

# “Bad grammar as well as bad logic”: Christine Ladd-Franklin on Bertrand Russell

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mathematics. Thus, six are necessary for the theory of implication,  
eight or nine for all pure mathematics.

\* 2. Primitive Propositions.

\* 1. Anything implied by a true proposition is true. Pp.\* This proposition

\* The letters "Pp" stand for "primitive proposition" as with Peano.

is used in every proof without exception; hence it will not be referred

\* Bad grammar as well as bad  
logic. You can only say the truth of  
p implies q if you define & mention a  
verbal noun. Best is  $(p \vee \neg q) \leftarrow (q \leftarrow p)$ , but

# Introduction / Plan for the talk

- Who is Christine Ladd-Franklin?
  - ▶ Biography
  - ▶ Logic
- Russell on Ladd-Franklin: What everyone “knows”
- Ladd-Franklin on Russell:
  - ▶ Presentations and published views
  - ▶ Archival material
- Conclusion

# Who is Christine Ladd-Franklin?: Biography

- Born in 1847, in Windsor, Connecticut.
- Graduated as valedictorian at Wesleyan Academy in 1865.
- Fall–Spring 1866: enrolled at Vassar College.
- Worked as a teacher until she could afford to return to Vassar.
- At Vassar, studied astronomy under Maria Mitchell.
- Turned to mathematics when a career in astronomy/physics wasn't possible.
- Numerous publications in mathematics journals (e.g., *Analyst*, where she was the first woman published) between 1875 and 1886.
- Taught mathematics at secondary school for nine years.
- Accepted to Johns Hopkins University in 1878, with the support of James J. Sylvester.
- Married fellow student Fabian Franklin in 1882.
- Post-PhD career: Psychology of perception.
- Died in 1930.

## Who is Christine Ladd-Franklin?: Logic

- Studied mathematics and wrote a dissertation, *On the Algebra of Logic*, under the supervision of C.S. Peirce, published in 1883.
- Later papers on logic (1889, 1890, 1904, 1912, 1913, 1920, 1927, 1928).
- Applied to teach at Johns Hopkins in 1893 (denied).
- Was given permission in 1904 to teach one class a year, for five years.
- Awarded her PhD in 1926.

## The Ladd-Franklin archives at Columbia

- Vast amount of material in her archives yet to be explored.
- (3000 photos taken across 30+ boxes, less than half the material!).
- Universal languages (such as Peano's Ladin, Esperanto, etc.)
- Notes on philosophical topics, including fundamental concepts of logic, relationship between logic and psychology, draft book(s).
- Extensive correspondence or engagement with: Boole, DeMorgan, Couturat, Jevons, Jones, Mitchell, Peirce, Russell, Schrödinger, Schröder, Paul Weiss, Whitehead ("You told me (when I had the happiness of seeing you) that you were very familiar with my paper on symbolic logic in the *Studies in Logic* by Members of the Johns Hopkins University—you told me in fact (much to my pleasure) that you kept the book always on your study-table."), etc.

## Russell on Ladd-Franklin

- Russell's anecdote: "I once received a letter from an eminent logician, Mrs. Christine Ladd-Franklin, saying that she was a solipsist, and was surprised that there were no others. Coming from a logician and a solipsist, her surprise surprised me" [8].
- Often quoted/recounted uncritically by other authors, e.g., [2, 6].
- A one-sided misrepresentation of the relationship between Russell and Ladd-Franklin.

## Ladd-Franklin on Russell, overview of published work and presentations (1)

Much of what Ladd-Franklin has to say is in unpublished work; what *has* been published has been not much studied.

- 1911 APA, Ladd-Franklin:

*opened the session with a paper on "Existence in Logic," in which she maintained that modern logic had introduced (in the hands of Bertrand Russell) many vagaries which the philosopher will do well not to take too seriously [7, p. 109].*

*In conclusion it should be observed that Frege, Peano, and Bertrand Russell are writing on mathematics, and that they give a very garbled account of a non-special symbolic logic" [3, p. 22].*

- Published as "Implication and Existence in Logic" in 1912 [4].

## Ladd-Franklin on Russell, overview of published work and presentations (2)

- 1917 APA, presentation “Bertrand Russell and Symbolic Logic” (abstract published as [5].)
- 1918 AMS meeting, gave the paper again (summary by F.N. Cole published in [1].)
- Nothing published other than the abstract and summary.

