month-of-paradox-(notes)

Notes of: <https://www.youtube.com/watch?v=Ll1RSeZz59k>

Video 1: The Month of Paradox

We will be studying paradoxes. We will be basing ourselves on “The Ways of Paradox” by W.V. Quine.

Video 2: Paradoxes of Penzance

*The paradox:*

Young Friedrich was apprenticed to Pirates until his 21st Birthday. He turns 21 years old today, but will not be able to leave the pirates for another sixty years or so. Why?

*My guess:*

They only celebrate his birthday every 4 years.

*The answer:*

He was born on the 29th of February.

*Analysis:*

Is this really a paradox, or is it just funny semantics? According to Quine, it is a certain type of paradox:

Veridical paradox: One whose claims are in fact true, though counterintuitive.

Video 3: One Equals Two

*The paradox:*

x=1, 1=1^2, x=x^2, x-1=x^2-1, x-1=(x-1)(x+1), x-1/x-1=(x-1)(x+1)/x-1, 1=x+1, 1=1+1, 1=2.

*My guess:*

I think the problem is to distribute x^2-1 into (x-1)(x+1), you could just write (1-1)(1+1)=1^2+1^2-1-1, which equals zero, and that x squared does not really seem natural as when we do the expanding we do not get an expression of the form a^2-b^2, but 2a^2-2b.

*The answer:*

We plugged in x-1 as the divisor, but we can’t do that, as x-1 equals zero.

*Analysis:*

This, is a:

Falsidical paradox: one with false claims and a fallacy in the proof.

Video 4: Antinomies

*The paradox:*

What if you had a paradox that used all correct reasoning, but it still showed contradictions?

If this sentence is true, then p and not p

Is it true or not?

*My guess:*

p^~p cannot happen, so ~(p^~p), and applying demorgan’s and double negation, ~pvp, which is a tautology. But still, the problem here is that it is referring to itself: T=>(p^~p),(T=>(p^~p))=>(p^~p), ((T=>(p^~p))=>(p^~p))=>(p^~p),

Which goes on forever.

*The answer:*

There is no answer.

*Analysis:*

Antinomy: one which uses correct reasoning to come to an impossible conclusion.

Video 5: The Four Paradoxes of Eubulides

*The paradoxes we will be looking:*

1. The horned man:

What you have not lost, you still have. You have not lost your horns, therefore you still have horns.

1. The hooded man:

You do not know the man in a hood approaching you. But you know your father. If your father approaches you in a hood you both do and do not know him.

1. The heap:

One grain of sand is not a heap. Adding a grain of sand to a non-heap cannot make a heap. You will never make a heap of sand.

1. The liar:

I am lying

Why it starts to matter now: we will start generalizing paradoxes now, and solve many of our problems.

Video 6: The Horned Man Paradox

*The paradox:*

Anything that you have not lost, is something that you still have. You have not lost your horns, therefore you still have horns. However, you seem to both have and not have horns.

A very similar paradox is:

Have you stopped beating your wife?

*My guess:*

This is simply False dichotomy, thus it is Falsidical.

Video 7: The Paradox of The Court

*The paradox:*

Protagoras, the famous sophist, took on a pupil, Euathlus, to study law. They agreed that the pupil would not pay until he had won his first case. When his education was finished Protagoras sued Euathlus for the price of education. According to Protagoras, if the pupil loses the case he will have to pay by order of the court, but if he wins he will have to pay by the agreement. However, According to Euathlus, if he loses the case then he cannot pay, as he has not yet won his first case, and if he wins, then he will not pay as the court has ordered him not to. Who is right?

*My guess:*

This paradox is Falsidical. Euathlus is wrong since he is committing the Fallacy of accident: the special case of a trial where Euathlus does not have to pay Protagoras is when the trial won by Protagoras is to end the education payment method.

Video 8: Dichotomy Paradox

*The paradox:*

A runner is about to start a race. Before he can get to the finish line he must make it halfway. Before he can make it halfway he must make it a quarter of the way. Before he can make it a quarter of the way he must make it an eighth of the way. The runner will never be able to travel an infinite number of distances. Therefore, he will never finish the race, or even move.

*My guess:*

No clue.

Video 9: The Arrow Paradox

*The paradox:*

An arrow is flying through the air. At any one moment the arrow is standing still. The time it takes an arrow to fly is composed of nothing but moments. Therefore, it is always standing still and never moves. There is no moment where anything is moving, therefore, movement is impossible.

