What is Wrong with Platonism?

by Sven Nilsen, 2021

Platonism is the idea that there exists abstract objects which are non-spatial and non-temporal. Meaning, abstract objects do not exist in space and time. This is my essay about what is wrong.

Platonism vs ordinary platonism

Most people, including philosophers, consider Platonism to be a subset of things that exist. It is also not clear whether Plato had this view, so Platonism is often written “platonism”, with a lower-case “p”. The form of Platonism I think about is defined differently than ordinary platonism, therefore I write it with “P” instead of “p”.

“Qual” means path semantical quality, which is a partial equivalence relation that lifts biconditionals with symbolic distinction. A thumb rule for “quality” is to think of “equality” but without the “e”. Equality is a total and quality is partial.

Platonism in my view is when any symbol `x` is qual to itself `x ~~ x`. This relation is called “self-quality”. Ordinary platonism in my view implies self-quality, but is not necessary equal to self-quality.

Platonism for `x`	<=>	x ~~ x
platonism for `x`	=>	x ~~ x

With other words, ordinary platonism is a subset of Platonism. When something holds for Platonism, it holds for ordinary platonism. This simplifies formal reasoning about platonism, since one can focus on self-quality as a model, instead of dealing with the complexity of platonism as a philosophical position.

Why ordinary platonism implies self-quality

Ordinary platonism is a philosophical position about existence of abstract objects. In order to reason about abstract objects, one needs symbols. However, ordinary platonism might also reason about abstract objects as in themselves, “outside” this world.

When referring to some abstract object `x` using a symbol `y`, one is using a Product Witness. This is written `x ~~ y` where `x` and `y` are symbolic distinct.

When talking about some abstract object `x` without using a symbol, one is using a Loop Witness. This is written `x ~~ x`.

Product Witness and Loop Witness are two different ways to make assumptions about abstract objects. In ordinary platonism, the distinction between the two can easily become ambiguous. This ambiguity is mostly tolerated because in logical languages, there is no way to tell whether something is assumed directly or deduced from other axioms.

Since quality is a partial equivalence relation, one can deduce `x ~~ x` from `x ~~ y` using transitivity and symmetry. This is not the same as using a Loop Witness, because `x ~~ x` is deduced rather than assumed. However, both Product Witness and Loop Witness implies `x ~~ x`.

Nominalism vs ordinary platonism

In the philosophical debate about ordinary platonism, the Product Witness is associated with nominalism and the Loop Witness with platonism. This is because the Product Witness does not need to imply the existence of abstract objects in the view of nominalism.

Nominalism might be defined as the view that ordinary platonism is only being true if and only if Loop Witness is being used. Hence, since both Product Witness and Loop Witness implies self-quality, it is sufficient to use the Product Witness. The Loop Witness is never necessary and therefore nominalism is a valid philosophical position on the truth value of existence of abstract objects. Yet, nominalism can not exclude ordinary platonism, so the debate is undecidable.

Ordinary platonism and nominalism are seen as opposites, but in my view of Platonism, the difference between ordinary platonism and nominalism is irrelevant. The important distinction is whether one can deduce self-quality in some language or not.

How self-quality is assumed, whether it is through Loop Witness or Product Witness, has no influence on any stronger or equally strong logic than Path Semantical Intuitionistic Propositional Logic (PSI), which includes Intuitionistic Propositional Logic (IPL) and Propositional Logic (PL). Since PSI is weaker than any widespread logic today, one can safely assume that the distinction between nominalism and ordinary platonism will have no practical application beyond metaphysics. At least until humanity expands fields of research to include new domains.

Therefore, as the distinction between nominalism and ordinary platonism is irrelevant for formal reasoning, I use the definition of Platonism that includes the structure of nominalism. This choice is not problematic because there are valid interpretations of ordinary platonism that have this structure. Nominalism is a particular interpretation that excludes the Loop Witness, so nominalism can be viewed as “cornering itself” as a philosophical position. I believe that allowing the Product Witness while excluding the Loop Witness is a too brittle foundation of language, which is why I propose a new opposite side to Platonism which is both stronger and resolves ambiguities that plagues the debate of metaphysics.

Seshatism

I suggest a new opposite side to Platonism, which I call “Seshatism”. The name comes from the ancient Egyptian goddess Seshat of writing, wisdom and knowedge. Seshat came before the god Thoth, but was later viewed as his daughter or sometimes wife.

Seshatism is the dual of Platonism and defined as the rejection of self-quality:

Platonism for `x`	<=>	x ~~ x
Seshatism for `x`	<=>	¬(x ~~ x)

In the period between 2000 B.C. and 1 B.C., female avatars of divine beings were gradually replaced with male avatars, until the Abrahamic religions arrived. In the Abrahamic religions, the monoteistic deity is viewed as primary male, with no female counter part of equivalent power.