# “Implication and Existence in Logic” (1)

- Russell’s logic leaves “much to be desired in the way of saneness and sobriety” [4, p. 642].
- Objections to Russell’s use of “ $p$  implies  $q$ ” as “a diagrammatic representation of reasoning” [4, p. 642]:
  - ① It inclines readers of *Principles of Mathematics* “to attribute [to *PoM*] a cabalistic meaning, a significance as a picture of the type of reasoning that takes place in the hypothetico-deductive fields of thought, which it does not, in fact, possess” [4, p. 642].
  - ② The common connotation of the word is much weaker than the way it is used by Russell, capturing a sense of “implies more or less but not exactly nor rigidly” and she argues that it “is better not to wrest words from their actual meaning for technical purposes when that can easily be avoided” [4, p. 642].
  - ③ Russell’s approach prioritizes inferences from a single premise, when in fact most actual inferences in the wild (so to speak) are drawn from multiple premises. While it is possible to draw a conclusion from a single premise, this “is subsidiary to the main work of logic” [4, p. 643].

## “Implication and Existence in Logic” (1)

- To take inference from a single premise as the basic form of inference is to inappropriately center something that is a “relatively unimportant part of the subject” of logic [4, p. 643].
- When Russell points out that multiple premises can always be combined into the statement of a single conjunctive premise, Ladd-Franklin calls his motive “amusing” [4, p. 644].
- It is also problematic “to give your formula an appearance of symmetry where no symmetry is, is the most fatal of error” [4, p. 644].

# “Bertrand Russell and Symbolic Logic” (1)

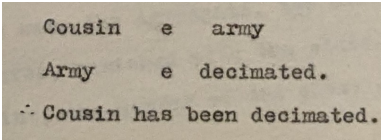
Three main points:

- 1 Logic should be of use and relevance to the philosopher, but Russell's *symbol logic* is not, because it “is intended solely for the mathematician” [5, p. 177].
- 2 Even for mathematicians, Russell is a poor guide given the number of times he has revised or rejected his previous views.
- 3 Objections to Russell and Peano's  $\in$  relation:

## “Bertrand Russell and Symbolic Logic”

*there is nothing peculiar in the relation concerned. . . The only reason given for regarding this relation as peculiar—that it is not subject (as is the relation) to the rule of syllogism—is wholly fallacious. . . Russell and Peano treat this ‘addition’ as constituting an important improvement over the logic which preceded them. . . instead of which it is simply erroneous [5, p. 177].*

*“That an inept symbolism is made use of in mathematics. . . would be of no consequence, but Russell and Peano treat this ‘addition’ [of  $\in$ ] as constituting an important improvement over the logic which preceded them—that of Peirce and his school—instead of which it is simply erroneous” [Box 41]*



Cousin e army  
Army e decimated.  
∴ Cousin has been decimated.

# “Bertrand Russell and Symbolic Logic” in the archives (1)

In the archives, we have found drafts of this paper, whose order of drafting we are reconstructing, including any changes between the APA presentation and the AMS presentation:

- 1 First draft
  - ▶ Edit 1
  - ▶ Edit 2
  - ▶ Edit 3
- 2 Second draft

## “Bertrand Russell and Symbolic Logic” in the archives (2)

- We are confident that the first draft is the earliest draft, as edits are directly incorporated into the second draft.
- We are also relatively confident that the edits are edits of this first draft, as they develop specific notes Ladd-Franklin hand wrote on top of the first draft.
- The first draft is stylistically closer to the second draft than the APA presentation, both in its phrasing and critical emphasis towards Russell himself, suggesting it was written after.
- However, the first draft may have only have been written shortly after the APA presentation, as they share a reference to the course of ten lectures she is to give “. . . at once, before the Philosophical Department of Harvard University” [5, p. 178] which an edit of the first draft mentions she is “. . . to give at Harvard University this year.”

## “Bertrand Russell and Symbolic Logic” in the archives (3)

- Reordering of title from draft 1 to draft 2
- Draft 2 foregrounds the argument that “there is nothing of critical importance in the works on logic of Bertrand Russell.”
- “[Russell’s] progress as a thinker has, as a matter of fact, been fraught with serious misadventure.”
- Argues that there is a fundamental movement from *Principles of Mathematics* to *Principia Mathematica* which has hitherto gone unacknowledged: In *Principia*, Russell abandoned the theory of classes, propositional functions, and relations which *Principles* was based on—yet misleadingly continued to use a similar language despite this foundational change.

## Concluding remarks

he  
ignores, as a  
matter of course,  
in the common  
logic, where more  
than two terms  
is an "unknowing"  
but you will  
hardly find it,  
& believe, explicit  
by set forth  
in the (poor)  
symbolic (math-  
ematical) logic  
of Peano-Russell.

2000. 2  
His philosophy is  
all wrong - see  
Lectures from I  
have given (notably  
positivist) add.  
Prof. H. P. S. ...  
(Mar 1917 p 29  
& (in first note)  
"Mrs. Annie Stephens  
extraordinary clear  
& brilliant debater"  
Gives ...  
\*first thing yet!

"... in the (poor) symbolic (mathematical) logic of Peano-Russell"  
"His philosophy is all wrong"

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