Book Corrections

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I have listed both harmless typos and items that may cause difficulty. The serious items are marked with *.

$x_1$ These deduction of $\omega$-stability from $\aleph_1$ categoricity in Theorem 18.16 uses Keisier’s result but also relies essentially on two results of Shelah, 17.11 and 6.3.1.

$9^\circ$ : Insert ‘formulas’ before ‘with’.

9 : The assumption of Lemma 2.12 should allow $G$ to be empty or a countable member of $K$.

11 : Proof of 2.19. In second line should be ‘finite subsets of $X$’ not ‘of $A$’.

12$^9$ : $\psi \upharpoonright X$ for $f$

12$^{10}$ : $X$ for $X_k$; $Z$ for $Z_k$

12$^{12}$ : $X$ for $X_k$; it might have been clearer to write $\hat{\psi}_k$ rather than $\hat{\psi}$

18$^1$ : ‘an’ for ‘and’

18$^3$ : $b_2^2$ for $b_2^{1,2}$

19$^{10}$ : $q_\ell h_\ell$ for $h_\ell b_\ell$

20$^{19}$ : Delete ‘from’.

20$^{22}$ : The mysterious subscript $\frac{1}{m}$ should read $\frac{1}{n}$.


24 last line of Definition 4.27: $PCT(\lambda, \lambda)$ should replace $PC(\lambda, \lambda)$.

28$^{18}$ : There is a missing colon after the second $f$.

41 : The reference to elementary submodel in the proof of Theorem 5.1.8 should be to $L^\ast$-elementary submodel.

47$^\circ$ $\alpha$ should be $\beta$ in the paragraph beginning ‘For successor’.

34 : Example 4.29. The example should further require that $|U(M)| = |M/U(M)|$ to ensure categoricity in the $\beta_\alpha$. (Thanks to Tori Norquez.)

50 : Example 6.1.3. The example asked for has been found by Baldwin, Hyttinen, Kesala.

53 : Theorem 6.3.2 hold also for $PCT(\aleph_0, \aleph_0)$ classes. This was implicit in [She87] and is explicit in [BLS].

55$^{10}$ The analysis in Part 4 if only for $L_{\omega_1, \omega}$.

55$^p$ The ‘unpublished’ works of Shelah appear in [She09].

75$^4$ : ‘$N$’ for ‘$n$’.

76$^1$ * In Definition 10.6 a, a chain should be required to be continuous.
93 : *** Exercise 12.9 is Not proved. The intended argument does not work. The claim remains open.

97 : Insert after \( p \in \text{ga} - S(M) \): ‘is minimal’.

12 : This is a piece of the ‘big picture’ that I should have put in to discuss Theorem 12.23. A natural approach to proving Theorem 12.23 would unthinkingly assume compactness of galois types (in the sense of Definition 11.4). But this is not necessary. There is an important distinction between an assertion of compactness: every increasing chain of Galois types has an upper bound and the existence of a bound for a coherent sequence. In applications like 12.23, the coherent sequence, both the types and the witnesses are built simultaneously. Thus there is a weaker demand than to find a sequence of witness for an already given increasing family of types.

110 : Delete the second ‘chapter’.

110 : * The reference should be to Lemma 10.11. This incorrect reference is repeated three times on page 111.

113 : * Theorem 14.12, \( \rho \) should be assumed to be less than \( \lambda^+ \).

116 : Add unless \( i_0 = j_0 \) and \( i_1 = j_1 \).

129: * ‘at least’ for ‘above’

140 : The initial sentence, ‘The assumption that \( 2^{\aleph_0} < 2^{\aleph_1} \) is essential in 18.16’ should be deleted. The remainder of the paragraph gives a more nuanced account of the actual situation.

141 : Exercise 18.19 should assume \( A \subseteq B \).

146 : ‘2b’ should be ‘3b’.

146 : Insert ‘a’ before ‘bit’.

146 : The example is correct but needs more explanation: Note that \( \text{tp}(a/B) \) does not split over \( C \) because only one new class has been added.

146 : 19.14.2 - space after ‘If’.

146 : * The proof of Lemma 19.16 is (at best) needlessly complicated. A simpler argument like that for 19.7 suffices. Use 19.8 to find an appropriate \( C \).

147 : * Theorem 19.18 is wrong as stated. The current statement should conclude with the phrase ‘and such that \( p \) and \( \hat{p} \) have the same rank.

A second clause can add. If \( A \) is Tarski-Vaught in \( B \), then the original conclusion of 19.18 holds.

(It is easy to construct \( p \in S_{\aleph_1}(A) \) that are stationary with \( A \) a finite set that have unique extensions to a larger set in each of various finite ranks and none of these extensions split. E.g. Let \( E \) be an equivalence relation with two classes, each infinite. Let \( E_2 \) be an equivalence relation on one of the classes and undefined otherwise. Call the prime model of this theory \( N \).

Fix \( m \in N \) with \( (\exists x)E_2(x, m) \). Now \( R_N(x = x) = R_N(E_1(x, m) \land \neg E_2(x, m)) = 4 \). But then if \( q \) is the generic type of the \( E_1 \)-class of \( m \). \( R_N(q) \) is also 4. So \( x = x \) is stationary. But it can also be extended to a type over \( N \) with rank 2.)
The proof given is wrong-headed. The correct idea is to add a formula \( \phi(x, c) \) to \( p \) just if \( R(p) = R(p \cup \{ \phi(x, c) \}) \). See pages 224-225 of citeSh87a for details.

The main result has nothing to do with Lemma 19.7; Lemma 19.7 does justify the second clause. I thank Martin Bays for pointing out the error.

165: \( \text{cf}(\delta) \) for \( \text{cf}(\lambda) \).
165: \( c_2 \downarrow_{D_{i+1}} M_i D_{i+1} x \) for \( c_2 \downarrow_{D_{i+1}} M_i D_{i+1} x \).
185: Definition 25.1. Replace ‘that’ by ‘where’ \( A \).
204: ‘tameness’ should be ‘non-tameness’.
205: Fact A2. 1) should read: \( \beth_n(\kappa)^+ \to (\kappa^+)^{n+1} \).
208: ‘Now we turn to the main construction’. The induction should have length \( \omega \).

209: Insert ‘among’ between ‘are’ and ‘those’.
212: Theorem B.6. The theorem should contain the hypothesis that \( \psi \) has a model that is \( \omega_1 \)-like. See chapter 6 of http://homepages.math.uic.edu/~marker/math512-F13/inf.pdf for an account which avoids this oversight.
217: Insert ‘in’ for ‘is’.
217: Insert ‘to’ before ‘emphasize’.
222: Insert ‘,’ after ‘Shelah’.

bibliography: Shelah’s book was published just after this one went to press [She09]

References


