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Author(s): Newton C. A. da Costa and Otavio Bueno
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Russell et le cercle des paradoxes by Philippe de Rouilhan
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most developed discussion of the grounds for axiom selection in set theory is given in the work of Penelope Maddy, and the contrast with the book under review is worth considering. Maddy does not put much stress on “self-evidence,” but rather explores the sorts of plausibility considerations that are, in practice, provided for and against candidate axioms. (In the volume under review, Maddy’s approach is described as based on “extrinsic” considerations and “heuristics” rather than self-evidence, p. 244.) Maddy’s stance does have the advantage that it can more easily address cases in which new candidate “axioms” are proposed, and taken to admit some acceptable degree (perhaps a high degree, perhaps not) of rational defense, but which fall short of “self-evident” (as this expression is normally understood). I expect that it would be interesting and instructive to work out Lavine-style analyses of principles like $V = L$, or determinacy hypotheses, and compare them with the rationales developed and studied by Maddy.

The author’s attitude to finite analogues of axioms does yield an opening for a potentially useful rationale for the pattern of axiom choice he studies. The author suggests (p. 253) that it is an error to think of mathematical knowledge as having secure foundations, and (p. 264) that finite mathematics is “a supplement to ordinary mathematics not a substitute for it.” Say we treat the Mycielski–Lavine finite mathematics as nothing more (though of course nothing less) than an interesting and revealing subfield of mathematics generally. Then the justification of the axioms of ZFC through extrapolation conforms to a familiar pattern: axioms in one domain are singled out as natural in part through their relations to principles treated as natural in another. Continuing with the example of plane projective geometry, the Desargues’s axiom is treated as natural in part because it is equivalent to the requirement that the coordinates have the algebraic structure of a skew-field. This reason for regarding the Desargues’s theorem as distinguished does not require that algebraic structure be treated as more fundamental than geometric structure—it only requires that algebraic structure be treated as relevant to geometric structure. If we take a similar attitude to the relation of Fin(ZFC) and ZFC, we have an instance in which one the principles of one domain are elucidated through their relations to another—a kind of self-reflective examination that is widespread in mathematics. How interesting these particular relations of finite and infinite turn out to be may depend on how interesting the theory of arbitrarily large sets turns out to be in its own right.


Why did Russell formulate the theory of types? The usual answer goes, because in 1901 he discovered what we now call Russell’s paradox, and later on he realized that not only this, but all the known paradoxes (including the Liar and Burali-Forti’s)—which threatened the foundations of logic and mathematics—were symptoms of the same disease. So, they could be treated in the same way. How? After several unsuccessful attempts, and taking from Poincaré the notion of the vicious circle principle, Russell sketched in 1908 the answer he would present two years later, with Whitehead, in the first volume of *Principia mathematica*. In a nutshell, his answer was the construction of what we now call the ramified theory of types.

In this book, Rouilhan persuasively argues that this way of telling the history is too simplistic to be adequate. The usual account is certainly correct in stressing the role that the vicious circle principle played in the development of Russell’s logic, and how the latter was formulated as an attempt to overcome the paradoxes. But this account entirely disregards two crucial factors: the decisive role that the doctrine of incomplete symbols (or logical fictions) played, and the universalist view that underlay Russell’s logical work. Moreover, the account takes for granted, following Ramsey, that the (bad) reason for ramification lies in (some version of) the semantic paradoxes, such as the Liar.

Rouilhan weaves together a number of issues in order to argue for this claim. The first part of the book, *Signification et dénotation* (pp. 31–128), concerns Russell’s theories of denotation, and Rouilhan discusses, in particular, Russell’s theory of definite descriptions. In the second part, *Prédicativité et universalité* (pp. 129–201), the focus shifts to the vicious circle principle, the substitutional theory, and type theory. The book opens with a discussion and classification of paradoxes in general (pp. 9–29), and closes with a revaluation of the significance of semantic paradoxes for ramification (pp. 275–291), and an examination of Russell’s logic and the issue of its universality (pp. 293–297).

As Rouilhan notices (p. 293), Russell had two main constraints while developing ramified type theory: on the one hand, he had to provide a logic that was weak enough to avoid the paradoxes, but on the other hand, it had to be strong enough to allow the reconstruction of classical mathematics. Now, the use of
the vicious circle principle was the way in which Russell satisfied the first constraint, and the introduction of
the axiom of reducibility provided, in a certain sense, the way to achieve the second. As the author
argues in detail, however, the ramified theory of types was not formulated at once, but arose from the
earlier ramified substitutional theory. And the shift from one to the other brought several conceptual
changes (pp. 293–294). In the substitutional theory, there were only differences of types between logical
fictions, or between logical fictions and entities; with the theory of types, there are differences among
the entities themselves. So, whereas in the context of substitutional theory, logic was taken to be universal,
and thus all entities were of one and the same logical type, such universality was ultimately lost with
the move to the ramified type theory. This was something that was quite difficult for Russell to come to
terms with. After all, he wished to articulate a logic that was both predicative and universal.