*My guess:*

Falsidical

Video 10: Uninteresting Number Paradox

*The paradox:*

Some natural numbers have interesting properties. Two, for example, might be considered interesting as 2+2=2x2=2^2 We will call those interesting numbers. Any number that is not interesting will be called an uninteresting number. However, the first uninteresting number is in fact interesting as it has as a property that it is the first uninteresting number.

Therefore all numbers are interesting

*My guess:*

Antinomous, but the rules for a number being interesting or uninteresting itself is contradictory, so it is a bad premise.

Video 11: Berry’s Paradox and Syllable Paradox

*The paradox:*

Berry’s:

What is the smallest positive integer not definable in ten words or less?

There must be some number that takes more than 10 words to define, 142,857,192,839,124,875,009 probably does. Yet if it was, it could be described by “The smallest positive integer not definable in under eleven words.”

Syllable:

What is the smallest positive integer not definable in 23 syllables or less?

There must be some number that takes more than 10 words to define, 142,857,192,839,124,875,009 probably does. Yet if it was, it could be described by “The smallest positive integer not definable in under twenty-four syllables.”

Therefore, all positive integers are definable in 23 syllables or less.

*My guess:*

No clue haha.

Video 12: Paradoxes of Heaps and Sets

*The paradox:*

One grain of sand is not a heap. Adding a grain of sand to a non-heap cannot make a heap. Thus you will never make a heap of sand.

Set:

The set of all sets that are not members of themselves, is this set a member of itself?

*My guess:*

No clue, maybe you should only add the falsidical version that does not include itself in itself idk I’m not astrophysics.

Video 13: The paradox of the barber

*The paradox:*

In a small village there is only one barber.

This barber shaves all and only men that don’t shave themselves.

Does the barber shave himself?

*My guess:*

You could just say that the village can only exist if there is at least two barbers: my answer for the last video

Video 14: Grelling’s paradox

*The paradox:*

Black, **bold**,Typed, small, *italicized*, red, CAPITALIZED, big,

All of these words are describing themselves. They are Autological:

Autological: an autological adjective is one that describes itself.

“Short” is short. “English” is English. “Polysyllabic” is polysyllabic.

Is “autological” autological?

Heterological: A heterological adjective is one that does not describe itself. “Long” is not long. “French” is not French. “Monosyllabic” is not monosyllabic.

But is “heterological” heterological?

If it is, it must not describe itself, and therefore not be heterological.

But if it isn’t, it must not describe itself, so it is heterological, so it does.

*My guess:*

None (got tired)

Video 15: Cantor’s Paradox

*The paradox:*

Imagine that death has come to your door. Not being an Epicurean, you beg for your life. He takes pity on you and says you can live if you beat him at four games:

Game 1: I am thinking of a natural number between zero and infinity. You have as many guesses as you want and time will not start again until we are done. Can you guess my number?

By counting every number from 0 on, you eventually get to Death’s number (it was 666, he’s not too creative). He congratulates you and gives you the second challenge.

Game 2: I am thinking of an integer. You may make as many guesses as you want and time will not start again until we are done. Can you guess my number?

You can count from zero on, 0, 1, -1, 2, -2… and eventually get to death’s number. (it was -666, you suspect there might be an easier way to do this). He congratulates you and gives you the third challenge.

Game 3: I am thinking of a rational number. You have as many guesses as you want and time will not start again until we are done. Can you guess my number?

Make a table-like structure bla bla bla. By using the diagonal method and alternating signs 1/1, -1/1, ½… you eventually reach death’s number (it was -666.6666666). With a malicious look in his skull, he gives you the final challenge.

Game 4: I am thinking of a real number. You have as many guesses as you want and time will not start again until we are done. Can you guess my number?

You sit and think. The minutes turn to hours. The hours turn to days. The days get so boring they give up and pass the job on years. Finally you decide to prove the task impossible.

You know that the set of real numbers can be put into perfect correspondence with the set of all sets. If the latter is uncountable, the former is uncountable.

Imagine all sets in the list Sn where Sn is a set and n ranges from 1 to infinity. Then, if you can show that a set S of all numbers n, not present in their own sets, S will never be the same as any previously listed set, as it does not contain 1, but S1 does, it does not contain 2, but S2 does, it does contain 4, but S4 does not etc.

