ACQUAINTANCE WITH LOGICAL OBJECTS IN *THEORY OF KNOWLEDGE*

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The purpose of what follows is to advocate a certain analysis of the simplest and most pervading aspect of experience, namely what I call "acquaintance". (*Papers* 7: 1)

Thus begins Bertrand Russell's *Theory of Knowledge*, the only book-length manuscript on philosophy which he left unpublished in his lifetime. While writing it in 1913 he came to the conclusion that it was fundamentally flawed, and never finished the work. Recent scholarship[1] investigating Russell's correspondence from the period has established that Wittgenstein played a central role in causing Russell to abandon the work. While major flaws have been found in the Multiple-Relation Theory of Judgment which is central to the work (and which was abandoned by Russell with the book), I shall argue that an even greater reliance on acquaintance might have allowed Russell to meet some of the type-theoretic quandaries in which his project got mired. While a definitive answer to why Russell quit writing *Theory of Knowledge* is not yet available, I will argue that even though the possibility I outline in this paper was theoretically open to Russell, his logical intuitions and goals for his epistemological project prevented him from taking the opportunity.

[1] Eames, Editor's Introduction to *TK*. Nicholas Griffin, "Russell's Multiple Relation Theory of Judgment", *Philosophical Studies*, 47 (1985): 213–47. S. Sommerville, "Types, Categories and Significance" (unpublished PHD thesis, McMaster U., 1979); "Wittgenstein to Russell (July, 1913). 'I Am Very Sorry to Hear ... My Objection Paralyses You'", in Rudolf Haller and Wolfgang Grassl, eds., *Language, Logic, and Philosophy: Proceedings of the Fourth International Wittgenstein Symposium ... 1979* (Vienna: Hölder-Pichler-Tempsky, 1980), pp. 182–7.

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I. THE PROJECT

To appreciate Russell's epistemological work of this period and his eventual decision to leave the book unfinished, one needs to appreciate that Russell had set himself a definite project. He wanted to combine relevant findings in the disciplines of logic, metaphysics and psychology in a thorough reconstruction of epistemology. As he notes at the beginning of the chapter on self-evidence (which is to provide the foundation for all other knowledge), "Logic, psychology, and metaphysics all have something to contribute ... but their various contributions are *prima facie* conflicting" (*TK*, pp. 156–7). His intention was to develop a theory of knowledge founded on self-evident knowledge of objects of acquaintance linked together by the mechanisms of an infallible logic. The theory would distinguish true from false belief, eliminate appeal to dubious or unnecessary items as objects of knowledge (by appeal to the theory of incomplete symbols) and unravel the nonsense implicit in purported statements using the theory of types. This section describes Russell's position in the three relevant disciplines: metaphysics, logic and psychology.

Russell inclines towards the use of Occam's razor in as many cases as possible. When he writes that "I should regard [Occam's razor] as the supreme methodological maxim in philosophizing", he adds the proviso that a simplified theory is only preferable "if it can possibly be made to account for all the facts" (*TK*, p. 21). He thus holds that the criterion, "the fewer theoretical commitments and ontological entities the better", should only be applied once logical considerations are satisfied and a workable interpretation of empirical data is found.

The correspondence theory of truth lays great importance on ontological considerations not only for Russell's but for any epistemology that advocates it. In a logically perfect language (as conceived by him) there is an isomorphism between the true sentences expressible in such a language and the world, in that each term in these sentences corresponds to something in the world. In many works, including *Principia Mathematica* and *Theory of Knowledge*, Russell was endeavouring to construct the structure for such a "logically perfect language".

Russell, who held the correspondence theory of truth from 1906 onwards,[2] also held that since false propositions and logically inconsistent entities neither subsist nor exist they could not be genuine objects of belief. Combining these positions with the doctrine that every mental event "has one or more objects" (*ibid.*) forces Russell to provide an account of beliefs (or desires, hatreds, etc.) which does not make what is believed (or desired, hated, etc.) propositional in its own right. Otherwise he would be unable to deal with false beliefs (etc.) without accepting the unattractive doctrine that reality includes false propositions.

