The Logic Book 5th Edition Errata

Compiled November 2011

Chapter 3

Page

76 3rd line after characteristic truth-tables: replace 'immediate sentences' with 'immediate components'

77 First line after first truth-table: replace 'truth-tables' with 'truth-values'

110 Second line after start of section 3.6: insert 'truth-functional equivalence' after 'truth-functional indeterminacy'

Chapter 4

Page

123 First line below tree: replace
'A &C
with
'A & C'

127 Line before second tree: replace ~ (H v ~ I)) with ~ (H v ~ I))} (add rt brace)

129 1.n. replace '(A ∨ B) & (A ∨ C)' with '(A ∨ B) ∨ (A ∨ C)'

130 Exercise *n., replace: 'H ∨ ~ I)' with '(H ∨ ~ I)'

131 Negated Biconditional Decomposition rule: replace '**P** ≡ **Q**' with '~ (**P** ≡ **Q**)'

136 Exercise j., replace 'B,)' with 'B)'

143 Exercise *b., replace '& ~ C' with '& ~ C}' (add right brace)

151 Line 1 of tree, replace '[(W & Y)]' with '(W & Y)'

151 Line 11 of tree: add missing justification: '2 ~ ⊃D'

Chapter 5

Page

164 Second derivation, line 4, replace '4 &E' with '3 &E'

165 4th line from bottom: remove blank line before 'To illustrate, consider the argument' and add blank line after 'To illustrate, consider the argument'

Second derivation, line 8 replace '⊃D' with '⊃E'

167 Line 4: replace

> When a subderivation is ended we say that the assumption of that subderivation has been discharged; it is no longer in force and may not be cited on subsequent lines.

with

> When a subderivation is ended (by using a rule that cites the entire subderivation) we say that the assumption of that subderivation has been **discharged** and is **closed**. The scope of an assumption includes the assumption itself and all sentences and subderivations occurring

subsequent to it but before it is discharged. Once an assumption is discharged neither it nor any sentence or subderivation lying within its scope can be appealed to in justifying subsequent lines of a derivation.

Line 10: replace

When a subderivation is ended (by using a rule that cites the entire subderivation) we say that the assumption of that subderivation has been **discharged** and that the subderivation is **closed**. The scope of an assumption includes the assumption itself and all sentences and subderivations occurring subsequent to it but before it is discharged. Once an assumption is discharged neither it nor any sentence or subderivation lying within its scope can be appealed to in justifying subsequent lines of a derivation.

with

We can now explain the concept of **accessibility**. Informally, a sentence or subderivation is accessible at line **n** of a derivation (can be appealed to in justifying line **n**) if and only if every scope line to the left of the sentence or subderivation is also to the left of the sentence on line **n**. More formally, a sentence or subderivation is accessible at a given line **n** of a derivation if and only if it falls within the scope of an open assumption.

172 Line 9: replace 'truth-functional compound' with 'truth-functionally compound'
Second derivation schema: replace both occurrences of '~ E' with '~ I'

173 Second derivation schema: replace both occurrences of '~E' with '~ I'
Third derivation schema: line 2, replace '~ E' with '~ I'

180 Replace Conditional Elimination rule schema with

Conditional Elimination (⊃E)

P ⊃ Q
P
Q

184 6th line above 2nd derivation: replace 'This as is as' with 'This is as'

185 Second derivation: line 8, replace '2, 7 ⊃E' with '5-7 ~ E'
line 13, replace '10-12' with '10-12 ~ E'

186 Derivation line 6: replace ‘A ~ E’ with ‘A / ~ E’
Line 11: replace ‘A ~ E’ with ‘A / ~ E’

187 1st derivation: replace ‘Derive: A ⊃ (B ⊃ C)’ with ‘Derive: A ⊃ (B ⊃ A)’
line 2, replace ‘A / ~ I’ with ‘A / ~ E’