The power of any set A is defined as the set of all subsets (or sets of the members of A, including A) of A. For any set A, A cannot be put into a one to one correspondence (bijunction) with the power of A (P(A)). Therefore the power of A is larger or greater than A.

Cantor’s theorem: P(A)>>A for all A.

1. There exist a set of all sets V
2. If V is a set so is P(V)
3. There are sets in P(V) that are not in V
4. Therefore V is not the set of all sets
5. Therefore V both is and is not the set of all sets
6. The set of all sets does not exist

^^ here is cantor’s paradox

Then, if the class of all sets is not denumerable, then the set of all real numbers is not.

Having proven that the game cannot be won, you give in and accept your fate. Death once again takes pity on you and gives you one last chance. If you can prove either that there is no set that is greater than A and less than P(A) or find a set that is, you can still live. No one has ever succeeded at either task.

The continuum Hypothesis:

There is no set that is greater than A and less than P(A)

It has been proven that this has not been proven ^^.

Video 16: The Paradox of The Hooded Man

*The paradox:*

There is a man in a hood coming towards you on a dark road.

You do not know who this man is.

Yet you know who your father is.

If the man in the hood is your father, you both know and do not know your father.

*My guess:*

It is not that you do not know and know who the person is. It is that you know who the hooded man is but you are not aware.

Video 17: The Surprise Test Paradox

*The paradox:*

A teacher tells a class that meets on Monday, Wednesday and Friday that there will be a surprise test next week.

But one student objects:

But that's impossible! The test cannot be on Friday as we would know by Thursday that the test could only be on Friday. However with this knowledge, we can eliminate Wednesday too, as since we know that the test can’t be on Friday, by Tuesday we could expect the test on Wednesday. Therefore the test must be on Monday. But since we now know that the test is on Monday, even that will not be a surprise. Therefore you cannot give a surprise test.

Video 18: The Lottery Paradox

*The paradox:*

Imagine that the secret to immortality and infinite happiness is discovered. However, it can only be given to one person. Therefore, the world organizes a gigantic lottery to determine who will win this fabulous prize.

Everyone on the planet is given a ticket and a perfectly random computer will decide the winner.

Looking at your ticket you know that your odds of winning are less than one in seven billion. Do you know that this is the losing ticket?

If your intuition is that you do, does everyone know that their ticket is the losing ticket? Even though there must be a winner?

If your intuition is that you don’t, how can you know that various skeptical scenarios, whose probability is arguably greater, are not the case?

Therefore, either admit that you are a skeptic, or that you know that you will never win the lottery.

Video 19: Paradox of the Preface

*The paradox:*

An author rationally believes each individual statement in a book that he has written. Yet when writing the preface to this book, he cannot bring the statements put together as he knows he is fallible.

Each statement is believed, yet the conjunction is not.

We generally assume the agglomeration principle for belief. Bp^Bq = B(p^q)

But the author does not hold this principle.

Its as if you believe p and ~p but do not believe p^~p

Video 20: The Paradox of Buridan’s Ass

*The paradox:*

Imagine a donkey positioned equally between two identical piles of hay. Unable to choose which pile of hay to go to, the donkey starves to death.

Buridan held that if we cannot decide which of two options is good we should suspend action.

Critics later satirized this claim with the paradox of Buridan’s ass (as many of his examples used donkeys.)

If all of our decisions are based on rational reasoning and belief, how can we choose between two equally good options?

*My guess:*

Um random idk

Video 21: The Decision Paradox

*The paradox:*

Imagine that a psychologist offers you the following test. He offers you a red and a blue box. He tells you that in one box is 10 dollars and in the other box is only one dollar. He claims that he can predict with 90% accuracy which box you will choose and he has put the 1 dollar in that box. Which box should you choose?

If you are convinced that you should choose the red box, that is a reason that you should choose the blue box as the psychologist knows that you would think to choose the red box.

But if this has convinced you to choose the blue box, then perhaps the psychologist knows that you would think that far ahead and you should actually choose the red box.

You have to make a choice, but as choices must be based on rational beliefs and you cannot form a rational belief without that belief counting against you, whatever you do cannot be based on beliefs.

Video 22: The Anti Expertise Paradox

*The paradox:*

Expert: Someone whose opinions are reliably correct.

