Platonic and Seshatic Increments

by Sven Nilsen, 2022

In this paper I argue that two interpretations of natural numbers give rise to a mathematical language bias that corresponds to Platonism and Seshatism respectively.

In the paper "Seshatism"[1], I outlined an alternative way of thinking about existence to Platonism[2]. From one point of view, it might seem like the distinction between Platonism and Seshatism is an infinite separation of language. However, in this paper, I will argue that there is also a point of view where this distinction seem to bring the separation in language together such that they appear to be belonging to two sides of the same coin.

I will take one of the simplest possible mathematical languages and talk about how Platonism and Seshatism manifests in the same system: The increment operation of natural numbers.

One can think about the interpretation of natural numbers in terms of how they are formulated with the Peano axioms[3]. In this repesentation, an increment is using the successor constructor to "wrap" an existing natural number into a 1-avatar[4]:

Z, S(Z), S(S(Z)), S(S(S(Z))), …

This interpretation might be thought of as having a Platonic bias. It copies the previous natural number perfectly and preserves all the structure in the created copy. It is such an intuitive and simple way of looking at natural numbers, that it feels like the "natural" way of thinking about them.

However, one can also think about the interpretation of natural numbers in terms of prime factorization[5]. In this representation, an increment destroys all existing factors and creates new ones:

0, 1, 2, 3, 2^2, 5, 2·3, 7, 2^3, 3^2, 2·5, …

This interpretation might be thought of as having a Seshatic bias. Instead of copying the previous natural number, the new natural number is assembled by taking factors from existing numbers and putting them together in a new ways.

Although the Platonic version seems much simpler than the Seshatic version, they are equally systematic and rigorous. There is no notion of one being more "correct" than the other. However, if one wishes a particular language bias, toward Platonism or Seshatism, then it is correct to pick the first one to get Platonic bias and the second to get Seshatic bias. This was tested with GPT-3[6]:

Natural numbers can be thought of as having a simple structure by incrementation, like the one used in the Peano axioms. However, they can also be thought of having a destruction/creation structure by incrementation, like the one used in prime factorisation. Which of the two interpretations corresponds to Platonism and which corresponds to Seshatism?

Platonism would be the interpretation that sees natural numbers as having a simple structure by incrementation. This is because the Platonic view is that natural numbers are abstract objects that exist outside of the physical world.

Seshatism, on the other hand, would be the interpretation that sees natural numbers as having a destruction/creation structure by incrementation. This is because the Seshatic view is that natural numbers are physical objects that are created and destroyed as they are used.

References

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Sven Nilsen, 2021-2022
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