CASTAWAY NUMBERS

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Although I'm interested in math, I've heard and read that the only math left to discover is in the airy range at the top of a mountain of other numbers and number systems. When I was in high school, I didn't know that, so I made up seven math systems of my own. Later, in college, I was told that three were unnecessary, three were already known, and one might be new. I soon learned that it didn't even matter, because one has to be a research mathematician at a university in order for math journals to be interested in publishing an article. Folk mathematicians like myself are automatically disqualified. Now, thanks to the power of positive wordplay, I've decided to change the rules and see what numbers I could find in spite of the fact that, according to another mathematician, the number system is closed and all discoveries that remain to be made have been proven to lie within that closed domain. Logology permits one to step outside that domain and let the imagination, guided by language, find new numbers. Here are some of them.

UNFINITY means "not finity," a number that isn't finite. However, unfinity isn't infinity, either. It's the only number that bridges the gap between finity and infinity. Its symbol is a small u with two dots above it, a downward pointing line above the dots, and a less-than sign on either side of it, which is <ü<. It follows that unfinity minus finity equals infinity minus unfinity.

ULTRAZERO means "above zero" and refers to the very first number higher than zero. Its absolute value is the same as zero. The only difference is that ultrazero is a positive number. Its symbol is +0. INFRAZERO means "below zero" and is the first number lower than zero. It has the same absolute value as zero, too, but it is a negative number: -0. Adding ultrazero and infrazero (+0 + -0) or subtracting either from the other (+0 – -0 or vice versa) gives simply 0.

IP (pronounced with a long I) is PI spelled backwards. Its numeric value is the reverse of the transcendental number PI. This gives IP a special property that PI will never have: IP has a known final digit, 3, since it ends with the following five digits: …5141.3. IP's main problem is that it doesn't have a starting digit—although millions of digits to the left of its decimal point have been calculated by computers. In addition, IP, in sharp contrast to PI, isn't followed by an endless string of digits on the right side of the decimal point. The symbol for IP is the Greek letter iota—ι.

UNDEFINABLES are the numbers resulting from undefined math operations. According to Webster's 10th Collegiate, seven such operations are listed under the entry for "indeterminate": 0/0, ∞/∞, ∞×0, 1^{∞}, 0^0, ∞^0, ∞-∞. Mathematicians haven't been able to figure out the answers, so they classify them as "undefined." Instead of simply giving up, we should give these pariahs their own numbers. One way to do this is to form a base system of undefinable numbers, each represented by a broken infinity sign, ∝, followed by a subscript number from 1 to 7. Thus $\propto_1$ is 0/0, $\propto_2$ is ∞/∞, and so on. The undefinables are simple to use, and they last forever: Once they appear with other numbers, they can't be removed. They can integrate themselves with other numbers ($5 \times 0/0 = 5 \times \propto_1 = 5\propto_1$), and they can combine with each other, as digits combine, to form new undefinables ($\infty\times0 + 1^{\infty} = \propto_1 + \propto_4 = \propto_{1+4}$). Added to the real numbers and the imaginary numbers, they form the undefinable number system.

EXTRANEOUS NUMBERS are the numbers or number systems that exist but haven't been discovered yet. All known numbers were extraneous at one time. In fact, the EXTRANEOUS NUMBER SYSTEM was extraneous until a few minutes ago. When a new kind of number or system is discovered, then it is no longer extraneous. The extraneous number system has just one symbol—a capital E printed backwards (or upside-down) one or more times. ∃ is pronounced "eh" each time it appears. The first three extraneous numbers are ∃, ∃∃, and ∃∃∃ (eh, eheh, and eheheh). ∃'s value is the next extraneous number that will be discovered, ∃∃'s is the one after that, and ∃∃∃'s is the one after that. When the next extraneous number *is* discovered, it sheds its extraneousness and becomes an EX-EXTRANEOUS NUMBER—a known number. At the moment of discovery, ∃ has no value. The values of all the other extraneous numbers immediately shift to fill the void. Then ∃ means what ∃∃ meant, and ∃∃ means what ∃∃∃ meant and so on. It is unknown whether there are a finite or an infinite number of extraneous numbers, and it may be impossible to predict whether or not it will ever be known.

IFFINITY is a number whose value is finite or infinite, and it may be impossible to predict whether it will ever be known, but that can't be proven. The EXTRANEOUS NUMBER SYSTEM above has an iffinite number of members—finite or infinite. If the number of extraneous numbers is ever proven, then they join either of two categories of number systems—those with a finite number of members or those with an infinite number of members. They aren't iffinite anymore. The symbol for iffinity is a capital O with an addition sign in it: ⊕.

IFIFFINITY is also a number whose value may or may not be infinite. It is like IFFINITY, except that it *can* be proven that it is impossible to predict whether the actual state—finite or infinite—will ever be known. For the EXTRANEOUS NUMBER SYSTEM, if it is proven impossible to predict whether the finity or infinity of them can be known, then there would be an ififfinite number of extraneous numbers. Currently, there are no number systems known to have an ififfinity of members. This means that ififfinity is an EXTRA-EXTRANEOUS NUMBER, existing outside EXTRANEOUS NUMBERS as a numeric concept with no number or number system to prove its validity. If and when that day comes, ififfinity will be an EX-EXTRA-EXTRANEOUS NUMBER—a known number. The symbol for ififfinity is a capital O with a multiplication sign in it: ⊗.

ANTINUMBERS are the numbers existing in the antimatter universe. For each number in our matter universe, there is a corresponding antinumber. Numbers and antinumbers can never be used together in the same mathematical operation, or both number systems will cease to exist, followed by the collapse of both universes. Each antinumber is preceded by a capital A printed upside-down—∀. For example, 371 in our system is ∀371 in the antinumber system. Adding 371 + ∀371 gives—Oh, no! I didn't mean to do that! Our universe is going to collap—