# Errata for Exact Sequences in the Algebraic Theory of Surgery
## by Andrew Ranicki
## Mathematical Notes 26, Princeton (1981)

This list contains corrections of misprints/errors in the book. Please let me know of any further misprints/errors by e-mail to a.ranicki@ed.ac.uk

p. 4, l. $-11$    $H^{r+1}(f)$

p. 5, l. $-5$    $T_\epsilon \; : \; \mathrm{Hom}_A(C^p, C_q) \to \mathrm{Hom}_A(C^q, C_p) \; ; \; f \mapsto (-1)^{pq} \epsilon f^*$

p. 5, l. 3    $C_p^t \otimes_A D_q$

p. 5, l. $-2, -3$
$$\begin{cases} \epsilon\text{-symmetric} \\ \epsilon\text{-quadratic} \\ \epsilon\text{-hyperquadratic} \end{cases}$$

p. 14, l. 11
$$\begin{cases} \epsilon\text{-symmetric} \\ \epsilon\text{-quadratic} \\ \epsilon\text{-hyperquadratic} \end{cases}$$

p. 31, l. 10    $\dot{\psi}_F(x, y, z) = (\Sigma_Y^{p\%} \dot{\Delta}_Y(y) - F^\% \Sigma_X^p \dot{\Delta}_X(x), F^\% h_X^p(x) - h_Y^p(y) - \dot{\Delta}_{\Sigma^p Y}(z))$

p. 31, l. 13    replace $\Omega$ by $\Sigma$

p. 46, l. 7
$$\begin{cases} (\delta\phi/\phi)_s \;=\; \begin{pmatrix} \delta\phi_s & \cdot \\ \cdot & \cdot \end{pmatrix} \\[2ex] (\delta\psi/\psi)_s \;=\; \begin{pmatrix} \delta\psi_s & \cdot \\ \cdot & \cdot \end{pmatrix} \end{cases}$$

p. 47, l. $-1$    $\partial C_r \;=\; C_{r+1} \oplus C^{n-r}$

p. 54, l. $-8$    Proposition 1.2.3 i), ii)

p. 61, l. 8    $f^* \phi' f \;=\; \phi \in Q^\epsilon(M)$

p. 76, l. $-5$    Highly-connected Poincaré complexes

p. 78, l. 10    $\delta\phi_s'' \;=\; \begin{pmatrix} \delta\phi_s & 0 & 0 \\ (-)^{n-r}\phi_s' f_{C'}^* & (-)^{n-r+s} T_\epsilon \phi_{s-1}' & 0 \\ 0 & (-)^s f_{C'}' \phi_s' & \delta\phi_s' \end{pmatrix}$

p. 78, l. $-2$    $D'^{n-r-s+1}$

p. 99, l. 5    $\mathrm{Hom}_B(D^*, D)_{n-s}$

p. 116, l. 7 $\quad C \xrightarrow{f} D$

p. 119, l. 6–9 $\delta\nu_s'' = \begin{pmatrix} \delta\nu_s & 0 & 0 \\ (-)^{n-r+1}\phi_s' h'^* & (-)^{n-r+s+2}T_\epsilon\delta\phi_{s-1}' & 0 \\ 0 & (-)^s\widetilde{h}'\phi_s' & \delta\nu_s' \end{pmatrix}$

p. 119, l. 12–15 $\delta\chi_s'' = \begin{pmatrix} \delta\chi_s & 0 & 0 \\ (-)^{n-r+1}\psi_s' h'^* & (-)^{n-r+s+1}T_\epsilon\delta\psi_{s+1}' & 0 \\ 0 & (-)^s\widetilde{h}'\psi_s' & \delta\chi_s' \end{pmatrix}$

p. 174, l. 10 $\quad \mathrm{im}(\widehat{H}^0(\mathbb{Z}_2;\widehat{S}^{-1}\widehat{A},\epsilon) \to \widehat{H}^1(\mathbb{Z}_2;A,\epsilon)) = 0$

p. 190, l. 6 $\quad 0 \leqslant r \leqslant n+1$

p. 190, l. 9 $\quad (P,Q,f,g,h,i,j,k)$

p. 191, l. 5 $\quad Q_0 = D_1 \oplus D_3 \oplus D_5 \oplus \ldots$

p. 192, l. −1 $\quad \phi \mapsto (\epsilon\widehat{\phi} \,;\; x \mapsto (y \mapsto (-)^{pq}\epsilon\overline{\phi(y)(x)}))$

p. 230, l. 11 complexes

p. 252, l. −5 $\quad (F,(\begin{pmatrix} -\gamma \\ \mu \end{pmatrix}, -\theta)G) \oplus (F,(\begin{pmatrix} \gamma \\ \mu \end{pmatrix}, \theta')G)$