The next period between 1 A.D. and 2000 A.D., the languages of science around the world were gradually influenced by the ideas of Plato, which resulted in ordinary platonism. This might be thought of as a masculine development in abstract thought, but without the direct expression of the male gender in religious avatars. While it seems somewhat far fetched at first to think about this development as “masculine”, I will show that there is a clear bias of reasoning, precisely of this kind and possibly linked to the imbalance between genders when crediting ideas.

Mathematical language design

As a person interested in philosophy, I take Platonism seriously. I am not taking a side on whether Platonism is true or false as a philosophical position. On the other hand, I am focusing my work on which role Platonism has in mathematical language design.

Mathematical language design is a field of study that combines theorem proving, combinatorics, logic, algebra and many other mathematical fields into one. It is cross-discipline in the sense that astronomy is cross-discipline, or industrial design is cross-discipline.

It is from the perspective of mathematical language design that I formulate my critique of Platonism. On one hand, I take Platonism very seriously as a philosophical position. It is an idea that is both powerful and simplifying in a world where understanding every aspect of languages is extremely hard. On the other hand, Platonism has some limitations as an applied idea.

Understanding the hard limits of language is not just about extending language in new ways that allows us to deal with problems from new perspectives. It is also about understanding that, if one can imagine having some access to a special computational oracle to overcome certain obstacles, then a Platonic approach would be sufficient. The limitations of Platonism as applied idea leads to insufficiency. Seshatism does not solve these insufficiencies, but trades them with other kinds.

The insufficiency of Platonism is why Seshatism must be considered seriously in the philosophy of mathematical language design. Seshatism brings a whole new way of thinking about languages which allows one to be more precise about how modern technology and abstract reasoning works from a philosophical perspective, whether it is about general purpose programming languages, compilers, machine learning, scientific theories, physics and foundations of mathematics.

However, Seshatism might also be taken seriously from a pure philosophical perspective. The importance of duality in mathematics makes it naturally to apply this idea for Platonism. To say which of Platonism or Seshatism is “true”, is just as stupid, at least at the surface level of language, as claiming one side of a coin is more “true” than the other side. At the depth level of language, the distinction between Platonism and Seshatism and the implied combinatorics of the two becomes extremely important to resolve ambiguities in metaphysics.

Bidirectionality vs directionality in language

A simplified model for reasoning about Platonism vs Seshatism, is to imagine two worlds of thinking, one based on strict bidirectionality and the other based on strict directionality.

The bidirectionality of Platonism follows from the total equivalence relation of quality when self-quality is deducible. With other words, the quality turns into equality, or a total equivalence relation. This collapses the distinction between biconditionals and path semantical quality. One can also think about it as a collapse, or symmetry, between surface and depth level of language.

For Seshatism there can be no equivalence relation at either depth of language, whether it is at the level of biconditionals or quality, since self-quality is not deducible. Seshatism is a non-strict partial order at the level of conditionals, but a strict partial order at the level of quality.

Platonic surface (biconditional)	reflexive, symmetry, transitive
Platonic depth (bidirectional quality)	reflexive, symmetry, transitive
Seshatic surface (conditional)	reflexive, antisymmetry, transitive
Seshatic depth (directional quality)	irreflexive, asymmetry, transitive

Foundational semantics and lack of directional quality in PSI

Path Semantical Intuitionistic Propositional Logic (PSI) can express Seshatism by rejecting self-quality. However, PSI has no way to express directional quality. The directional quality that appears at Seshatic depth which is a strict partial order, is implied implicitly by Seshatism, not directly.

¬(x ~~ x) implies ¬(x ~> x) but there is no `~>` in PSI

This means that Seshatism requires a weaker logic than PSI to be well understood. Yet, it is possible to reason indirectly about Seshatism in terms of the change it enforces through the Seshatic surface. One can either use PSI or erase the depth layer overall and replace PSI with stronger logics, such as IPL or PL, which are better understood.

The non-strict partial order of conditionals is the natural language of graphs with at most one arrow between any two nodes. Transitivity and reflexivity makes such graphs similar to categories. By extension, when multiple arrows are allowed, one obtains the full language of Category Theory.

Despite the ability to remove the Seshatic depth from language, Seshatic depth is still useful to reason carefully about the role of normalization in theorem proving. The reason is that symbolic distinction separates quality from equality. This means Seshatic depth has a stronger semantics regarding symbolic distinction, which ensures that `x == x` is only true when `x` is normalized.

In foundations of mathematics, more specifically Homotopy Type Theory, the existence of a point which for every path is contractible, is the definition of homotopy level zero. This can be translated to the process of normalizing terms in formal languages. Since Seshatic depth includes this stronger semantics regarding symbolic distinction, one can say that Seshatism implies important aspects of the foundations of mathematics.