188 Derivation f: replace line numbers 12-17 with numbers 11-16

193 Line 6 of derivation on top of page: replace ‘⊃I’ with ‘~ E’

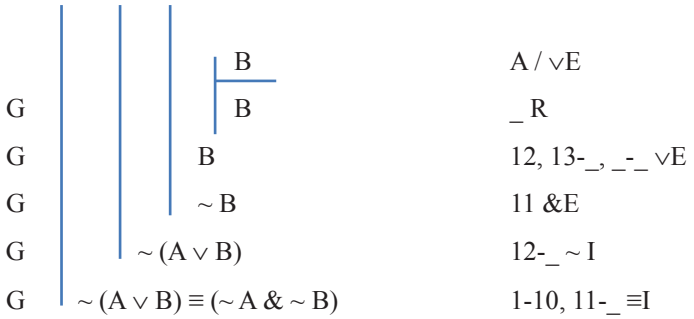
199 First derivation schema: replace two occurrences of ‘~ N ∨ L’ with ‘~ N ∨ A’
Line 1 of first paragraph after first derivation schema: replace ‘~ N ∨ L’ with ‘~ N ∨ A’
Line 2 of first paragraph after first derivation schema: replace “ or ‘L’” with “or ‘A’”
Second derivation schema: replace ‘~ N ∨ I’ with ‘~ N ∨ A’ in lines 5 and 6

199 Second derivation, line 8, justification should be ‘4, 7 &I’

202 Line 1 of 1st derivation: replace: ‘A/’ with ‘A /’

202 2nd line after 2nd derivation, delete ‘we need to derive’

205 Line 3: replace ‘Negation Elimination’ with ‘Negation Introduction’ and ‘began’ with ‘begun’.
Replace last five lines of top derivation schema with



205 Second derivation, line 12, replace: ‘A /~ I’ with ‘A / ~ I’

211 First derivation, line 4: replace ‘1, 2 ≡E’ with ‘1, 3 ≡E’
First derivation, line 9: replace ‘1, 7 ≡E’ with ‘1, 8 ≡E’
In last block of text, penultimate line: replace
We will take ‘B’ as our new goal ‘B’.
with
We will take ‘B’ as our new goal.

219 Second derivation schema, line 4: replace ‘~ I’ with ‘~ E’

220 First derivation schema: lines 4 and 9, replace ‘~ I’ with ‘~ E’

223 Exercise 1.m. replace ‘{A ∨ B)’ with ‘{(A ∨ B)’
Exercise 1.p. replace ‘{(A & B ≡’ with ‘{(A & B) ≡’

225 Exercise 6.a. replace ‘{A ⊃ B, ~ A ⊃ ~ B)}’ with {A ⊃ B, ~ A ⊃ ~ B}
Exercise 6.c. replace ‘A ≡ ~ (B ∨ C)’ with ‘A ≡ (~ B ∨ C)’
Exercise 6.g. replace ‘{(A ⊃ (D & B)’ with ‘{A ⊃ (D & B)’
Exercise 6.h. replace ‘{~ (A ≡ B)’ with ‘{~ (A ≡ B)}’
Exercise 7.d. replace ‘~ (F ∨ ~ G) ≡ (~ (H ∨ I)’ with ‘~ (F ∨ ~ G) ≡ ~ (H ∨ I)’

226 Exercise 7.j. replace ‘~ (A ∨ B)’ with ‘~ (A ∨ ~ B)’

229 1st derivation schema, line n+1, replace ‘i, j ⊃E’ with ‘i, n ⊃E’

229 1st derivation schema, line n + 3, replace ‘**n** – **n** +2 ~ I’ with ‘**n** – (**n** + 2) ~ I’

229 Replace

Modus Tollens (MT)

| **P ⊃ Q**
| **~ Q**

> **~ Q**

with

Modus Tollens (MT)

| **P ⊃ Q**
| **~ Q**

> **~ P**

229	Line 3 from bottom, replace '**i**, **j** ⊃E' with '**i**, **n** ⊃E'
229	Line 2 from bottom, replace '**j**, **n** +2 ⊃E' with '**j**, **n** + 1 ⊃E'
229	Last line: replace '**n** – **n** + 2 ⊃I' with '**n** – (**n** + 2) ⊃I'
231	Footer: replace '5.5 THE DERIVATION SYSTEM *SD*+' with '5.4 THE DERIVATION SYSTEM *SD*+'
264	Line before Exercise set 6.3E: replace '(See Exercise 20 in Section 5.4E)' with '(See Exercise 14 in Section 5.3E)'
266	4th line after Metatheorem 6.4.1: replace '(see Exercise 20 in Section 5.4E)' with '(See Exercise 14 in Section 5.3E)'
275	Exercise 5: make 5.c 5.a and make 5.e. 5.b. Add after 5.b '(These are clauses c and e of 6.4.11.)