Anti-Expert: Someone whose opinions are reliably incorrect.

Now take the following sentence offered by John Buridan:

You do not believe this sentence.

If you believe the sentence then it is false, so you have no reason to believe it. But if you don't believe it, it is true, so you should believe it.

You will always be an anti expert on this sentence.

And yet, even though you cannot determine if you believe the sentence or not, anyone else can easily. You are an anti-expert on the subject, while everyone else is not.

Video 23: The Knower Paradox

*The paradox:*

Rely on:

PK: proof is sufficient for knowledge.

KT: Knowledge is sufficient for truth.

This statement is known to be false.

If the statement were to be true, that would imply that it is false.

We have just proven that the statement is false, and since proof implies knowledge we know the statement to be false.

Therefore the statement is true, which implies that it is false.

No one knows this statement.

If the statement were to be true, then it would not be known and therefore be true.

If the statement were false then someone would know it, which would make it true. Therefore the statement is true. But we have just proved it true, which is sufficient for knowledge of it, so someone knows the statement, and it is false.

*My guess:*

For the first paradox, we are just looping through logical statements: p=~(p)=~(~(p))=~(~(~(~(p))))=goes on forever

Video 24: Moore’s Paradox

*The paradox:*

M) I went to the pictures last night, but I don't believe it.

What is odd about this statement?

Understanding it either as p^~Bp or p^B~p

Generally if someone contradicts themselves, then they have uttered a contradiction, but here that is not the case.

If we replace the first person:

M1) G.E. Moore went to the pictures last night, but he doesn’t believe it.

Must be: p^~Bp

Or make it past:

M2) I went to the pictures last night, but I didn’t believe it.

Must be: p^B~p

Or make it conditional:

M3) if the building on the corner is a cinema then I went to the pictures last night, but I don’t believe it.

Must be: C=>(p^~Bp)

The problem is that we lack the logical framework to show that this is a contradiction, even though most would say it is. And we cannot claim it is meaningless as it works in other contexts.

Video 25: Meno’s Paradox AKA The Paradox of Inquiry

*The paradox:*

If you know the answer to a question, you cannot gain knowledge by asking it. But if you do not know the answer to a question, you will not recognize a correct answer if it is given.

What is the Capital of Mali?

It's Timbuktu!

There is no way to know if that's right.

But if you have some knowledge, you might be able to tell if an answer was correct but not be able to tell thee answer/

If you knew the conditional, “if the Atlas says x is the capital of y, then it is the case”.

What is the Capital of Mali?

It's timbuktu!

I just checked Google Maps, they say it's Bamako!

And yet this still fails to explain how we get knowledge to start with.

How can you know that what the Atlas says is true? (without that neat conditional)

How do we know that reliability is a valid way to gain knowledge?

This goes on forever. How do you know anything

Video 26: The Ancient Liar Paradox

*The paradox:*

It is the oldest, appearing in the New testament.

Can be stated in 3 words.

Yet unsolved.

The original:

There once was a man, Epimenides,

A Cretan the talk of the centuries,

Threw logic in the fire,

Called all cretans liars,

Now he is just called by obscenities

E called all C liars,

If C are liars, E is true.

But if his statement is true, then there is one Cretan that is not a liar, E, making his statement false.

But if the statement is false, then he is a liar, so our counterexample falls away and once again the statement is true.

Video 27: The Modern liar Paradox

*The paradox:*

“I am lying right now”

The truth of the statement implies it’s falsehood and it’s falsehood implies it’s truth.

Against: Lies are not the same as falsehoods. You only lie if you believe what you are saying is false.

Then take lying all together:

This statement is false.

This statement is not true

*My guess:*

Um you are looping: ~p = ~~p => p never appears on the thing

Video 28: The Cyclical Liar Paradox

*The paradox:*

Objection: Statements that reference themselves are problematic. In fact, let's just call them meaningless.

But this makes: “This statement is true”, “All true statements are true” meaningless.

And even if we create meaningful statements there can still arise problems:

“The statement below is not true”

“The statement above is true”

Then, such statements which form tight circles should be disallowed as well.

Perhaps using a truth hierarchy, like Tarski’s.

There are different kinds of truth. Truth 0, Truth 1, Truth 2. And so on.