To see why Russell's metaphysical inclination against the existence of false propositions poses a problem for logical analysis, let us examine Russell's famous case of false belief:

Othello believes that Desdemona loves Cassio. (PP_3, p. 72) (1)

Since Desdemona does not love Cassio, even though Othello believes this is the case, the false proposition that

Desdemona loves Cassio (2)

must not appear in the analysis of (1). If a false proposition did appear as the object of Othello's belief, then that proposition, as a constituent of the belief, would also have to exist. Russell could not accept this. While it would make sense to say that what makes a true belief true is the correspondence of the object of belief with reality, and what makes a false belief false is its lack of correspondence with reality, the problem is dealing with this lack of correspondence in an analysis of the truth of the statement of belief in a "false proposition". The important thing is that (2) not be a proposition when analysis is complete, for then there could be no isomorphic correspondence between the true statement (1) and a reality in which (2) did not hold.

Russell's multiple relation theory of judgment (in the version of *Theory of Knowledge*) tried to eliminate this problem by analyzing (1) as a single fact represented by a relation of belief relating the subject Othello with the individuals Cassio, Desdemona and the universal

[2] Griffin, p. 213.

loves. Since belief would be the only "relating relation" in (1), (2) would not be a propositional component of (1). The problem for this theory was how the belief relation was able to properly relate its constituents, especially without loves becoming a particularized relation.[3] The introduction of logical form as a constituent of the object-complexes of "propositional attitudes" was an attempt to solve this problem. We shall return to this question and related ones in later sections.

While Russell always liked to start with commonsense understandings of subjects, he believed that analysis often revealed problems in these notions which it was the business of logic and epistemology to solve (*TK*, p. 97). In the following passage, which we shall examine in more detail below, Russell asserts the supremacy of the logical over the psychological: "The introspective difficulty, therefore, cannot be regarded as fatal, or as outweighing a logical argument of which the data and the inference seem to allow little risk of error" (p. 99).

He hoped to build on the successes of *Principia*, applying its logic to the problems of epistemology; in other words, to removing any logical contradictions from epistemology. *Principia* was to supply the syntax for the logically perfect language, while acquaintance with the world was to supply its semantic content.

The importance of type theory to the program and to its collapse in *Theory of Knowledge* must not be underestimated. The first version of type theory enunciated in 1903 in an appendix to *The Principles of Mathematics* is a precursor to what is now known as the Simple Theory of Types.[4] The basic point of the theory was to eliminate various paradoxes, most notably Russell's paradox, by eliminating self-referential statements and definitions.[5] It did this by specifying that a well-formed sentence must conform to certain restrictions regarding what kind of thing is to be denoted by a symbol or over which a

[3] See P. Geach, *Mental Acts* (London: Routledge, 1957).

[4] See A. Urquhart, "Russell's Zigzag Path to the Ramified Theory of Types", *Russell*, n.s. 8 (1988): 82–91, for a summary of the differences between the 1903 theory and the modern simple theory of types as formulated by Ramsey, Chwistek, Tarski and Gödel. (The main differences are that there is a type of all numbers and another of all objects in the 1903 theory.)

[5] Writing about the development of *Principia* in 1959, Russell stated that "[t]he first of these [requisites for a theory of logic], which was absolutely imperative, was that the contradictions should disappear" (*MPD*, p. 79).

variable can range. Similarly, the kinds of things which can serve as arguments to a given function are restricted: entities can only be members of the next highest class or serve as arguments to a function of the next highest level.

Dissatisfied with this theory since it grated against his intuition that logic should be unified,[6] Russell searched for more palatable solutions for several unsuccessful years. By 1907 he decided to accept the drawbacks of type theory. The more elaborate Ramified Theory of Types was the result. The concept of order (although not the term) now appeared, which Russell hoped would solve some of the more "semantic" paradoxes which had appeared since the Simple Theory of Types was put forth or remained unresolved by it (e.g. the Liar Paradox). The type of a predicate expression in this theory was determined both by the type of its argument expressions and by the form of its definition. Functions or classes could now contain other functions or classes which were more than one order down in the hierarchy, and of different types.

Both versions ruled out as invalid the class which gave rise to Russell's paradox, since it violates type restrictions. While type theory discarded many unproblematic classes, it succeeded, for a time, in stabilizing a tottering arithmetic (*MPD*, pp. 75–6). Unfortunately, the Ramified Theory of Types required, in order for classical mathematics to be developed, that an extra Axiom of Reducibility be posited towards which Wittgenstein eventually directed some of his most telling criticisms.