Chapter 7

Page

294 4 lines from bottom: replace ‘Sentence 5’ with ‘Sentence 4’

296 Replace exercise set 7.4E number 2 with

2. Symbolize the following sentences in PL. (Note: Not all of these sentences are true.)

UD: The positive integers
Ex: x is even
Ox: x is odd
Lxy: x is less than y
Px: x is prime
a: 1
b: 2
c: 4
d: 100

a. Some positive integers are odd and some are even.
*b. Some positive integers are prime but not all positive integers are not prime.
c. No positive integer is less than 1.
*d. No positive integer is less than itself.
e. 2 is less than 4 and 4 is less than some positive integer.
*f. Every positive integer is less than 100.
g. Not all positive integers are prime and not all positive integers are even.
*h. Not all positive integers are primes and not all positive integers are non-primes.
i. All positive integers are even if and only if all positive integers are not odd.
*j. 1 is not prime and no positive integer is less than 1.
k. There is an positive integer that is less than 100.

301 5th line from bottom of table, replace ‘(Gay)’ with ‘Gay’
310 Line 4: replace ‘things’ with ‘thing’
314 Line 16: replace ‘(∃)’ with ‘(∃w)’
317 Line 11 from bottom: replace ‘**P** & **Q**’ with ‘(**P** & **Q**)’
317 Line 7 from bottom: replace ‘O-sentence’ with ‘I-sentence’
322 Line 8: replace ‘larger’ with ‘large’
324 Line 18: replace ‘if follows’ with ‘it follows’
339 Line 10 from bottom: replace ‘is ferocious’ with ‘x is ferocious’
354 Paraphrase of sentence 5 should be:

Each y is such that if y is a person and y understand this text then either y understands Bertrand Russell’s *Principia Mathematica* or y understands **Lewis** Carroll’s *Alice in Wonderland*.

354 4th line before sentence 6: replace ‘[Py’ with ‘([Py’
362 Delete: lines 19-21
A shorter version is

$$(\forall x)(\forall y)(\forall z)[([(Px \ \& \ Py) \ \& \ Pz] \ \& \ [(Nxb \ \& \ Nyb) \ \& \ Nzb]) \supset (z = x \vee z = y)]$$

362 Line 22: delete "the very same pear as"

362 8th line from bottom: replace '= z)' with '= z)]' (insert square bracket)

365 Replace lines 9-10 with

Both (both 2 is prime and the only successor of 2 is prime) and each successor of any prime that is not 2 is not prime.

367 Line 17: replace 'identity' with 'A'

371 Line 5: replace '(∃x)Bx & ~ B*f*(x)' with '(∃x)[Bx & ~ B*f*(x)]'

374 Line 10 from bottom: replace '$\mathbf{t_n}$) are individual terms' with '$\mathbf{t_n}$ are individual terms'

Chapter 8

Page

387 Line 25: replace 'Either Modonna is a politician' with 'Either Modonna is not a politician'

398 Exercise 5.e. replace '(Cw))' with 'Cw))'

400 Line 8 from bottom: replace 'member of y' with 'member y'

403 Exercise 3.d. in second sentence, replace '((∃z)' with '(∃z)'

403 Exercise 4.e. Replace

$$\{(\forall w)(Nw \supset (\exists z)(Mz \ \& \ Cwz), (\forall z)(\forall w)(Mz \supset \sim Cwz)\}$$

with

$$\{(\forall w)(Nw \supset (\exists z)(Mz \ \& \ Cwz)), (\forall z)(\forall w)(Mz \supset \sim Cwz)\}$$

That is, add missing right parenthesis after first occurrence of 'Cwz)'

413 Line 18: replace '(∀**x**)**P**' with '(∃**x**)**P**'

417 Line 3 of 3rd full paragraph: replace 'in which every member' with 'in which no member' and replace 'and no member' with 'and every member'.