Whenever we speak of the truth of some statement S, we must use a subscript one higher than any of the found in S (or the statement is meaningless).

So of the statement “Snow is white” we might say that it is true 0. As it contains no truth predicates.

While the statement: “Snow is white is a true statement” we might say that it is true 1.

“This statement is not true 0 of itself” is meaningless as to refer to a statement with true 0 we need a statement with true 1.

However, we can say that “This statement is not true of itself” is not true 1, because it is meaningless.

Similarly, for your first statement to refer to the second, the first must be of a higher level of truth than the second.

Yet for the second to refer to the first, the second must be of a higher level than the first. Therefore they are meaningless.

Yet this itself creates paradoxes:

James: Everything that John says is true.

This is fine on its own if this statement is of a higher level than all of John’s statements.

John: Everything that James says is true.

Now they must both be of a higher level than the other. Yet this should not be a paradox

*My guess:*

godam

Video 29: The Boolean Liar Paradox

*The paradox:*

Either this statement is not true or 2+2=4

Half of the disjunction may be meaningless (or contradictory), but the disjunction is still true as the other half is true:

Either AddIbiuIBRGkUdrbbrdub or 2+2=4

Clearly the first half is not true, and definitely meaningless, but this does not matter as the second half is.

Therefore containing a meaningless disjunction does not imply a disjunction is meaningless.

Either this statement is not true or 1=2.

It is not the case that 1=2, therefore, if the statement is true, then it is not true, while if it is not true, then it is in fact true.

Therefore if the statement is true or not tre it is both true and not true.

Equivalent: If this statement is true then 1=2.

Video 30: The Paradox of Dogmatism

*The paradox:*

P1) if I know some statement p to be true, then I know that any evidence against p is misleading.

P2) I should disregard evidence that I know is misleading.

P3) if p is known, then all evidence against p can be disregarded.

C) therefore once I know p, I cannot ever change my mind.

Example:

P1) I know that I turned off the stove

P2) If I turned off the stove then any evidence provided to me that I did not turn off the stove is misleading

P3) If my neighbor reports that she saw smoke coming from the windows of my house, then her evidence is misleading

P4) My neighbor reports that she saw smoke coming from the windows of my house

C) therefore my neighbor’s evidence is misleading evidence

Video 31: The Unintentional Liar Paradox

*The paradox:*

Walking through an empty school building you see the following note on a blackboard:

The statement on the blackboard in room 101 is not true.

Rm 101:

The earth is flat.

If you change this blackboard to say the earth is round, you have made the statement on the entrance false.

If you write aiefiwbefecnrncewfgyu the statement on the entrance is true again, as this one is false.

Then, you write:

The statement on the blackboard in room 101 is not true

However, this statement can be classified as meaningless, then all other statements are true.

Even though they are all similar statements referring to the same things.

*My guess:*

wtf

Video 32: The Liar’s Revenge Paradox

*The paradox:*

There are lots of solutions to the Liar’s Paradox:

* Tarski’s Hierarchy
* Paracomplete Logic
* Paraconsistent Logic
* McGee’s Definite Truth
* Language Contextualists
* Situation Theories
* Revision Theories of Truth

But there still is a problem that defeated all these so far:

The Liar’s Revenge:

Take whatever you classify the liar statement as, be it meaningless, not truth bearing, recognized failure to assign a standard truth value, call it L, and reform the paradox as follows. This statement is either not true or L.

Take “meaningless”. This statement is either meaningless or not true. If it is not true, it is true. If it is meaningless, it is true. If it is true, then it is not true or meaningless.

Video 33: Yablo’s Paradox

*The paradox:*

All of the versions of the Liar paradox have involved some kind of self reference, the simple solution is to just outlaw all self reference.

Imagine an infinite list of statements of the same form.

S0) all statements of a greater value than this one are not true. For all Sn, if n is greater than 0, Sn is not true.

S1) All statements of a greater value than this one are not true. For all Sn, if n is greater than 1, Sn is not true.

…

If S0 is true, then all statements following S0 are not true, S1 is not true, but if S1 is not true then there must exist an Sm that is true. Then, because this contradicts S0, S0 must be false.

But if S0 is not true, there exists some statement Sm such that Sm is true. If Sm is true, there exists some statement Sm+1 which must not be true. Therefore there must exist some statement greater than Sm+1 which must be true by the untruth of Sm+1, but must be false by the truth of Sm.