Crediting of knowledge

Platonism and Seshatism might be thought of as different views of crediting knowledge. A platonist believes that ideas are discovered, not created. A seshatist believes that ideas are created, not discovered. They use different ways of thinking about how knowledge is generated.

The process of replacing female avatars of divine beings in religion with male avatars, happened gradually over a long period of time such that at any given moment, this process might have gone unnoticeable. However, when viewing human history on a the scale of millenia, it is clear that there was a transition from a more balanced belief of avatar genders, into a primarily male dominated world of ideas, in particular for the western tradition of philosophy and religion.

For example, in Abrahamic religions, the monotheistic deity is credited the creation of Earth and the entire universe. This is quite a big step that separates Abrahamic religions from some polytheistic religions, where the creation of the world is depicted as a process of transitioning from primordial forces or beings into the social hierarchy of gods. Still, the process of creation is present in Abrahamic religions, but with the monotheistic deity playing the major role in all steps instead of being replaced by other avatars.

In physics, the forces of nature have gone through a similar unification process. Instead of having different laws for electricity and magnetism, there is the theory of electromagnetism. This theory in turn is unified with weak and strong nuclear forces in the Standard Model. Physicists seek ways to unify the Standard Model with gravity and have yet to succeed. However, one can think about this process as similar to what happened in religion: The search for a theory of everything is the scientific version of a monotheistic deity replacing other avatars occupying the same roles.

Why Platonism is not masculine and Seshatism is not feminine

It is possible that Platonism is biased on average in male humans due to their physiology, compared to female humans which might be biased on average towards Seshatism.

A male human often seeks status by single great achievements. This way of thinking is dominated by the idea that a single action creates a world which remains static forever, allowing the male to enjoy high status with high predictability over time.

Similarly, a female human often seeks status by achievements that requires smaller actions over long periods of time. This way of thinking is dominated by the idea that many small actions allow a world where things can grow naturally and where the direction is adjusted through making small corrections.

At the same time as there might be a bias of thinking on average between male and female genders, it is also true that Platonism and Seshatism are much more extreme than the actual difference. The expression of gender is not black/white, so is the way of thinking. Both genders use both ways of thinking, which changes over time, like orbiting around a center of bias.

There are not many philosophers that are extremely Platonic in their reasoning. On the contrary, much of modern philosophy is a debate about seeing things from both Platonic and Seshatic perspectives. The only reason one can notice a trend in abstract thinking towards Platonism in the past 4000 years, is because the small differences in biases accumulate over time and this becomes visible at large time scales.

The Crediting Tautology of Unification

In science, a unified theory provides a framework to reason more consistently across domains. When thinking in this way, it is easy to credit the unified theory as an abstract origin of explainable phenomena. However, prior to unification, it is common that theories are developed in isolation which explains and predicts phenomena in various domains.

What should be credited how knowledge is generated?

- The theories that are developed in isolation (Seshatism)
- The unified theories found by combining isolated theories (Platonism)

The answer is that both ways of crediting knowledge are consistent. This is the opposite case of a paradox, which is called a “tautology”. A tautology is true for all cases. There is no case for which crediting knowledge in one way is false, but because there is a seemingly difference in the way of thinking, people being biased can lead to discrimination of the opposite view.

This is why the trend in abstract thinking over the past 4000 years might be viewed in relation to gender discrimination. Women around the world today are still struggling to achieve equal status to men on average and this is also true for people who do not fall into a binary category of gender. The obvious answer is that nature does not care about our way of thinking, and neither does mathematics when it comes to language.

It is not possible to say “Seshatism is true, but not Platonism” or “Platonism is true, but not Seshatism” truthfully, because they are both logical possibilities which arises from path semantical quality. They are both two sides of the same coin, one inseparable from the other, despite their differences.

Inside theories vs Outside theories

The past year I have been working on a discovery in mathematical language design about the distinction between Inside theories and Outside theories. An Inside theory is a language where an external object is modelled as an unknown abstract object in the grammar of the language. An Outside theory is a language where at least one symbol does not refer to its own theory.

In the context of Platonism vs Seshatism, I claim the following correlations to be true:

- Inside theories are strongly correlated with Platonic views of mathematics
- Outside theories are strongly correlated with Seshatic views of mathematics

Platonism and Seshatism can be viewed as a duality that occurs in path semantical quality. However, Inside theories and Outside theories are not distinguished by path semantical quality, but by the weakening of the order assumptions in the core axiom of path semantics. An Inside theory might be thought of as satisfying the rigor of Path Semantics, while an Outside theory might be thought of as satisfying the informal language of Avatar Extensions.

