requires.47 At its opening, it presents what appears to be an alternative theory to Russell's flawed one. What we see through this appearance, when we realize that on the theory's own apparent telling, there can be no such theory. When we throw away the ladder, we give up the attempts to state what this conception of representation and truth demands of language and the world, give up trying to operate at an illusory level of generality, without however rejecting the conception of truth as agreement with reality. Rather, we understand what this conception comes to, when we appreciate how what can be said can be said clearly, when we appreciate the standard of clarity set by the general form of sentences.48

NOTES
1 I shall focus on Frege's version of the universalist conception, as it is clearer and better motivated than Russell's. Most of the features of Frege's views that I highlight have parallels in Russell.
2 For Frege's expression of this viewpoint see Die Grundgesetze der Arithmetik (Jena: H. Pohle, 1893), vol. 1, Vorwort, p. xv, and also

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3 See Gottlob Frege, Begriffsschrift [Halle: L. Nebert, 1879], Vorwort, p. vi.
5 Benno Kerry raises a form of this objection against Frege. For a lucid discussion of the difficulty Frege faces here, see Michael Resnik, "Frege's Theory of Incomplete Entities," Philosophy of Science 32 [1965]. For defenses of Frege's concept—object distinction against these objections, see Cora Diamond, "What Does a Concept-Script Do?" in The Realistic Spirit (Cambridge, Mass.: MIT Press, 1991) and my "Generality, Meaning, and Sense in Frege," Pacific Philosophical Quarterly 67 [1986].
7 For a trenchant discussion of Wittgenstein's use of the word "tautology" see Burton Dreben and Juliet Floyd, " 'Tautology'—How Not to use a Word," Synthese 87 [1991], pp. 23–49.
8 Quotations are from the C. K. Ogden translation of the Tractatus.
10 Frege brings out the regulative status of logical principles in Die Grundgesetze der Arithmetik, Vorwort, esp. pp. xvi–xix.
12 Lewis Carroll, "What the Tortoise Said to Achilles," Mind n.s., 4 [1895].


Russell projected a third part to Theory of Knowledge that would extend the multiple relation theory to molecular judgments, including generalizations. Confronted with Wittgenstein’s objections to the multiple relation analysis, Russell abandoned the manuscript, never drafting the third section. I believe that it is problems with Russell’s theory of atomic judgments that discredit it in Wittgenstein’s eyes and lead Russell to give up the approach.

Russell, Problems of Philosophy, pp. 126–7. Russell in Philosophical Essays, p. 158, had suggested that in x’s judgment that aRb [[x,a,R,b] R can enter as an argument for the judgment-relation as having one of two “directions.” This account in effect replaces relations as ontological atoms with relations with senses. Russell understandably abandons it. For further discussion of difficulties with the 1910 version of Russell’s theory, see Nicholas Griffin, “Russell’s Multiple Relation Theory of Judgment,” Philosophical Studies 47 (1985), pp. 219–20.


I take this thesis to be explicit in Russell, Principles of Mathematics, §219, p. 229: “Hence R and R[= the converse of R] must be distinct, and
that relations are somehow the product of the cognizing mind. Frege handles type-theoretic distinctions much more carefully than Russell, and clearly Frege's construction of a notation that automatically enforces type-theoretic distinctions influences Wittgenstein. However, Wittgenstein would equally reject Frege's understanding of these distinctions as making relations into things, as Frege allows both the designation of relations and allows relations to fall under higher-level concepts.

32 Wittgenstein discusses the difficulties in describing how relations in sentences, as opposed to names, symbolize in the 1914 “Notes dictated to Moore,” appendix II in NB, pp. 109–10. Desmond Lee reports that in a conversation about 2.01 in 1930–1, Wittgenstein said: “Objects also include relations; a proposition is not two things connected by a relation. Thing and relation are on the same level. The objects hang as it were in a chain” [Wittgenstein’s Lectures, Cambridge 1930–1932, ed. Desmond Lee [Totowa, N.J.: Rowman and Littlefield, 1982], p. 120. This is a peculiar remark. If an atomic fact is not two objects connected by a relation, then there seems to be no ground for calling any constituent thing in it a relation. Whatever Wittgenstein may have had in mind here, this view of relations is utterly unlike either Russell's or Frege's. I am grateful to Denis McManus for bringing this remark from Lee's lecture notes to my attention.


34 The German reads: "Dass sich die Elemente des Bildes in bestimmter Art und Weise zu einander verhalten, stellt vor, dass sich die Sachen so zu einander verhalten." I think that the Pears–McGuinness translation of 2.15 – “... represents that the things are related in the same way,” [italics mine] – is philosophically tendentious for being misleadingly definite.

35 Here I am indebted to Warren Goldfarb, who for years has urged the insufficiency of thin correlations or "dubbings" to constitute the representing relation between pictures and reality.

36 I take 4.24 to support this interpretation. It may help to ease textual qualms to observe here that while elementary sentences consist of names, not every expression in an elementary sentence is a name. Indeed, the notion of an expression introduced at 3.31 leads to an understanding of quantification that permits quantification into the position occupied by relational predicates.

37 It should be noted in this connection that Wittgenstein introduces an alternative to Frege's and Russell's technique for defining an ancestral of a relation [4.1252 and 4.1273]. Wittgenstein's technique secures that the statement that says that the ancestral of a particular relation is transitive will be tautological.


39 On Wittgenstein's view, these are just further truth-functions of elementary sentences.

40 In this connection, I should mention that a class of sentences may also be presented by a formal law that generates a series of sentences. In the Tractatus, this device replaces Frege's and Russell's technique for defining the ancestral of a relation. See 5,501 and 4,1273.

41 Following a suggestion of W. D. Hart in “The Whole Sense of the Tractatus,” The Journal of Philosophy 68 (1971), p. 280, I believe this scope ambiguity is the indeterminateness in a sentence containing a designation of a complex mentioned in 3.24. I am also indebted to Hart’s suggestive discussion in this paper of Wittgenstein's conception of clarity in the Tractatus.

42 Of course, the way the complexes are related, so to speak, may have to be modeled in a different way as well.

43 Russell, Principles of Mathematics, §427, p. 449. See also §47, p. 43. I am indebted to Warren Goldfarb for pointing out the relevance of these passages to the 2.02's.

44 I am indebted throughout this section to Brian McGuinness, who, noting the misleading character of Wittgenstein’s rhetoric in the 2.0’s, makes this point in his insightful paper “The So-called Realism of the Tractatus,” in Irving Block, ed., Perspectives on the Philosophy of Wittgenstein [Cambridge, Mass.: MIT Press, 1981], p. 63.


48 I am indebted to Burton Dreben, Cora Diamond, Juliet Floyd, Peter Hylton, and especially Warren Goldfarb for assistance and encouragement in writing this paper.