The third discipline used in constructing the epistemology of *Theory of Knowledge* was psychology, specifically the psychological aspects of experience. The importance of acquaintance in this regard is clear. "All cognitive relations—attention, sensation, memory, imagination, believing, disbelieving, etc.—presuppose acquaintance" (*TK*, p. 5). Acquaintance is a psychological phenomenon and is the most primitive notion in the epistemology of *Theory of Knowledge*. It is a relation between a subject and an object (or object-complex). Different types of objects of acquaintance can be distinguished by noting differences

[6] For an account of the relationship between type theory and the unity of logic in Russell's thought, see Urquhart, *op. cit.*

in the relation.

An object of acquaintance is directly given for Russell; it is self-evident. While one might wonder how this sort of view could account for sensory illusions, mistaken memory and similar sorts of error, Russell held that the possibility of error was actually only introduced when one mistook these basic facts as indicating something beyond themselves—when one judged that the fact that one seemed to be seeing a dagger indicated that there was a dagger, i.e. when one mistook (in this case) acquaintance with sense-data as being knowledge of material objects. Error does not arise at the level of acquaintance (or even understanding[7]) but at the higher level of judgment or belief.

Although different passages contradict one another, there are at least four main types of objects of acquaintance in *Theory of Knowledge*: particulars, facts, universals (both of relation and of predication), and logical forms. Acquaintance with particulars is the most elementary type of acquaintance in the book and the least controversial. Differences in the relation of acquaintance to particulars distinguish sensation, memory and imagination.

One aspect of the version of the Multiple Relation Theory of Judgment which was introduced in *Theory of Knowledge* and abandoned with it was acquaintance with logical forms. We shall concentrate on this distinctive feature in this paper and make explicit the manuscript's reliance on acquaintance with logical types. The next section examines acquaintance with universals and logical forms while sec. III treats acquaintance with logical types.

II. ACQUAINTANCE WITH UNIVERSALS AND LOGICAL FORMS

The manner in which we have acquaintance with universals underwent a transformation between *The Problems of Philosophy* and *Theory of Knowledge*. In *Problems*, published less than a year and a half earlier, Russell holds that acquaintance with universals is derived from abstrac-

[7] It seems that what Russell was getting at here was that understanding only involves apprehension of meaning, and a lack of understanding involves confused or nonsensical thoughts, while a judgment or belief involves a claim that what is meant is either true or false, a claim that may be either correct or in error. One understands propositions on this theory, and propositions are either true or false.

tions of instances of them. When we see a white patch, we are acquainted, in the first instance, with the particular patch, but by seeing "many white patches, we easily learn to abstract the whiteness they all have in common, and in learning to do this we are learning to be acquainted with whiteness" (*PP*, pp. 158–9). A process of abstraction from instances is also involved in becoming acquainted with universals of relation, such as "being to the left of" (p. 160).

In *Theory of Knowledge*, Russell identifies an infinite regress in this earlier approach (pp. 82–4): a "relation-similarity" universal must be given before any other universal could be derived. Thus he claims that logic requires that at least this one universal be given directly in acquaintance without any process of abstraction. Psychologically, there is evidence that many relations are known immediately. So although some universals can be and are known by abstraction, a large number are known in acquaintance.

Russell argues that since asymmetrical relations such as "before" have corresponding relations in ordinary language that carry the opposite sense, and both relations refer to the same occurrences, these converse relations are simply different names for a single underlying relation and an indication of sense. He goes on to claim that when these underlying relations are considered, the relations are intelligible without demanding any terms (p. 88).

Although Russell only started writing *Theory of Knowledge* in May 1913, he may have discussed this account with Wittgenstein the previous year. If this were so, it would explain Wittgenstein's complaint to Russell in his January, 1913 letter that universals should not be represented as constituents of a relational proposition but in a completely different way from particulars in the symbolism.[8]

A consequence of Russell's position on this question is that those aspects of the analysis of universals which require that universals have terms need to be eliminated: universals cannot be treated as functions (or as what functions stand for, if functions are construed as strictly linguistic).[9] But solutions to the direction problems considered below

[8] L. Wittgenstein, *Letters to Russell, Keynes and Moore*, ed. G. H. von Wright and B. F. McGuinness (Oxford: Basil Blackwell, 1974), pp. 19–20.

