Synthese (2020) 197:5539–5540
https://doi.org/10.1007/s11229-018-01968-y

CORRECTION

Correction to: Deduction and definability in infinite statistical systems

Benjamin H. Feintzeig[1]

Published online: 3 November 2018
© Springer Nature B.V. 2018

Correction to: Synthese https://doi.org/10.1007/s11229-017-1497-6

1. Prop. 1 is false as stated. The proof implicitly assumes that all Cauchy sequences in X^* are bounded. The definition of completeness should be amended as follows to make the proposition true: a locally convex vector space X with topology generated by a family of semi-norms L is said to be *complete* if every **bounded** Cauchy net converges to an element of the space. Note that this definition differs from some standard definitions; it might more properly be called *bounded completeness*. This definition should be understood to apply throughout the paper.
2. Prop. 6 is false. Equation (1) provides a sufficient, but not necessary, condition for a W*-algebra $\mathfrak{R}$ to be the bidual of a C*-algebra, i.e. $\mathfrak{R} \cong \mathfrak{A}^{**}$. To see this, notice that Eq. (1) implies the predual $\mathfrak{R}_*$ is weak* closed in $\mathfrak{R}^*$, which implies that $\mathfrak{R}$ is reflexive. Thus, for a counterexample, one need only choose a non-reflexive W*-algebra $\mathfrak{R}$, of which there are many.
   Since the rest of the paper pertains to biduals, the definition of wholeness should be amended as follows: call a W*-algebra $\mathfrak{R}$ *whole* iff **there is some C*-algebra** $\mathfrak{A}$ **such that** $\mathfrak{R} \cong \mathfrak{A}^{**}$. On this definition, the remaining propositions in §5.3 are true.
   The only proposition whose proof makes use of Prop. 6 is Prop. 7. As such, the proof of Prop. 7 in the appendix is not valid. However, it can be recovered as follows: Let $\mathfrak{R}$ be a W*-algebra and $\mathfrak{A}$ and $\mathfrak{B}$ be two C*-algebras such that $\mathfrak{A}^{**} \cong \mathfrak{R} \cong \mathfrak{B}^{**}$. Cor. 1.13.3 of Sakai (1971) implies that $\mathfrak{R}$ has a unique predual, and hence a unique normal state space. This entails that the state spaces of $\mathfrak{A}$ and $\mathfrak{B}$ are affine homeomorphic and that this homeomorphism preserves global orientations (We know that these state spaces are globally oriented by Thm. 5.54 of

The original article can be found online at https://doi.org/10.1007/s11229-017-1497-6.

✉ Benjamin H. Feintzeig
bfeintze@uw.edu

[1] Department of Philosophy, University of Washington, Savery Hall, Box 353350, Seattle, WA, USA

Alfsen and Shultz (2001, p. 222)). It follows from Cor. 5.72 of Alfsen and Shultz (2001, p. 234) that $\mathfrak{A}$ and $\mathfrak{B}$ are *-isomorphic.

References

Alfsen, E., & Shultz, F. (2001). *State spaces of operator algebras*. Boston, MA: Birkhauser.
Sakai, S. (1971). *C*-algebras and W*-algebras*. New York: Springer.