For mathematics teachers who work hard to develop problem situations that are truly meaningful, *Street Mathematics and School Mathematics* will affirm their conviction that this work is worthwhile, and may even suggest that they are not going far enough. This book is for readers with an interest in how mathematics is learned and used in the real world of farmers, fishermen, construction foremen, and carpenters. That tends to imply that all those who teach mathematics would benefit from reading this book. The setting is Brazil, principally in and around Recife, a city in the northeast region of Brazil. The authors characterize Brazil as a "class differentiated society," in which the education system is "deficient both quantitatively and qualitatively." About one-quarter of the school-age children are not in school, and astounding dropout rates are a factor to be reckoned with in the primary grades. The northeast region, the setting for the studies reported in this book, has the lowest educational levels in the nation.

Street Mathematics and School Mathematics is the synthesis of a series of related research studies carried out over a ten-year period. Some of the individual studies have been reported in journal articles. The volume represents a multifaceted research study, characterized by an interesting mixture of number-crunching quantitative methods and broad-based qualitative methods. The statistical treatments are thorough, but seem mildly guilty of too much precision. The narrative descriptions (augmented by bits of transcription) of the manner in which problems posed to real world mathematics users are fascinating. These descriptions are enough to cause anxiety for teachers who believe in teaching the one-and-only approved algorithm.

Although the book reports the results of the statistical analyses used in the various studies, the meaning of the text is not lost to those who can't tell an ANOVA from a BNOVA. The descriptions of the procedures and the discussions of results are accurate and clear. The chapters of the book tend to be separate and distinct, but the fundamental ideas build well as the text progresses. The text needed more careful editing in a few places; however, it is the first publication of this work in English – the original papers were in Portuguese.

Building from Ginsburg's ideas on informal and formal mathematics, the authors carefully develop the notions of street mathematics and school mathematics. Simply stated, street mathematics is oral and preserves meaning; while school mathematics is written and leaves out

specifics of situations. At the outset, these loose definitions are more of a hypothetical stance – one which is carefully elaborated as the text proceeds.

One section of the book compares problem solving skills of unschooled or marginally literate farmers to those of students with rural and urban students with five to seven years of schooling. The problems were drawn from situations within the experience of the farmers, but involved mathematical relationships within the ability of the students. As a group, the farmers presented solutions which were both correct and meaningful, while the student groups floundered.

For this reviewer, the most interesting aspect of *Street Mathematics and School Mathematics* was the study and discussion of reversibility and transfer as it related to proportion problems. In the study, fishermen solved direct and inverse proportion problems in which the situations in the problems were from agricultural contexts. Based on these and other studies, the authors suggest that proportionality develops from everyday experience, and not from classroom work with a proportions algorithm. More importantly, these studies seem to challenge the often-voiced notion that what here is called "street mathematics" is a result of concrete thinking and therefore is less likely to yield generalization.

For all the mathematics teachers who are hammering away at the "time-honoured" proportionality algorithm in this form:

$$\frac{a}{b} = \frac{c}{x} \qquad \text{Solve by cross-multiplication} \qquad x = \frac{b \times c}{a}$$

. . . . please, read Chapters 5 and 6!

After working through *Street Mathematics and School Mathematics*, this reviewer's cynical side might dismiss the work – the setting is exotic, some of the studies involve very small numbers of subjects, many variables are uncontrolled. However, to do so would be an injustice. The bottom line of learning from this work is that we must augment school mathematics with the strength of street mathematics: *the preservation of meaning*. Many students in school view mathematics as a collection of externally dictated rules and procedures to be memorized. If students are to perceive mathematics as a self-empowering tool that will help them deal with the real world, the mathematics of the classroom must be shown to make real world sense.

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