[9] B. Linsky discusses the relation between propositional functions and universals in *Principia Mathematica* and other works by Russell, noting many confusions, ambi-

require that the understanding relation have some means of distinguishing and arranging the constituents of the object-complex of understanding when this object-complex is not present in acquaintance. The logical form of a relation-complex involving a universal now enters as a new constituent of the analyzed form of an understanding of that relation-complex. The logical form specifies the number, type and interrelationships of the constituents in the relation-complex, tasks that could have been borne by the characterization of the universal as a function with a specific number of arguments of specific types. In separating the role of relating machinery from the substantive content or unchanging property of a universal, Russell was able, on this reading of *Theory of Knowledge*, to abstract into the universal what would have been common in all of its various logical types on the universal-as-function theory while relegating to logical forms all that varied. Universals would not need to be typically ambiguous. Even though this treatment is consistent with the neo-Platonism of *Theory of Knowledge*, where universals are held to exist in timeless being, while "thoughts and feelings, minds and physical objects exist" in temporal existence, the status of logical forms *qua* timeless beings and *qua* the structures of relations in time is no less difficult than that of the old universals.

One problem with this analysis of universals is that it threatens to make them indistinguishable from individuals, since *Principia Mathematica*'s only entities are individuals, functions and propositions (*PM*, 1: 132). One way out would be to stipulate that universals are indeed "individuals", but of a different logical type than particulars. That Russell did indeed think this way is supported to some extent by Wittgenstein's January 1913 letter to Russell: "I think that there cannot be different types of things! In other words whatever can be symbolized by a simple proper name must belong to one type" (*Letters*, R.9). Having two (or any number larger than one) primitive types of terms—universals as well as particulars—would require revisions at the heart of the Ramified Theory of Types, revisions which might upset much of the work in *Principia*. Yet this is still conceivable as the basis

guities and problems, and concludes that they cannot be identified ("Propositional Functions and Universals in *Principia Mathematica*", *Australasian Journal of Philosophy* 66 (1988): 447–60.

for a different theory of types, and no obvious obstacles block the redevelopment of mathematics on this new type-theoretic basis. Note that I am not definitely ascribing this view to Russell, but merely suggesting that *Theory of Knowledge* might have been an abortive attempt in this direction, and that irrespective of whether Russell held the view, it is at least worthy of consideration because of the role it leaves for logical forms. If this view is rejected, then one or the other of the ontological entities of universals or particulars must be chosen as constituting logical individuals, leaving the other to be analyzed in some more complicated way. But these possible analyses are beyond the scope of this paper.

Geach holds that Russell's treatment of universals as constituents of the judgment relation in his 1910–12 versions of the Multiple Relation Theory of Judgment is inadequate since a universal like "larger than", as a relative term, "is incomplete; it carries with it, so to say, two blanks that need filling up" (*Mental Acts*, p. 50). The introduction of logical forms in the 1913 version in *Theory of Knowledge* overcomes this objection by allowing the understanding to see the need for these terms and their relation to the universal through acquaintance with the logical form of the complex (in knowledge by description) or through acquaintance directly with the complex (in knowledge by acquaintance).

An account similar to the one given for the necessity of acquaintance with universals is given for acquaintance with logical form:

> It is difficult to see how we could possibly understand how [the constituents of a relation-complex] are to be combined unless we had acquaintance with the form of the complex.... Such words as *or*, *not*, *all*, *some*, plainly involve logical notions; and since we can use such words intelligently, we must be acquainted with the logical objects involved. ... [L]ogical form ... is presupposed, not only in explicit knowledge of logic, but in any understanding of a proposition otherwise than by actual acquaintance with the complex whose existence it asserts. (*TK*, p. 99)

Later in the work (p. 116), a separate argument is given for why we must be acquainted with logical forms in order to understand propositions. The new argument holds that our thought must in some way "unite" the terms and relation; it cannot unite the given terms in the given relation out in the world, but can be understood as relating

them to the general logical form. Without the logical form of a complex, the understanding would not know what to do with the terms and the relation in cases where the complex is not present to acquaintance.