Russell knew all too well the difficulty posed by distinctions of types of entities for a logic conceived as
universal; namely, that it is impossible to speak of these distinctions without transgressing the boundaries
of what can be said, and thus without speaking, from the viewpoint of universalism, in a meaningless
way (pp. 43, 152, 297). Frege had faced the same problem (which Rouilhan discusses at length in Frege,
*Les paradoxes de la représentation*, Les Éditions de Minuit, Paris 1988). And the same goes later on
for Wittgenstein in the *Tractatus*. It is a pity that Rouilhan examines Russell’s work roughly up to the
first edition of *Principia*. It would have been nice to know his analysis of the evolution of Russell’s
thought concerning the issue, and more generally, to see for Russell the same detailed examination that
Rouilhan provided elsewhere for Frege (op. cit.), concerning the problem posed to logical universalism
by those thoughts that seem to require one to “get outside” of logic. This examination would shed some
light on the issue of why Russell did not formulate a semantics for the theory of types. (Related issues are
discussed by W. Goldfarb in *Logic in the twenties: the nature of the quantifier*, this JOURNAL, vol.
44 (1979), pp. 351–368; and in *Russell’s reasons for ramification, Rereading Russell: essays in Bertrand
Russell’s metaphysics and epistemology*, University of Minnesota Press, Minneapolis 1989, pp. 24–40.)

In any case, Rouilhan provides a beautiful reconstruction of Russell’s logic, and discusses in detail
the formalization of ramified type theory (pp. 234–251). Furthermore, as opposed to the received view,
he argues that the resolution of certain purely logical paradoxes requires ramification (pp. 280–282). He
also shows that a version of a paradox that Russell formulated in the appendix on type theory in his
1903 book *The principles of mathematics* (1116) can be formulated in the simple substitutional theory
(pp. 178–194) as well as in the simple theory of types (pp. 223–230). In this way, a strong defense of
the ramified type theory is provided in the book.

For all these reasons, in our view, this is one of the best historico-critical analyses of Russell’s logic,
and it is a fundamental contribution to the exegesis of Russell’s logical work. In particular, we think
an English translation is highly recommended. After all, Russelian studies will never be the same after
Rouilhan’s work.

Finally, here are the errata indicated to us by the author: Page 13, line 12, add a comma after
‘voit.’ Page 28, line 20, for ‘entités,’ read ‘propositions.’ Page 28, line 21, for ‘classes,’ read ‘classes de
propositions.’ Page 48, line 10 from below (f.b.), for ‘obvie,’ read ‘ordinaire.’ Page 51, line 14 f.b., read:
‘langage: sous ce dernier mot, il s’agit.’ Page 73, line 4, read: ‘la valeur non φ(ϕ).’ Page 94, line 5 f.b.,
for ‘obvie,’ read ‘ordinaire.’ Page 100, last line of each table, delete the vertical line and the sign ‘+’. Page
104, line 17, for ‘est,’ read ‘était.’ Page 104, line 9 f.b., read: ‘deuxième partie, ni les trois.’ Page 108, line
21–22, for ‘guitelmes,’ read ‘italiques.’ Page 110, line 15 f.b., for ‘est,’ read ‘était.’ Page 124, lines 9–8
‘(id.).’ Page 181, line 6, read: ‘et des relations binaires. Etc.’ Page 193, formula (31), for ‘F[R]’; read
‘F[R]’, and in formula (32), for ‘FRW’; read ‘FRW’. Page 218, line 17, for ‘z1,…, zn’; read ‘z1,…, zn’.
Page 221, line 13 f.b., read: ‘n’est pas une entité une (single) de tout.’ Page 224, line 1, after ‘si,’
add ‘des types simples.’ Page 235, line 13 f.b., after ‘si,’ add ‘des types ramifiés.’ Page 236, line 15, in the
middle of the line, for ‘n,’ read ‘n’. Page 241, line 11, read: ‘d’un même symbole.’ Page 246, line 2 f.b.,
for ‘od(r)’, read ‘od(r).’ Page 262, line 7 f.b., for ‘(+, +, 0),’ read ‘(+, +, +).’ Page 266, line 11 f.b., for ‘(+)’;
read ‘(+)’. Page 267, line 13 f.b., at the end of the line, for ‘rj étant,’ read ‘rj étant.’ Page 275, line 3, for ‘hyperarithmétiques,’ read ‘dits “hyperarithmétiques,”’ and in line 4, for ‘dits “hyperarithmétiques,”’ read ‘dits “hyperarithmétiques.”’ Page 276, lines 21–22 and 26–27,
read: ‘écrit aux l. 21–22 de la p. 276 de Russell et le cercle des paradoxes.’ Page 285, line 17, after ‘ou,’ add
another sign of negation: ‘—’. Page 295, line 10, for ‘à,’ read ‘de.’ Page 307, between Weyl1918 and Wiener
1914, add the following reference: ‘Whitehead (Alfred North) et Russell (Bertrand) 1910–13—Principia

