minimal completeness and maximal applicability

Unless one blindly assumes the conventional system to have perfect, irreducible superstructure or "minimal completeness", then it is not necessarily impossible for a superior system to exist although it may thusfar be undiscovered or unused.

Unless one blindly assumes the conventional system to be perfect in the sense of having unrivalled ability to solve legitimate problems (algebraic and beyond) or "maximal applicability", then it is not necessarily impossible for a superior system to exist although it may thusfar be undiscovered or unused.

Unfortunately, for either ideal condition to actually exist within the conventional system would be a miracle since it has evolved and built-up over the centuries gradually, without following <u>any</u> overall, holistic design or long-term plan, always as an improvised, emergency response to the latest in a long series of utilitarian demands, into its present, asymmetrical superstructure in a piecemeal manner analogous to the spontaneous growth of spoken languages.

In summary, by following a pattern of development that was deficient in intelligent design and haphazard on every critically-important point, it was most likely doomed in every way to mature into something far from ideal which, not surprisingly, actually occurred with its present condition as an atrocious mess.

[This is an objective, factual assessment.]

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re: minimal completeness

One capability of a superior system of arithmetic is enabling the solution of comparable, solvable algebraic equations from the conventional system in a more concise, simpler and structurally-symmetrical form. By reducing the number of required binary operations <u>or</u> number systems, two methods to definitively improve conciseness of form are identified.

In conventional arithmetic, there are six conventional binary operations existing as three pairs of inverses:

- **addition (conventional) & (conventional) subtraction**
- **conventional multiplication & (conventional) division**
- **conventional involution & (conventional) evolution**

In revised arithmetic, there are only three revised binary operations:

- **addition (conventional)**
- **revised multiplication**
- **revised involution**

[Note: Since addition is a conventional binary operation regardless, only two of out the three so-called "revised binary operations" are literally revised.]

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minimal completeness
comparison #1
binary operations

revised arithmetic: 3
conventional arithmetic: 6

Revised arithmetic requires 1/2 as many binary operations.

The revised binary operations are at least as capable as the conventional binary operations in arithmetical computation and serving in an algebraic framework (and other, higher branches of mathematics).

In conventional arithmetic, the real number system does not have closure under conventional involution and (conventional) evolution thereby creating complex numbers (and so forth to infinity).

In revised arithmetic, the real number system has closure under all revised binary operations.

Conventional algebra can solve <u>most</u> solvable equations within the complex number system, the fourth number system. However, an infinite number of hypercomplex number systems, creatable via the Cayley-Dickson construction, will ultimately be needed, in theory, to enable conventional algebra to solve <u>all</u> solvable equations.

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minimal completeness
comparison #2
number systems

revised algebra: 3
conventional algebra: infinity

Revised algebra requires an infinite fraction fewer number systems.

Revised algebra can solve <u>all</u> solvable equations exclusively within the real number system, the third number system.

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minimal completeness
total comparison (#1 & #2)

Revised arithmetic and revised algebra require an infinite fraction fewer resources by measure in binary operations and number systems.

These two vital comparisons necessitate that it is erroneous to attribute "minimal completeness" to conventional arithmetic and conventional algebra when revised arithmetic and revised algebra requires <u>an infinitely small fraction as many</u> binary operations <u>or</u> number systems to function effectively. Furthermore, they support a strong case for revised arithmetic and revised algebra having general superiority.

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re: maximal applicability

In conventional algebra, a binomial, linear equation to the fifth degree or higher is generally impossible to derive solutions for.

In revised algebra, a binomial, linear equation to the nth (<u>any</u>) degree is solvable since after revised cross-multiplication, it is always reducible to the original, first degree equation (which is solvable in every case).

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maximal applicability
comparison
solvable degrees of linear equations

revised algebra: infinity
conventional algebra: 5

Revised algebra has infinitely greater power to solve linear equations.

This vital comparison necessitates that it is erroneous to attribute "maximal applicability" to conventional algebra when revised algebra has infinitely greater capability to solve linear equations. Furthermore, it supports a strong case for revised algebra having general superiority.

Conclusion-

In tandem, the comparisons of "minimal completeness" and "maximal applicability" wherein revised arithmetic and revised algebra are measurably, infinitely superior are severely damning to anyone who advocates and tries to justify the position that conventional arithmetic and conventional algebra should continue to be used.