III. ACQUAINTANCE WITH LOGICAL TYPES

Russell states that in the elementary complexes "*A*-before-*B*" and "*A*-after-*B*" (with form *xRy*, and constituents *A*, *R*, and *B*), "[t]he position of *R*, unlike that of the other constituents, *can* be assigned relatively to the form" (*TK*, p. 146). This presupposes that *R* is known to be of a different type than the other constituents, although Russell never explicitly states this. How one could be acquainted with the logical type of an object in the same experience that involves acquaintance with the object itself is suggested in *Theory of Knowledge*'s account of complex perception.

Acquaintance is a dual relation between a subject and an object, but the object may be complex, and attention can be used to distinguish its parts: "... *complex perception consists in acquaintance with a whole combined with attention to its parts*" (p. 125). A bit later he writes that "mere attention to it [the complex] will enable us to give it a complex name, such as '*aRb*'" (p. 127), where the complex name is an indicator of the logical form of the complex. Analogously, mere attention to an object which is a constituent of a complex would enable us to determine its logical type. Thus on this account, when we are acquainted with an elementary object we would be able, with a refocusing of attention, to simultaneously determine its type. In this way, the logical type of a particular would be a property of that particular.

Although indubitable knowledge of type is required from the relation of acquaintance at an elementary level in order for my reconstruction of the project in *Theory of Knowledge* to get off the ground, knowledge of type in other situations could presumably be obtained by description (which accounts for those cases in which our thoughts are confused due to type mistakes). Not only would knowledge of types necessarily be derived from acquaintance in at least some instances of terms and first-order functions (i.e. those which relate only terms), it would also seem necessary for such an essential relation to Russell's philosophy as class membership, which is of at least second order. That this is within the spirit of Russell's project is clear from

the following passage: "Certainly all epistemologically legitimate inference demands that both the premiss and the connection of premiss and conclusion should be data, either for perception or for judgment" (p. 47).

IV. UNDERSTANDING

In Part II on Atomic Propositional Thought, understanding is taken as the primitive multiple relation presupposed in all others. That *S* understands that *A* is similar to *B* is analyzed as:

$$U\{S, A, B, \text{similarity}, R(x, y)\} \tag{3}$$

where $R(x, y)$ is the form of an elementary dyadic relation (*TK*, p. 117). $R(x, y)$ is used interchangeably in *Theory of Knowledge* with *xRy*. The different styles of letters in this latter notation indicate differences in logical type. But given our account of acquaintance with logical types, a different notation, which makes explicit the extra information derived from the shifts in attention with respect to *A*, *B* and similarity as well as the logical form, would be preferred. As an initial attempt, let us take the following:

$$U(S, A_{\mathbf{A}}, B_{\mathbf{B}}, \text{similarity}_{\mathbf{similarity}}, xRy_{\mathbf{xRy,\ x,\ R,\ y}}) \tag{4}$$

In (4), boldface terms indicate logical type, and their subscripted position shows the information about logical type revealed by acquaintance with the object of the corresponding term. Note that it is not necessary for *S* to ascribe a type to herself in order for her to understand that *A* is similar to *B*. The logical form *xRy*, when complexly perceived, yields **R**, **x**, **y** as well as **xRy**. That **R**, **x** and **y** be properties of *xRy* in the same way that **A** is a property of *A* is not essential, only that the relation of understanding can "link up" **R** to **similarity**, **x** to **A** and **y** to **B**.

While (4) provides a general analysis of what it means for a subject to understand a binary relation, in the actual case at hand **x**, **y**, **A** and **B** would all be of the same type, say **p** (for particular), and **similarity** and **R** would also be the same type, say **u** (for universal), and thus the type of the logical form of the object-complex would be **pup** in a Russell-like notation, or **f** (for a first-order relation uniting two par-

ticulars and a universal). This yields

$$U(S, A_{\mathbf{p}}, B_{\mathbf{p}}, \text{similarity}_{\mathbf{u}}, xRy_{\mathbf{f,\ p,\ u,\ p}}) \qquad (5)$$

Although (5) is phrased in terms of the analysis of universals as terms (which preserves an independent role for logical forms), the suggestion that there is acquaintance with logical types works equally well if logical forms are eliminated in favour of a more orthodox treatment of universals as functions:

$$U(S, A_{\mathbf{i}}, B_{\mathbf{i}}, \text{similarity}_{\mathbf{o,\ i,\ i}}) \qquad (6)$$

In (6), **i** is the type of a particular, and **o** the type of a first-order function taking two particulars as arguments. Since no separate role remains for the logical form when the universal is treated as a typed function, the logical form is eliminated.