423 Exercise 6, line 2: replace

('a', 'n')

with

{‘a’, ‘n’}

434 9th line from bottom: replace ‘)) &’ with ‘) &’

437 Line 6 from bottom: replace ‘have the same truth-table’ with ‘have the same truth-value’.

Chapter 9

Page

461 In tree at top of page, line 2: replace ‘~ Ga’ with ‘~ Gab’

462 Delete final right parenthesis in line 1 of second tree

463 1st line after first interpretation: replace

~ Fb’

with

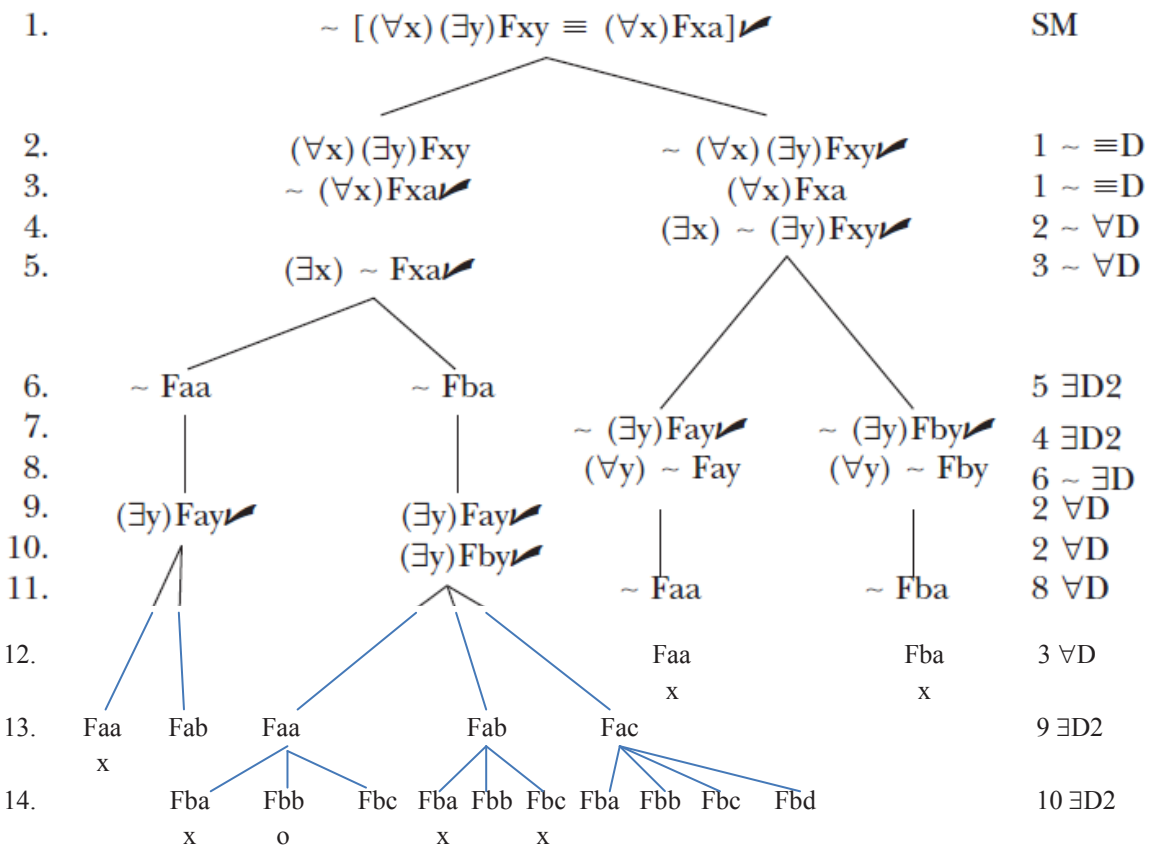
‘ ~ Fb’

467 Exercise set 9.1E: replace ‘Construct’ with ‘1. Construct’.

483 Line 8: replace ‘a **finite truth-tree** be’ with ‘a **finite truth-tree** to be’

490 Delete last 3 words on page: ‘The System is’

492 Replace second tree with



510 Line 1, replace ‘O*f*(a)’ with ‘~ O*f*(a)’

Line 8, replace ‘x is odd’ with ‘x is even’

511 Last line: replace '*f*(b)' with '*f*(x)'

512 Exercise 1.n.: replace '(∃x)' with '~ (∃x)'

521 Replace:

1. A literal that is not an identity sentence
2. A compound sentence that is not a universally quantified sentence and is decomposed

3. A universally quantified sentence (∀**x**)**P** such that **P**(**a**/**x**) also occurs on that branch *for each constant* **a** occurring on the branch and **P**(**a**/**x**) occurs on the branch for at least one constant **a**

