Erratum to 'Isotopies of homeomorphisms of Riemann surfaces'

By Joan S. Birman and Hugh M. Hilden

There is an error in the statement and proof of Lemma 5.1 of [1]. The lemma in question is true in some cases and false in others. The error does not affect the main body of [1], that is, Theorems 1, 2, 3 and 4, but it does imply that Theorem 5, the proof of which uses Lemma 5.1, is true precisely when Lemma 5.1 is true and must be modified when it is false. Theorem 5 of [1] is well known to be true in the case of hyperelliptic covering spaces of the punctured sphere. Since [1] was published 43 years ago and has been used by many authors, we checked through the 42 papers that, according to MathSciNet, cited our work, and verified that they had all used Theorems 1–4 but not Theorem 5.

We are grateful to Tyrone Ghaswala, who discovered a counter-example to Lemma 5.1 and pointed out our error to us, and to Ghaswala and Rebecca Winarski, whose preprint [2] gives necessary and sufficient conditions for Lemma 5.1 (and so also Theorem 5) of [1] to hold, and gives a concrete example where they fail to hold.

References

[1] J. S. Birman and H. M. Hilden, On isotopies of homeomorphisms of Riemann surfaces, *Ann. of Math.* **97** (1973), 424–439. MR 0325959. Zbl 0237.57001. http://dx.doi.org/10.2307/1970830.

[2] T. Ghaswala and R. Winarski, Lifting homeomorphisms and cyclic branched covers of spheres, preprint. arXiv 1607.06060.

Professor Emeritus, Barnard College, Columbia University, New York, NY
E-mail: jb@math.columbia.edu
http://www.math.columbia.edu/~jb/

Professor Emeritus, University of Hawaii at Manoa, Honolulu, Hawaii
E-mail: mike@math.hawaii.edu
http://math.hawaii.edu/wordpress/people/hilden/