V. THE DIRECTION PROBLEMS

In Griffin's article two forms of "the direction problem" were distinguished (pp. 219, 224). Where the narrow form is concerned with confusions amongst terms of the same logical type, the wide form is concerned with confusions amongst terms of different logical types. Its narrow form arises when the positions in an object-complex of two or more constituents of the same logical type is important to determining the sense of the complex, e.g. the possible confusion of *A* and *B* in "*A* is before *B*" where *A* and *B* are of the same logical type. Judgments of complexes that are permutative, i.e. homogeneous (involving terms of the same logical type) and asymmetrical (those in which the position of the terms is relevant to determining the sense of the relation), are analyzed by Russell in *Theory of Knowledge* into an associated conjunction of heterogeneous complexes in the following way:

> Let γ be a complex whose constituents are $x_1, x_2, \ldots x_n$ and a relating relation R.... The relation of $x_1, x_2, \ldots x_n$ to γ are their "positions" in the complex; let us call them $C_1, C_2, \ldots C_n \ldots$.
>
> Unless the relation happens to be non-permutative, γ is not determined when we are given R and $x_1, x_2, \ldots x_n$. But it is determined when we are given also the positions of $x_1, x_2, \ldots x_n$, i.e. when we are given

> $x_1 C_1\gamma . x_2 C_2\gamma . \ldots x_n C_n\gamma$. (*TK*, p. 146)

This analysis, however, only succeeds in reducing the narrow form of the direction problem to the wide form of the direction problem and the problem of dealing with conjunctions in molecular thought.

It seems Russell hoped to use type restrictions to prevent the wide form of the direction problem. Whether universals are treated as a type of term distinct from particulars or as functions of a specific type, I contend that Russell's use of logical forms in understanding the cognitive relation presupposed in all propositional thought would have allowed him to meet Wittgenstein's January 1913 requirement that a theory of types tell us "that 'Mortality is Socrates' is nonsensical" (*Letters*, p. 19). This contention relies on a more explicit, extended use of knowledge of logical types than that present in *Theory of Knowledge*.

Griffin proposed that there is a dilemma in the use of logical forms in understanding (or belief on his reading): either these forms contain free variables and therefore make the sentences expressing belief-complexes in which they appear open sentences, or these forms are complete logical facts and thus the relating relation cannot use it to tell how the other constituents of the belief relation should be put together (pp. 223–4). But while Griffin concluded that "Russell's dilemma here seems absolutely inextricable" (p. 224), a way out may be provided elsewhere in the same paper:

> It seems not impossible that forms may be entities but not constituents of those complexes which have the form in question; in the same way, house plans are entities but not constituents of the house for which they are the plan. (P. 236)

In the passage of *Theory of Knowledge* which gives rise to the second horn of the dilemma (p. 114), Russell states that a given dual complex *xRy* has the logical form "something has some relation to something" where these "somethings" are nothing. In this way he comes to the conclusion that the logical form of a dual complex has no constituents: it does not have a structure, "it *is* a structure" (p. 114). This structure is what we must understand in order for us to be able "to understand a proposition which states that *x* has the relation *R* to *y*" (*ibid.*).

Let us make use of an analogy of logical types to the shapes of puzzle pieces. Griffin's argument was that logical forms must either be

like puzzle pieces already put together or like a grid of puzzle piece shapes unfilled by pieces. In the first case, they provide no aid to the understanding in fitting together the constituents of the relation. In the second case, he claimed that they make the understanding relation an open sentence, since these unfilled shapes are then free variables. But it may be possible to consider these "piece shapes" as abstract geometrical forms, which could then exist if they are possible without demanding to be filled in when the logical form of which they are part is a constituent of an understanding (or belief, etc.) relation. That is, the manner in which logical forms specify the logical type of one of their "parts" or "positions" would be different from the way in which either open variables or concrete terms (or complexes) specify logical types—the first would *be* the shape, the second, a container of that shape, the last, actual things which would fit in a container of that shape. Other objects are not fitted into the form, rather the form is used as a blueprint by the understanding relation in the construction of the object-complex. The constituents of the object-complex, whose logical types are known in acquaintance, are put together in such a manner that the resulting complex displays an isomorphism with the logical form, with the constituent in each corresponding "part" being of the same logical type.

