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Qualitative Quantities

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ing geometric designs, leading to the building of fractals, matrix addition, polyhedra designs, and polyomino activities appropriate for children (and adults) of any age.

In his Foreword, Arthur Powell quotes Gerdes on his research methodology:

We looked to the geometrical forms and patterns of traditional objects...and posed the question: why do these material products possess the form they have? In order to answer this question, we learned the usual production techniques and tried to vary the forms. It came out that the form of these objects is almost never arbitrary, but generally represents many practical advantages and is, quite a lot of times, the only possible or optimal solution of a production problem...Applying this method, we discovered quite a lot of 'hidden' or 'frozen' mathematics (p.vii).

Mathematicians, students of mathematics, anthropologists, and the lay public can learn a great deal of mathematics from this book, while gaining an appreciation of the beauty and intricacies of African art and culture.

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Qualitative Quantities

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Numbers, we thought, were empty holes
for things in multiples and rows:
spaces for lineal progressions,
holders for nominal abstractions—
empty, vacuous, estranged
from colors and emotive names.

But now we find that numbers hold
associations—fragrant, bold—
innoculants against the cold.

An oily seven, rounded five
are bouncy, quirky, half alive.
Eight is rough and ten is smooth,
and nine an incipient burst balloon.

Numbers with personality
are the ultimate irrationality
in a field renowned for its perfection:
math as queen, as Number One
in platonic space, ad infinitum.

Only humans would make a religion
from wholes, square roots, and fractions,
and greet with unfathomable horror
the realization of the zero;
and find in numerology
a qualitative alchemy—
to work with abacus and crucifix
in efforts hardly apolitical
to fix the names of enemies to 666.

There is more between heaven and earth, Horatio,
than square and cube and ratio;
between stone tool and complex widget
more than the abstract humble digit.
Embodying secret codes of hope and fate,
justice, transcendental love and hate,
like Rorschachs, numbers are used to carry
sums of self—the qualitative territory
of the perfect imaginary.