Jacek Pańsczek develops a subject-predicate term logic in which names are interpreted as quantifiers with singular extension. The logic becomes Meinongian when an “ontology” of nonexistent objects is later attached, and is then extended into free, modal, and two-sorted Meinongian logics, and applied to a philosophical study of reference and intentionality, and a theory of fictional “entities.”

The task of axiomatizing Meinongian logic is important and difficult. Infamously, Meinong’s semantic project has met with little sympathy from mainstream analytic philosophers and mathematical logicians since the time of Bertrand Russell’s 1905 criticisms. The tide has nevertheless begun to turn in favor of intentional logics and semantics, and Pańsczek’s work joins other recent efforts to articulate a consistent formalization of Meinong’s object theory. Pańsczek’s formalism is elegantly developed in both its quasi-classical logical foundation, and in the Meinongian ontology of its superstructure. There is much to admire in Pańsczek’s exposition, especially his technical virtuosity and innovative reconsideration of the requirements of logical syntax. For purposes of critical review, however, I shall concentrate on a number of difficulties in the philosophical interpretation of Pańsczek’s system.

Pańsczek avoids historical issues, and does not try to justify his term logic as specially suited for Meinongian applications. An Aristotelian term logic, in which quantifiers are interpreted as names, might be regarded as more naturally Meinongian. In a Meinongian—as opposed, say, to a Fregean—semantic framework, anything thinkable enters the semantic domain as an intended object. The quantifications all, some, none, and so forth, might then be understood by a Meinongian as intended objects named by the corresponding quantifiers. Pańsczek’s subject-predicate term logic by contrast does not make quantifiers into names, but construes names as singular quantifiers. Pańsczek champions subject-predicate term logic explicitly on extra-Meinongian grounds, arguing that it more straightforwardly represents the surface grammar of natural language predications and quantifications. ‘Adam is not lazy’ and ‘Somebody is not lazy’ in Pańsczek’s view, have a parallel grammatical structure, in which ‘Adam’ and ‘Somebody’ function alike as subject terms to which the same predicate is applied. Where a traditional classical logician writes ¬La and ∃x¬Lx, Pańsczek symbolizes the singular quantifier term expression as ax¬Lx.

Pańsczek’s term logic is independently interesting, but not recognizably Meinongian. Pańsczek nevertheless refers to his logic throughout as the M-logic, suggesting that from the outset it is supposed to be a Meinongian logic. But the M-logic presented in Pańsczek’s Chapter II is only a subject-predicate term logic in which “Every Mt-formula [of M-logic] has the form txA, where t is a constant or quantifier and xA is a predicate” (p. 28). Although Pańsczek proposes to prove the completeness of M-logic at the end of Chapter II, as a way of demonstrating that Meinongian logic is a version of classical logic, the logic does not become Meinongian until a Meinongian ontology is later “associated” with it in Chapter III. Pańsczek’s M-logic, prior to his attaching a Meinongian ontology, is best described as a generalized ontically neutral free logic, even before the logic is “extended” to provide a more self-consciously free logic in Chapter IV. In proving the completeness of M-logic, it is questionable, as a result, whether Pańsczek has proved the completeness of a distinctively Meinongian logic. Insofar as the completeness of M-logic is supposed to establish that M-logic is a version of classical logic, it remains doubtful whether Pańsczek successfully demonstrates his central thesis that Meinongian logic in his formalization is a version of classical logic.

Despite similarities between M-logic and its underlying quasi-classical term logic, Pańsczek considers M-logic as going beyond the classical limitations of a logic of individual terms. In contrasting his system with classical logic, Pańsczek concludes that “M-language contains terms which, because of their syntactic and semantic status, cannot be identified with individual constants and have no direct counterparts in C-language” (pp. 49–50). But it is unclear precisely how M-logic, whether or not it is in any sense Meinongian, is supposed to be related to classical formalisms. Pańsczek compares the expressive power of M-logic with that of classical C-logic. Where C’ is a fragment of C-logic in which no individual constants occur, but that retains classically interpreted quantifiers and bound variables,