Then there is a very similar paradox to this one, Sorensen’s Queue Paradox:

Imagine an infinite line of students that have all and only the same thought.

S0) some students behind me are thinking something is not true. For some Sn, n is greater than 0, Sn is false.

S1) some students behind me are thinking something is not true. For some Sn, n is greater than 1, Sn is not true.

…

This is the same but instead of saying All we say Some.

Video 33: General Paradoxes (Answers)

Let's go ahead and solve these things aight?

*The Horned Man Paradox*

Falsidical: “it assumes that anything you have not lost is something you had to begin with. I haven’t lost a million dollars, but that doesn’t mean I ever had a million dollars to lose in the first place.”-Friday the Thirteenth

Antinomious: “There is nothing wrong with the reasoning, the conclusion does follow from the premises, but we still arrive at a false or contradictory conclusion. The problem here is that the first premise is false, not that the reasoning is bad”-LeonhardEuler1

*The Paradox of the Court*

Veridical: “I think that euathlus is correct because when Protagoras sues him, he is breaking the agreement”-Paul the skeptic

Veridical: “Veridical, because at least as I see it, and as presented the answer is yes. Think about it like ice cream: you really like both chocolate and vanilla, and so your favourite is that chocolate-vanilla swirl they have at soft-serve machines. Now imagine that someone comes up to you and asks, ‘Would you like chocolate or vanilla ice cream?’ Certainly it is implied that it is an exclusive or, but it is not explicitly stated: so yes I would love chocolate and vanilla ice cream shortened to just yes is an entirely valid answer.”-Friday the Thirteenth

Falsidical: “there are in fact four arguments going on, as follows: PW) Protagoras argues that if he wins, then Euathlus will have to pay by order of the court. PL) Protagoras argues that if he loses, then Euathlus will have won and so he will have to pay by the virtue of their agreement. EW) Euathlus argues that if he wins, then he will not have to pay by exemption of the court. EL) Euethlus argues that if he loses, then he will not have to pay in accordance with his agreement with Protagoras. Note that PW and EW hold only if the court’s decision overrides the agreement between Protagoras and Euathlus, while PL and EL hold only if the court upholds their agreement. Thus, Protagoras can’t simultaneously argue PW and PL, nor can EUathlus simultaneously argue EW and EL. Therefore the paradox is falsidical, as both parties' arguments are faulty.”-Fengardice

Antinomious: “I think it depends on whether they take themselves to be beholden to both agreements. If they take themselves to be beholden to both agreements, then it seems that the pupil has to both pay and not pay.”-The Realist Nihilist

Antinomious: “The contract states: Euathlus should pay the fee on, and only on, the occasion of winning his first case. His first case, though, he is asking for the judgement that Euathlus should not pay his fee. So, substituting the requested judgement into the contract gives: Euathlus should pay the fee if, and only if, Euathlus should not pay his fee, which is a clear contradiction”-Harry Ray

Carneades’: The Paradox leads to a contradiction, that Euathlus must both pay and not pay. Therefore it cannot be Veridical. If the court correctly ruled in favor of either party, that would make the paradox Falsidical, as one of the arguments that led to the contradiction was faulty. For the paradox to be antinomious, we cannot simply be able to deny that such a contract could exist, without risking a significant portion of our belief structure. It seems that there is no reason to believe that such a contract that would cause an actual paradox to be created would exist. We simply need to input some basic stipulations on our legal system to avoid the paradox. And, in fact, our current legal system would not allow for such a paradox to be created. Basically he is saying that the fallacy is in not acknowledging that the court specific on the very pay method itself should be a special case when the rule does not follow.

*Dichotomy Paradox*

Falsidical: “the sum of 2^-n from 1 to infinity converges to 1. The sum of an infinite number of terms is not necessarily infinite.”-Ensavier

Carneades (haha they are a real one after this): Make a unit square, cut it in half, pick one half and cut it in half again if you're not convinced. Or just walk somewhere.

*Arrow Paradox*

Falsidical: “The arrow is never not moving. Coming from a physics perspective, I’d say it's falsidical, since movement has to be looked at compared to time to get a velocity or speed, so the paradox is already assuming a wrong view of how to view movement”-Krip

(IMO this is bs as we need phase space and not just position to solve the diff eqs that predict motion)

Carneades: While Zeno’s paradoxes might have once been autonomous, we have long since gotten rid of our naive assumptions about movement and reality.