p. 255, l. 11 with

p. 257, l. −2 $\quad \theta_{-1} : D^0 \to D_1$

p. 258, l. 2 $\quad \theta_0 - \epsilon\theta_0^* = 0,\ \widetilde{d}\theta_0 - \widetilde{\theta}_{-1} + \epsilon\theta_{-1}^* = 0,\ \theta_0\widetilde{d}^* + \theta_{-1} - \epsilon\widetilde{\theta}_{-1}^* = 0$

p. 258, l. −4 on the chain level $f_\%(\psi_0') = \theta_{-1},\ f_\%(\widetilde{\psi}_0') = \widetilde{\theta}_{-1},\ f_\%(\psi_1') = \widetilde{d}\chi\widetilde{d}^* - \widetilde{\theta}_{-1}\widetilde{d}^*$

p. 259, l. 4 $\quad$ with $\delta\psi' = \{\delta\psi_0' = -\epsilon\chi^*,\ \delta\psi_1' = -\chi\widetilde{d}^*,\ \widetilde{\delta\psi}_1' = \widetilde{\theta}_{-1},\ \delta\psi_2' = 0\}$

p. 372, l. 5 $\quad \cdots \to \cdots \to \cdots \to$

p. 375, l. 3 $\quad L_n(A,\epsilon)$

p. 420, l. 3 $\quad n \geqslant -2$

p. 431, l. 13 $\quad (\sum_{j=0}^\infty a_j x^j)(\sum_{k=0}^\infty b_k x^k) = \sum_{j=0}^\infty \sum_{k=0}^\infty a_j\alpha^{-j}(b_k)x^{j+k}$

p. 445, l. 6 $\quad (C,\nu,\delta\phi,\phi) \mapsto (C_\alpha[x,x^{-1}],[\nu,\delta\phi,\phi]) \oplus (C_\alpha[x,x^{-1}],-\phi)$

p. 445, l. 8 $\quad (C,\nu,\delta\psi,\psi) \mapsto (C_\alpha[x,x^{-1}],[\nu,\delta\psi,\psi]) \oplus (C_\alpha[x,x^{-1}],-\psi)$

p. 457, l. −5 nilcomplexes

p. 477, l. 3 $\quad \to\ \cdots \to \ldots$

p. 490, l. $-1$ $\partial\ =\ \partial_f\delta\ =\ \widehat{\delta}\gamma_{g'}$

p. 514, l. $-6$ $(\theta + \mu^*\psi_B\mu + \chi_B + \epsilon\chi_B^*, \theta' + \mu'^*\psi_{B'}\mu' + \chi_{B'} + \epsilon\chi_{B'}^*)$

p. 514, l. $-2$ $\beta^*(1 \otimes_{B'} \theta')\beta - 1 \otimes_B \theta - (1 \otimes_B \mu^*)\psi(1 \otimes_B \mu)$
$\qquad = \beta^*(1 \otimes (\chi_{B'} + \epsilon\chi_{B'}^*))\beta - 1 \otimes (\chi_B + \epsilon\chi_B^*) \in \mathrm{Hom}_{A'}(A' \otimes_B G, A' \otimes_B G^*)$

p. 519, l. 4 $\quad (\psi - (\psi + \epsilon\psi^*)\chi(\psi + \epsilon\psi^*), 0)(B^q, \psi' + \epsilon\psi'^*, B'^q))$

p. 534, l. 1 $\quad L_2(\mathbb{Z}) \oplus L_2(\mathbb{Z}) \to L_2(\mathbb{Z}_2) \to L_1(\mathbb{Z}[\mathbb{Z}_2]) \to L_1(\mathbb{Z}) \oplus L_1(\mathbb{Z})$

p. 557, l. $-3$ of

p. 584, l. 2 $\quad [X, G/TOP] = \mathcal{T}^{TOP}(X) = \mathcal{T}^{TOP}(X, Y, \widetilde{\xi}) = H_n(X; \mathbb{L}_0)$

p. 604, l. $-9$ $T(\nu_M)$

p. 606, l. 3 $\quad C(f; \mathbb{Z}_2)$

p. 622, l. 5 $\quad Q_{n-1}(C') \to Q^{n-1}(C') \oplus Q_n(SC') \to Q^n(SC')$

p. 644, l. 9 $\quad$ is

p. 663, l. $-2$ $Wh_*(\pi_1(X)) \to \widetilde{\mathrm{Nil}}_*(\Phi)$

p. 669, l. $-10$ $\partial x$

p. 672, l. 8 $\quad 1 \otimes_A \psi$

p. 672, l. $-10$ $\to D_k$

p. 672, l. $-9$ $\widetilde{B}_k \otimes_A$

p. 673, l. $-8$ chain homotopy types of (finitely generated) $n$-dimensional

p. 674, l. $-1$ $a =$

p. 677, l. $-11$ injection, not surjection

p. 695, l. 10 $p\psi$ not $p^!\xi$

p. 704, l. $-4$ The chain map $j : p^!C \to E$ is ill-defined. It should be replaced by the
$\quad \mathbb{Z}[\pi']$-module chain map $j' : p^!C \to E' = C(f)$ defined by

$$j' : p^!C_r = p^!D_r \oplus p^!p_!p^!D_{r-1} \oplus p^!p_!E_r \to E'_r = p^!D_{r-1} \oplus E_r ;$$
$$(x, a \otimes y, b \otimes z) \mapsto ([a]y, [b]z) \quad (a, b \in \mathbb{Z}[\pi], x \in D_r, y \in D_{r-1}, z \in E_r)$$

