Contents

Numbers as Signs

Do numbers exist?

If numbers exist, where might we find them? They are always, so to speak, out of grasp from our physical senses. Even their origins are alluding. It's as if they've been granted some kind of nonterminating preexistence beyond our spatiotemporal realm. Do numbers exist outside our comprehension of them? Are they nothing more than a human construction? Despite the many attacks put forth on these ontological issues, there remains a lack of semiotic analysis on the numerical digit itself. Given the set of natural numbers $\{1, 2, 3, \dots\}$, let us first analyze their sign elements to arrive at an origin representation.

Symbolic

Interacting with numbers is done exclusively and indirectly through the use of signs. Where in Saussurean terms, the signifier of the sign points to the unobtainable signified; the number itself. Contrast that to a photograph in Peircean terms which operates as an iconic sign. The photo sign signifier or the sign vehicle's representation points to that which was or still is the actualized physical signified; the interpreted sense. A number sign is however a symbolic sign in which the signified points to an abstract object; a mathematical object.

Nonsymbolic

That is not to say that numbers can only exist as symbols. In the case of re-punits or more historically the tally marks, consider a unary numereral system. The sign is both the signifier and the signified of its own representation. A self-referential representation that exposes the accumulated events of it having

been counted into a signed existence. The physical representation of an idealized iconic set of tallies is itself an indexical sign to the act of having been counted. An evolution of semiotic signs for numbers are revealed where the conventionalized set of indexable events becomes itself the iconic representation of past events. With increased familiarity on duplicated self-referencing signs, new foreign representations are introduced and the number becomes symbolic. That is to say, a number's existence assumes a temporal continuum which has been abstracted through symbolism. If numbers exist anywhere, their full existence spans the temporal continuum in which they had been counted.

Model

Given our description of sign transitions we can model the semiosis of the number 4.
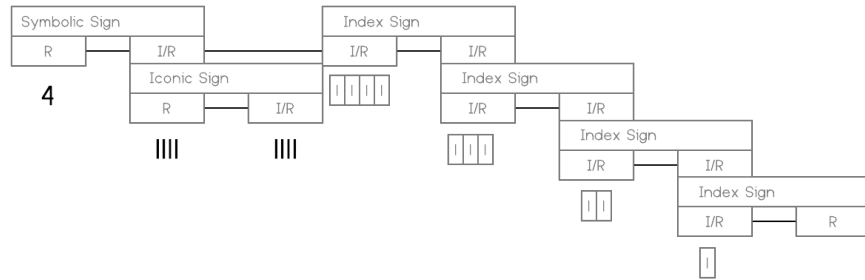
We can simplify the model to exclude the meta labels.
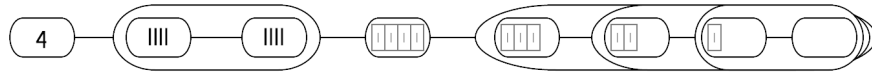
The model shows that the origin representation of numbers is nothing; no representation. No representation is not sufficient evidence for nonexistence. To avoid naive realism, we must continye to consider a number's existence beyond any single representation.

Suspension

Before symbolic abstraction, observing a number at any point in time would collapse any existence to an indexical sign where the signified representation is that of past events. However, one may be left with doubts that the time continum is a true precondition for a number's existence. One could simply express "1 million", knowing that neither you nor I have counted to it. Additionally, "one million plus one" is "one million and one" which can be validated without

having to have done the counting. At the symbolic level, the precondition of counting can be suspended as arithmetic laws can be applied to the language of symbols. Algebra formalizes symbol manipulation further and even introduces meta symbols in order to avoid the creation of individual number signs. To peer past symbolism's capabilities consider how one would evaluate $2^2 2^2 2 + 1$. How would we determine if that's a prime number?

Assumed Events