4. A sentence of the form **a** _ **t**, where **a** is an individual constant and **t** is a closed term such that the branch also contains, for every literal **P** on that branch containing **t,** every sentence **P**(**a**//**t**) that can be obtained from **P** by Identity Decomposition

with

1. A literal that is not an identity sentence of the form **a** = **t**, where **a** is an individual constant and **t** is a closed term
2. A sentence of the form **a** = **t**, where **a** is an individual constant and **t** is a closed term such that the branch also contains, for every literal **P** on the branch containing **t**, every sentence **P**(**a**//**t**) that can be obtained from **P** by Identity Decomposition
3. A compound sentence that is not a universally quantified sentence and is decomposed
4. A universally quantified sentence (∀**x**)**P** such that **P**(**a**/**x**) also occurs on that branch *for each constant* **a** occurring on the branch and **P**(**a**/x**)** occurs on the branch for at least one constant **a**.

That is, amend clause 1 as shown, move clause 4 so that it is now clause 2, and renumber clauses 2-3 so that they are now clauses 3-4.

Chapter 10

Page

540 Line 6: replace 'Existential Generalization' with 'Existential Introduction'

542 Third full paragraph, line 2: replace 'Existential Instantiation' with 'Existential Elimination'

542 Second line after last derivation: replace 'The existential' with 'The existentially'

550 Exercise 2.c. line 4: replace '2∀∃E' with '2∀E'

561 5th line after 1st derivation: replace 'we can bet' with 'we can get'

568 Line 7: replace 'Conditional Introduction' with 'Conditional Elimination'

570 Line 3: replace ‘Derive (∃x)(Fx ⊃ (∀y)Fy)’ with ‘(∃x)(Fx ⊃ Ga)’
571 Penultimate line: replace ‘sentence at line 3’ with ‘sentence at line 2’
572 Line 1: replace ‘Derive: (∃x)(Fx ⊃ (∀y)Fy)’ with ‘Derive: (∃x)(Fx ⊃ Ga)’
Line 18 of first derivation: replace ‘1R’ with ‘2R’
577 The top derivation should begin as follows:

Derive: (∀x)(Fx ≡ Gx), ~ (∀x)(Fx ≡ Gx)

1	(∀x)(Fx ≡ Gx)	Assumption
2	(∃y)(Fy & ~ Gy)	Assumption

That is, move the horizontal line to below line 2 of the derivation.

578 Line 6 of first derivation: replace ‘3 E’ with ‘3 &E’
583 Line 3 of section 10.3: replace ‘that are unique’ with ‘that is unique’
590 Last line of first block of text: replace ‘Identity Decomposition’ with ‘Identity Elimination’
590 First derivation after first block of text, line 1: replace ‘(∀y)’ with ‘(∀x)’
Second derivation after first block of text, line 5: replace ‘2, 4 =E’ with ‘2, 4 ⊃E’
Last derivation, line 6: replace ‘Haa = Wbb’ with ‘Haa ⊃ Wbb’
591 Third derivation: replace ‘Derive: (∀y)(Fyh ⊃ Ghy)’ with ‘Derive: (∀x)(Fxh ⊃ Ghx)’
Fourth derivation: line 1, replace ‘(∀y)’ with ‘(∀x)’
592 Second derivation: line 3, replace ‘2,2 IE’ with ‘2,2 =E’
595 First derivation: line 11, replace ‘1, 2-10 ∃E’ with ‘1, 3-10 ∃E’
Second derivation: line 11, replace ‘1, 2-10 ∃E’ with ‘1, 3-10 ∃E’
Second line of block of text below second derivation, replace ‘*PLE*’ with ‘*PDE*’
596 Replace two derivations at top of page occurring after “Consider the following simple derivations” with

Derive: (∃z)Fz

1	(∀y)Fy	Assumption
2	Fa	1 ∀E
3	(∃z)Fz	2 ∃I

Derive: (∃z)F*g*(z)

1	(∀y)Fy	Assumption
2	F*g*(a)	1 ∀E
3	(∃z)F*g*(z)	2 ∃I

That is, move the horizontal lines as indicated.

Replace derivation at bottom of page with the following derivation:

Derive: (∀x)Ex

1	(∀x)E*d*(x)	Assumption
2	E*d*(a)	1 ∀E
3	(∀x)Ex	2 ∀I **MISTAKE!**

That is, move the horizontal line as indicated.

604 Exercise 10.4E 1. In instructions, replace '*PLE*' with '*PDE*'