*Uninteresting Number*

Falsidical: “Falsidical, but can be made veridical with a minor tweak. Essentially we don’t have a coherent definition of interesting. The statement the first uninteresting number is in fact interesting is simply false for any reasonable definition of interesting. To make the paradox veridical, we can simply accept that being an uninteresting number is actually interesting, and therefore there can be no such thing as an uninteresting number. This is counterintuitive, but not contradictory.”-Harry Ray

IMO this seems reasonable thanks Harry

*Berry’s Paradox*

Falsidical/Antinomious: “Falsidical according to intuitionistic logic (no excluded middle) but Antinomious according to classical logic. The excluded middle is required for the leap that (there exists no smallest that has no property x, therefore all have the property not x) but that is possible under classical logic and the problem of size of encoding probably does have formal meaning based on Kolmogorov complexity”-Mike Samuel

Carneades: there are other ways to resolve the paradox, Tarski Hierarchy for “definable”, however this is an autonomous problem for our intuitive understanding of definable.

Video 33: Paradoxes of sets (Answers)

Let's go ahead and solve these things aight?

*The Paradox of the Heap*

Falsidical: “I can only say that the sorites paradox about heaps is falsidical. Adding a grain of sand to a non-heap can make a heap under the right conditions. What’s required is that the grain of sand be stacked on top of other grains of sand. Its clearer if one looks at logs or bricks stacked on top of each other.”-Paradoxarn

Antinomious: “A heap is subjective and not defined, so it is unknowable so by thinking a grain of sand is not a heap is a false conclusion.”-Hiway

(IMO, you can go the other way around and say that if you take off one grain of sand from a heap it will still be a heap so its as if we can simply find a better definition)

Carneades: Autonomous, until we define a heap as a certain quantity, then it becomes falsidical.

*Russell’s Paradox*

Antinomious: “Russell’s paradox is autonomous (so much so, that in later proposals for the foundations of set theory, the collection of all sets that aren’t members of themselves is pretty much defined not to be a set).”-Fengardice

Carneades: Correct, until you redefine set theory as lacking a set of all sets that aren’t members of themselves, then it will become falsidical.

*The Paradox of the Barber*

Antinomious: “This is just a hypothetical case, and only if you eat up the whole story that you get the paradox, only proving that the hypothetical case couldn’t be. It's not like other paradoxes, say theseus ship paradox where you could actually do the experiment in our world.”-Alejandro Quinones

Falsidical: “If he shaves or doesn’t shave himself, then the second statement, this barber shaves all and only men that don’t shave themselves, is a false statement. It’s only a paradox if both premises are true statements.”-1140Cecile

“The proper conclusion to draw is just that there is no such barber.”-Quine

*Grelling’s Paradox*

Antinomious: “Any word that is an adjective is equivalent to the set of things to which that adjective applies. Autological is equivalent to the set of words that describe themselves, and hence the word autological will be a member of that set. Which also makes it a set that contains itself, as the word autological is a set. The set for the word heterological is the set of all words (ie sets) that don’t describe (ie include) themselves. Which is Russell’s paradox”-Harry Ray

Carneades: Antinomious, unless we eliminate such words from our language.

*Cantor’s Paradox*

Veridical: “Veridical. I’m happy accepting that the set of all sets doesn’t exist.”-Harry Ray

Antinomious: “You will quickly see that Cantor’s antinomy boils down, after all, to Russell’s. So the central problem in laying the foundations of general set theory is to inactivate Russell’s antimony and its suite. If such theorems as Cantor’s are to be kept, the antinomies must be inactivated by milder restrictions than the total withholding of the principle of class existence from cases where the membership condition mentions membership. One tempting line is a scheme of subscripts analogous to the scheme used in avoiding the antinomies of truth and denotation. Something like this line was taken by Russell himself in 1908, under the name of theory of logical types. A very different line was proposed in the same year by Ernst Zermelo, and further variations have been advanced in subsequent years.”-Quine

Note: my notes for this series are terrible. Don’t mind them.

|  | There is contradiction | There isn’t contradiction |
| --- | --- | --- |
| It is right | Antinomies | Veridical |
| It is wrong | Falsidical | ?? (I don't think this even exists) |