

Conclusion

Objekttyp: **Chapter**

Zeitschrift: **L'Enseignement Mathématique**

Band (Jahr): **20 (1974)**

Heft 1-2: **L'ENSEIGNEMENT MATHÉMATIQUE**

PDF erstellt am: **13.05.2024**

Nutzungsbedingungen

Die ETH-Bibliothek ist Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Inhalten der Zeitschriften. Die Rechte liegen in der Regel bei den Herausgebern.

Die auf der Plattform e-periodica veröffentlichten Dokumente stehen für nicht-kommerzielle Zwecke in Lehre und Forschung sowie für die private Nutzung frei zur Verfügung. Einzelne Dateien oder Ausdrucke aus diesem Angebot können zusammen mit diesen Nutzungsbedingungen und den korrekten Herkunftsbezeichnungen weitergegeben werden.

Das Veröffentlichen von Bildern in Print- und Online-Publikationen ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Die systematische Speicherung von Teilen des elektronischen Angebots auf anderen Servern bedarf ebenfalls des schriftlichen Einverständnisses der Rechteinhaber.

Haftungsausschluss

Alle Angaben erfolgen ohne Gewähr für Vollständigkeit oder Richtigkeit. Es wird keine Haftung übernommen für Schäden durch die Verwendung von Informationen aus diesem Online-Angebot oder durch das Fehlen von Informationen. Dies gilt auch für Inhalte Dritter, die über dieses Angebot zugänglich sind.

What is also true is that R^* is even more closely related to R than we've suggested so far. Our version of the Main Theorem didn't permit as admissible statements those which had variables ranging over the functions on R , the relations on R or the subsets of R . A generalization of the theorem to include such statements is impossible. If it were possible, the Axiom of Completeness would be admissible and we'd have that R^* is complete, which contradicts a result seen previously. It turns out, however, that there exists a distinguished class of functions on R^* , a distinguished class of relations on R^* , and a distinguished class of subsets of R^* such that all statements with function, relation, and set variables can now be allowed in applications of the theorem provided that in R^* these variables are constrained to vary only over these distinguished classes. Robinson calls the functions, relations, and subsets of R^* in these classes *internal* functions, relations and subsets. Expressed differently what we are saying is that if you wore spectacles which were opaque to all functions, relations, and subsets of R^* other than the internal ones, you'd swear that R^* is complete, N^* is well ordered, etc. Your glasses wouldn't let you see the counter-examples! What is remarkable is that *one* pair of spectacles can be made to work for *all* the new statements. If only the Axiom of Completeness were at issue, we could simply choose a pair of spectacles which blocks out the bounded subsets of R^* which don't have least upper bounds. Using the improvement of the Main Theorem just mentioned the Theory of Integration, for example, becomes more susceptible to the methods of Non-Standard Analysis, and some of the argumentation elsewhere in this article could be simplified.

CONCLUSION

At the turn of the century Bertrand Russell wrote:

"... hence infinitesimals as explaining continuity must be regarded as unnecessary, erroneous, and self contradictory."

This remark gives some indication of the degree of disrepute into which the use of infinitesimals had fallen, and it serves to underscore the achievement in its eventual vindication by Robinson. Russell's work in logic, it should be mentioned, constituted one of the important steps along the way. Such is the unexpected path the development of ideas sometimes follows!