Path Semantics is a language for theorem proving that extends dependent types. What is understood about it is that it is sufficient to introduce an imaginary inverse for categories, which lifts categories into groupoids. Higher categories become higher groupoids, which are the basis for Homotopy Type Theory. Therefore, Path Semantics might be viewed as a particular interpretation of mathematics which focuses on the role of the imaginary inverse.

Avatar Extensions is an attempt to develop a language for reasoning about mathematics in Outside theories. When weaking the order assumptions in the core axiom into a naive core axiom, one can construct Möbius topologies which can be assembled into hypercubes and then clean up diagonals using highest n-avatars. The identification of highest n-avatars is a theory of Avatar Graphs, a subfield of studying Avatar Extensions. Avatar Graphs also has the ability to model natural numbers with error correction, in the form of Harry Potter Patterns (HPPs). Avatar Extensions is enormous successful and applicable, with its own formal logic (Avatar Logic) which is an alternative to First Order Logic. The philosophy of Seshatism was developed from studying Avatar Extensions.

Platonism vs Seshatism does not need to imply that there is a unique way of distinguising one from the other. There can be higher dimensional analogues like the difference between Inside theories and Outside theories.

Inside language is Outside the world

Platonism credits knowledge to the idea that there exists abstract objects, which one uses to discover ideas. In this process of crediting knowledge to abstract objects, there is a dual process of discrediting knowledge by the worldly process that generated it.

The world is too complex to reason about, so humans replace the world with an abstract one, where avatars of ideas are playing with each other in a theatre of the cosmos.

The process of crediting knowledge is what separates Seshatism from Platonism. When one form of crediting of knowledge happens, there is a corresponding process that discredits knowledge in the opposite view. It is like Platonism and Seshatism can not both get a medal for participating in a competition, since the people who arrange the competition judges who gets the medal by some criteria that distinguishes one way of thinking from the other. The danger is that Platonism enforces ideas on us so convincing that we sometimes forget what happens to the world!

Seshatism, time and non-determinism

Seshatism forces language to be directional, which is similar to how humans experience time. Time only moves forwards, never backwards, so it is like a tree that branches indefinitely, each branch representing a single moment of experience. The branching of the tree is also related to the Everett interpretation of quantum mechanics. This again is related to the order free assumption in non-deterministic path semantics, that demands that quantum events are purely random. The relation between directional language and time, brings Seshatism to be associated with randomness.

In computer science, a Turing machine is taken as the fundamental model of computation. However, a Turing machine has no source of randomness and must compute all such phenomena using pseudo-randomness. The search for a pure mathematical definition of randomness is almost paradoxical, because if one knows the exact definition one can predict it and thus it would not random!

Instead of taking Turing machines as the fundamental model of computation, one can use other models where randomness is a primitive building block. This leads to the study of non-deterministic languages in mathematics. Quantum physics can be viewed as a subfield of non-determinism.

Seshatism as a world hidden in the undecidable

When two sets share a boundary, the boundary itself can be used as a metaphor for two functions, one function that maps the first set to the second set, and one function that maps the second set to the first set. The language of such functions and corresponding functors are involutions, adjoints and similar mathematical structures. In the erasure of such language, the only remaining artifact is the boundary between the sets. The boundary takes on the role of representing ideas which can not be categorised into either set and has a powerful rethoric in eastern traditions of philosophy.

This idea of a boundary is related to Seshatism through directionality. The kind of directionality in Seshatism prevents meaningful use of symbols as symbols equivalent to each other. Such symbols need an antisymmetric or asymmetric relation to each other. By extending this idea as a superposition, one can view directionality into both sides as the boundary between sets. However, since only one direction can be true at any specific time, the idea of the boundary becomes undecidable. This again leads to Seshatism as a world hidden in the undecidable.

Platonism can manage fine on its own, as long it is incomplete. What happens under incompleteness is that Seshatism is hidden beyond the unthinkable boundary, the undecidable, the infinitely separated idea requiring an infinite steps to prove. By Platonism putting an infinite distance between itself and Seshatism, it makes itself seemingly safe.

Unfortunately for Platonism, Seshatism is not only infinite separated, but also luring just behind the curtain by duality, like a ghost haunting the living. Or, is it Seshatism haunted by the Wittgensteinian ghost of Platonism? What happens to physical objects when we are not looking?

Conclusion: Plato’s curse of language

Plato advocated the meta-idea that ideas exist in a world “outside” this world. Humans are merely discovering this Platonic world. Thus, it makes it impossible for humans to invent anything! They can not be the originators of their own creation, because the idea already existed in the Platonic world. Neither can nature be credited monetary or physical existence. With some sort of magic trick, Plato swaps the “inside” with the “outside”. Platonism seems to be obviously true when you get used to it. However, has Platonism actually brought the system of ideas into order? I think not.