Logical forms, though complex in the sense of being a complex structure whose "parts"[10] are (and reveal) logical types, are simple in the sense that they are basic, irreducible elements of the theory of knowledge in *Theory of Knowledge*. No "part" of a logical form can be removed or replaced without destroying it or changing it into a different logical form. Logical forms cannot be analyzed away. In a fundamental way, they are the bridge between the simple and the complex.

Russell's use of the word "variables" in quotes, when introducing acquaintance with logical forms (p. 98) is to be regretted on this account. It is noteworthy that the discussion which follows in the same paragraph (a) does not mention substitution of constituents into the form, (b) stresses the *logical* difference between constituents of different logical types (i.e. between a relation and its terms) and (c)

[10] What Russell referred to as the "positions" in the relation-complex (*TK*, p. 146) are to the relation-complex what these "parts" are to the logical form.

expresses reservations about whether the account of logical forms as concatenated variables is the right logical account.

While a notation is necessary in order to write about logical forms and the way they participate in this theory of knowledge, and the above analysis provides a reason for using one which would discourage confusion between a logical type and a variable of that logical type, the symbolism of *Principia* does not allow logical types to be named directly. This is because a function which yielded the logical type of any argument could not be an argument of itself and would itself be of no determinate type, and therefore invalid. Logical types are not on par with other elements of *Principia*'s symbolism—they are about, rather than within, the symbolism. Russell's use of a notation for logical forms which mimics the notation for variables of specific logical types is an indication of the deeper conceptual dilemma he was facing. He needed to use logical types directly, but the closest he could come was to indicate logical types via free variables of those types. So Griffin's analysis of the use of logical forms, which situates *Theory of Knowledge* within the bounds of Russell's larger project of this period, and specifically as constrained to working within the bounds set by *Principia*, is correct as far as it goes. Exactly how much of this project remains if one allows logical types to be distinguishable from open variables and concrete terms is too large a question to be fully settled here. We know at least that the wide direction problem is solvable, albeit at the cost of multiplying the number of entities.

VI. THE CIRCULARITY PROBLEM

Sommerville noted a vicious circularity in *Theory of Knowledge*. The judgment "that *aRb*" is taken to be an elementary judgment, but it in turn relies on knowledge of the types of *a*, *R*, and *b* in order to unite them correctly with the form *xRy*. These types, however, are only known to be of the most basic type when the judgment "that *aRb*" is known to be elementary.[11] Thus the judgment "that *aRb*" could only be known to be elementary by virtue of another judgment, leading to

[11] "Types, Categories and Significance", p. 707; "Wittgenstein to Russell (July, 1913)", p. 187.

an infinite regress. Acquaintance with logical types allows an escape from this vicious regress at the cost of accepting a less vicious regress.

On the reading of this paper, "judgments" of logical type similarity between the constituents of an object complex and the "parts" of the logical form are required before an elementary judgment of knowledge by description can occur. While this supposes that our cognitive apparatus is equipped to make these judgments of logical type similarity, no vicious regress threatens. This is because the judgment of the similarity of logical types is made in the context of a knowledge of these logical types acquired through acquaintance. All acquaintance relations are still dyadic, although with the complication of being complex in the sense of yielding acquaintance with both the object of acquaintance and its logical type. The judgments of logical type similarity are part of the overall judgment relation—their isolation and identification can be considered as a partial analysis of it.

To digress for a bit, if one considers what knowledge of types is plausibly derived from acquaintance, as opposed to what types it is necessary to suppose are known by acquaintance, the former would be quite extensive indeed if the concept of "relative type" could be fleshed out. Class membership provides a ready example—acquaintance may plausibly be said to allow judgments that certain entities are members of certain classes (i.e. are a specific logical type) without necessarily ascribing or being able to ascribe absolute types to either the class or the entities.

