

## How the Great War impacted the Roots of Modern Logic: An Historical Forward

This work attempts to follow through on the short lived but very intense and widely influential research program of Bertrand Russell and Ludwig Wittgenstein to create (or perhaps discover) a clean and perspicuous theory of logic -in the largest, language inclusive sense of the term 'logic'. According to Toulmin, the seed of Wittgenstein's Tractatus sprouted in Vienna under the twilight of the Habsburg Empire before he ever met Frege, or Russell. Wittgenstein's ultimate purpose, he said, was "to devise a method of reconciling the physics of Hertz and Boltzmann with the ethics of Kierkegaard and Tolstoy within a single consistent exposition"<sup>1</sup>. Russell both pre-dated and outlived Wittgenstein. And his writings were of a broader more encyclopedic scope as well. What may not be as well known for those who are not specialists in this area, is that Russell's philosophy of logical atomism<sup>2</sup> as articulated in his lectures from 1918<sup>3</sup> – represented his results of the research program he shared with Wittgenstein. It was, effectively, Russell's Tractatus.

From the letters remaining of that period<sup>4</sup>, Russell's own reflections forty years later<sup>5</sup>, and more recent analyses<sup>6</sup>, it's clear that Russell and Wittgenstein had been involved in an epic philosophical adventure. To take just one snippet of a letter from October 1913, less than a year before the outbreak of WWI, Russell wrote to a friend

*"Then my Austrian, Wittgenstein, burst in like a whirlwind, just back from Norway, and determined to return there at once, to live in complete solitude until he had solved all the problems of logic. I said it would be dark, and he said he hated daylight. I said he was mad, and he said God preserve him from sanity (God certainly will)..."<sup>7</sup>*

Who knows how things would have played out if the war hadn't hurled them to opposite corners of the political and ethical universe? In 1914, Wittgenstein returned -the dutiful son- to his native Austria and entered the army (along with the rest of his male siblings). He carried everywhere a copy of Tolstoy's 'The Gospels in Brief', acted with a bravery that bordered on total disregard for his own life<sup>8</sup>, and was the only one of (by that time) three brothers who was not either maimed or killed in the war. In a study of contrasts, not only did Russell not serve the war effort, he served against it -as a committed pacifist, and wound up jailed during the same year as Wittgenstein for his criticism of the war.

Meanwhile and in spite of the war, both men continued working on the themes in which they earlier had been jointly immersed; but without any communication at all. Wittgenstein wrote most of the Tractatus in 1918 while a prisoner of war in Monte Cassino. At roughly the same time, Russell delivered his lectures on Logical Atomism. While acknowledging his friend Ludwig Wittgenstein as the source for

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<sup>1</sup> 'Wittgenstein's Vienna' Toulmin and Janik page 168

<sup>2</sup> By signaling out these two specific works I am not trying to devalue the work they produced either before or after. Rather I am calling attention to an extraordinary decade when two brilliant individuals worked on a shared and extremely ambitious research agenda under the most trying of circumstances.

<sup>3</sup> 'Logic and Knowledge' pps 177-281

<sup>4</sup> Bertrand Russell's Dialogue with his Contemporaries Elizabeth Eames pps 136-169

<sup>5</sup> 'My Philosophical Development' Bertrand Russell 1959 pps 82-94

<sup>6</sup> Wittgenstein's Apprenticeship with Russell' Gregory Landini 2007

<sup>7</sup> Eames p 154

<sup>8</sup> 'The Young Ludwig' Brian McGinnis

critical aspects of what was presented<sup>9</sup> (consistent with Russell's gracious style), he had no idea, as he was delivering his lectures, whether Wittgenstein was even alive. Such was the Great War.

Saying anything intelligible, much less novel can be quite difficult when it comes to logic, for the objects around which logical stories are woven can neither be seen nor touched. Misunderstandings are common. When Russell and Wittgenstein finally met up again in Brussels in 1920, the intensity of their war experiences could only have served to accentuate the idiosyncrasies each of them had and render the clear exchange of their privately continued research all but impossible. Absent the living emotional bonds and shared vocabulary that had absorbed their obvious differences in temperament during the prewar years, and given the extreme difference in their relative war experience - sides as well as positions, it's tremendously sad, but not surprising, that they had lost forever the magic of their previously shared intellectual-emotional space.

All the more so because, I believe, (and with the notable exception of Wittgenstein's recognition of the centrality of process both to representation in general and to number concepts specifically), their positions were not as distinct as they might have thought judging only from the surface appearance of words<sup>10</sup>. Who knows what would have happened if they had continued to collaborate for another decade? Perhaps some of Wittgenstein's critiques of the classical paradigm would have been absorbed by Russell, integrated into textbook logic, and eventually used by computer scientists to design the variety of information management software frameworks that exist today<sup>11</sup>. This is not a trivial point. As I have shown elsewhere<sup>12</sup>, many of the shortcomings in modern information management software can be traced to the equivalent shortcomings in the predicate calculus.

Without any pretense of arguing the details of either work in this forward, suffice it to say that both works dealt with Logic in the largest language inclusive sense of the term. Yes; formal logic, truth functions and the manipulation of symbols played a role. But so too did the link from the world, however defined, to our private sensory motor experiences, and from private sensory motor experiences to linguistic representations of that experience capable of being publicly shared, to the limits of what can be known at all, and of what can be known with certainty. Logic, in the smaller sense of the term then operated within those linguistic bounds

As to the title of this book, it has two senses depending on how it is parsed; both of which are intended. In one sense, the title asserts that language is the process of knowing the world. In another, that the world, as a limiting factor for our thoughts, abstractions, verbalizations, feelings and sensory motor experience is a part of language.

With logic acting as the cornerstone for language, and all representation and intentional concerns playing out within language, features typically associated with the concept of Mind follow naturally from language. Ockham would suggest we pick one. And so we have: Language.

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<sup>9</sup> Logic and Knowledge page 177

<sup>10</sup> However, it remains for another book to show the similarity of argument -not of vocabulary (and certainly not everywhere, but in large parts) at the sentence and paragraph level in the Tractatus and Russell's Logical Atomism.

<sup>11</sup> Though Wittgenstein was generally considered the deeper or more profound philosopher, Russell's published work (e.g., the Principia ) had greater influence among logicians and ultimately computer scientists who when looking for an abstract layer upon which to base data definition and manipulation languages found most often the threads of predicate and propositional logic linking Russell to Frege. It would be hard to over-estimate the importance of the predicate and propositional calculus to modern computing, especially information management.

<sup>12</sup> See OLAP Solutions 'Building Multi-dimensional Information Systems' 2nd edition pps 603-613