The paper *The L-theory of twisted quadratic extensions* (Canadian J. Math.
XXXIX, 345–364 (1987)) contains a generalization of Proposition 7.6.4.

p. 737, l. $-13$ $\oplus\widetilde{LNil}_n(A, \alpha^{-1}, \epsilon)$

p. 738, l. $-8$ $\widehat{L}^n(p^!)$

p. 739, l. 9    $\pi \times_\alpha D_\infty$

p. 740, l. 6    $(Q_1; \partial_+ Q_1, \partial_- Q_1) = (M \times \overline{P_1^k - D^k}; \partial M \times \overline{P_1^k - D^k}, M \times S^{k-1})$

p. 740, l. 8    $(Q^{n-2}, \partial Q^{n-3}) = (Q_1 \cup_{M \times S^{k-1}} Q_2, \partial_+ Q_1 \cup_{\partial M \times S^{k-1}} \partial_+ Q_2)$

p. 742, l. $-5, -10$   $L_{n-2}(\mathbb{Z}[\pi \times_\alpha D_\infty^{-\epsilon}])$

p. 767, l. 15   obtain

p. 789, l. $-9$   if $r = 1$ let $g' = \begin{pmatrix} 1 \\ -1 \end{pmatrix} : \mathbb{Z}[\pi'] \to C(\overline{S}^0) = \mathbb{Z}[\pi'] \oplus \mathbb{Z}[\pi']$

p. 797, l. $-9$   $(H_{(-)^i}(M'); M', \mathrm{im}(\begin{pmatrix} 1-t \\ \alpha' \psi' + (-)^i t \psi'^* \end{pmatrix} : \alpha' M' \to M' \oplus M'^{*, w'\xi}))$

p. 798, l. $-6$   $\alpha SC(\widetilde{X})_r = \alpha C_{r-1}$

p. 807, l. 1   $C(g^!)$

p. 811, l. 16   $\nu_{K \subset U} : K \to BG(2)$

p. 813, l. 4   The asserted "mild generalization of the splitting theorem of Shaneson [1]" is wrong. If $\omega : \pi \to \mathrm{Aut}(\mathbb{Z}) = \mathbb{Z}_2$ is a non-trivial group morphism the semi-direct product $\pi' = \pi \ltimes_\omega \mathbb{Z}$ can also be expressed as a free product with amalgamation $\pi' = \pi *_\rho \pi$ of two copies of $\pi$ along the index 2 subgroup $\rho = \ker(\omega) \subset \pi$ (cf. the two expressions for the infinite dihedral group $D_\infty$ on p. 739, which is the special case $\pi = \mathbb{Z}_2$, $\rho = \{1\}$). Cappell's splitting theorem gives

$$L_n(\mathbb{Z}[\pi'^{\,w'}]) = L_n(\mathbb{Z}[\pi^w]) \oplus L_n^X(\mathbb{Z}[\rho^v] \to \mathbb{Z}[\pi^w]) \oplus \mathrm{Unil}_n(\Phi) \quad (n \in \mathbb{Z})$$

with

$$w' : \pi' \longrightarrow \pi \xrightarrow{\;w\;} \mathbb{Z}_2 \ ,$$
$$v : \rho \longrightarrow \pi \xrightarrow{\;w\;} \mathbb{Z}_2$$

for any map $w : \pi \to \mathbb{Z}_2$, $X = \ker(Wh(\rho) \to Wh(\pi))$ and

$$
\begin{array}{ccc}
\mathbb{Z}[\rho^v] & \longrightarrow & \mathbb{Z}[\pi^w] \\
\downarrow & \Phi & \downarrow \\
\mathbb{Z}[\pi^w] & \longrightarrow & \mathbb{Z}[\pi'^{\,w'}]
\end{array}
$$

The discussion on p. 812–814 should therefore be restricted to the case $\omega = +1$ only.

p. 817, l. 7   $\widehat{\psi}_F : \dot{H}_{n+1}(X/\pi) \to Q_n^{[0,0]}(C(f)) = \widehat{Q}_n(C(f)) \quad (n \geqslant 0)$

p. 818, l. $-12$   $\widetilde{M} \times D^1 \subset \widetilde{W}$

p. 820, l. 2    indeterminate

p. 820, l. $-2$  $\widetilde{X} \;=\; \bigcup\limits_{j=-\infty}^{\infty} z^j N$

p. 823, l. 14  delete a

p. 828, l. 1    Seifert [2]