The new circularity difficulty which arises on the view that types are known by acquaintance is this: While entities of various logical types are hierarchically arranged by the theory of types to avoid paradoxes, references to the logical type itself are not allowed. The type of a relation which relates a logical type (not an entity of some determinate logical type) to something else (e.g. a subject) cannot be determined within type theory; the type of such a relation would be indeterminate. Any act of acquaintance with the type of an object or judgment of type similarity is therefore outside of type theory, and thus so too would be any relation logically dependent on these relations, such as judgments of propositions involving judgments of logical similarity, judgments about these judgments, etc. But this is only viciously circular if one wishes to ground type theory within a typed epistemology (Russell's goal). An alternative is to allow relations which have logical types as an object to be of a meta-type.

One can forestall a quick regress of meta-meta- ... -types by noting that only relating-relations (i.e. understanding, judging, believing, desiring, etc.) and acts of acquaintance fall outside of type theory, with the relating-relation always being one level above the level of all the acts of acquaintance related. Since there is only ever one relating relation, the regress is not vicious.

There are two other ways of taking this. One is to note that although an infinite regress of acts of acquaintance with acts of acquaintance is possible, it never happens since we need not continue it and quickly give up the effort. The second is that although there is a regress in specifying a language in a meta-language (this meta-language must be specified in a meta-meta-language, etc.), this is not infinite if we just accept one of these meta- ... -meta-languages. Accepting that acts of acquaintance are able to determine types of objects and that judgments of type similarity match the types of objects with the types of the "parts" of the logical form cuts the circle.

VII. CONCLUSION

Sommerville[12] endorsed the criticism directed at Russell's analysis of acquaintance with logical notions that Wittgenstein made in his *Notebooks 1914–1916*: namely, that "a *property* cannot be a logical type!"[13] Certainly logical forms are a new construct not present in *Principia*, and are exceedingly abstract, not being things or entities. Whether the properties of existents such as these would or would not include logical types is intimately tied up with the question of their existence, since they are introduced in order to yield logical types which can be used in constructing complexes. Whether particulars have the property of being the logical type of a particular is a related, and likewise difficult, problem.

It seems that one problem that Russell was running up against in *Theory of Knowledge* was the impossibility of specifying a typed lan-

[12] "Types, Categories and Significance", p. 707; "Wittgenstein to Russell (July, 1913)", *passim*.

[13] *Notebooks 1914–1916*, ed. G. H. von Wright and G. E. M. Anscombe, 2nd ed. (Oxford: Basil Blackwell, 1979), p. 101.

guage from within the context of that language. In a language of experience which is typed (in a Russellian sense), the rules for what is of what type must come in before the first word, so to speak. In the book this means that entities must be presented to acquaintance already typed. This does not, in the simplest cases, seem to present any psychological difficulties—the difference between a particular and a universal seems possible to be known by acquaintance. Besides, as noted earlier, Russell was generally prepared to accept theories if they had a solid logical basis, even if the psychological or metaphysical implications were unsavoury.

But while this is a way out, Russell would never have chosen it. While Wittgenstein went on to develop a version of logical atomism which remained silent about type-theoretic restrictions while conspicuously observing them, and the approach we are proposing would give the role of a meta-language to acquaintance, Russell's commitment to resolving paradoxes would not have allowed this sidestepping. Russell believed type theory was necessary to resolve the paradoxes. Attacks which went to the heart of the theory could not be overcome by just accepting incompleteness. The years from 1903 to 1907 spent futilely searching for other solutions (see Urquhart's paper) made a collapse of type theory all the more crushing.

Logical forms were introduced to help resolve the direction problems, but perhaps Russell was unable to find any way of making them work at the molecular propositional level. Other problems concerning the ontological status of logical forms were also pressing from encounters with Wittgenstein. And while a method of avoiding the problems encountered in grounding a type-theoretic epistemology is outlined above, this method would not have been acceptable to Russell. Thus it is no surprise that Russell's presentiment that Wittgenstein's criticism "makes a large part of the book I meant to write impossible for years to come"[14] turned out to be true.[15]

[14] Letter from Russell to Ottoline Morrell, no. 811, pmk. 20 June 1913; quoted in *Papers* 7: xxvii–xxviii.

[15] I would like to thank Nicholas Griffin for reading earlier drafts of this article and providing many helpful suggestions and criticisms.