#33
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Recording 33

B: Thank you. First I was thinking about us having different configurations of two arrows, different arrangements, of just one is of interest. And this is the sequence when we have A is in state of knowledge of B; and B is in state of knowledge of C which is time if we take into consideration all the others which are seven of them, as far as I could see, when we have directed graphs. Then it will change the illusionary time. It will change the time quanta because the way time quanta was obtained, or illusionary time unit, is either two because we have two arrows over the probability to have two arrows or arrangements which is recognized as time, is square of two N.

Y: (acknowledges)

B: So it divides two over square of two N. But now, since we are recognizing more structures which are of not interest but which are influencing the probability, then here we should divide by the number of those structures. Now, I have differentiated first of all, so either we shall here have two over square of two N multiplied by seven, if we take into account all seven recognized possible configurations of two arrows or if we neglect the ones in which we have just two individuals, two non-individuals (non-physical individuals) into the picture instead of three although the same number of arrows, two. If we neglect those, then still we should multiply this denominator by three. And this will change the whole curve between…Maybe we should come closer actually to the GUTs model because the time unit will be smaller. But now we should decide. So to state explicitly, I have differentiated while looking at those structures of two, arrangements of two. I have differentiated between ones in which we have two non-physical individuals although same number of arrows which are those. A to B, B to A, A to A, A to B, A to B, B to B, and A to A, B to B. Those are different from the other one in which time is of interest for us, the arrangements recognized as time in that they have just two non-physical individuals; and we have here three non-physical individuals. So either way, we have change of the ratio of the elementary time unit. It will influence the curve. So I have drawn here a picture. We could come closer to the GUTs model, or whatever, something will change because first...

Y: In any case, if it is accurate, that’s what counts. Guth is not necessarily…

B: Correct.

Y: Correct. As I said there is nineteen parameters in their formulas that have to be put in by estimation not based on measurements, only four or five are based on measurements. The rest are, “Well, this seems about right”.

B: (acknowledges)

Y: It sounds like us.

B: No, no, we sound more accurate, I hope. When I was thinking about inflection point a lot, I was thinking, why? Why? Why this *pi* over 2N. And then I read the paper which Don gave me, the Seeley's paper. And then I found he says about the inflection point, "It is empirically obtained." This means by experience. They have measured; and they have a lot of cases. And they had stated that it is *pi* over 2N which some how releases us from the searching for the reason. But it doesn't mean it. There is no reason for it. So I was thinking more to find the reason. And I believe that I have found something. There are several actually line of thinking leading to inflection point being *pi* over 2N. And one which is closest to Lila is the American Flex Simulation.
5:46
Don: (acknowledges)

B: Because in this simulation which was invented two hundred years ago, and which leads to estimating *pi*, we have the American flag, the strips; and we a needle which is with the length equal to the difference between the strips. And so we are throwing away this needle and counting how many times it intersects the lines. And we put points for these cases. So, whether the needle will intersect the line or not, depends on two parameters. So this is…this resembles the…what we are doing in Lila. We are adding or taking away arrows, whichever arrow we should denote for the time which is all the same, either taking away arrows from the extant situation or adding to a sum primonial situation. We have two choices either an individual will choose to
0:07
be in a state of direct knowledge of another or not. Just the same as here, either the line is intersected or not. So to proceed, this needle, there are two parameters which influence whether the needle will intersect the line or not and these are the distance D and the angle Alpha. So the limit cases are the one in which we have the angle of…the angle is *pi* over half which is significant. And the other limit or boundary condition is when we have the needle parallel to the strips. So this is this case here so because whether the needle will intersect the line or not depends on the project of the half of the needle over the vertical axis. Why so? If…and this…if we observe the needle as rotating around its middle point, this projection is sine, it's sine. And because it is moving to this position to maximum position which is perpendicular to the beginning… to the starting position, then this is *pi* over two. So the…if we draw this range or area in which we have intersection, and area in which we have not intersection, then we have quarter of sine. We have sine from zero to *pi* over 2. And we have inflection point over here, just the same as we get in Lila. So if we pick…if we take an arbitrary point into the intersection area, and if we move through a line denoting one sixth angle so this is as if we are moving parallel to a position of the needle, and we keep the angle so all these points are intersecting, and here we have area where we do not have intersection, and when we are far away enough depending on the distance here. And the other way around, if we draw a line which is parallel to the horizontal axis denoting constant distance from the strips, then this is like moving through a line denoting a constant distance. We have this position here. So this line is denoting area of intersection and area of non intersection. And inflection point is *pi* over half N. And now we proceed to find the probability which is what we do here also in Lila. So this area of intersection is integral from zero to *pi* over half, integral from zero to *pi* over two half of sine X…D X. Integral of sine is minus cosine of X in the limits from zero to *pi* over half. This is minus cosine of *pi*

over half plus cosine of zero. And it is cosine of *pi* over half, cosine being this function. So this is here *pi*, this is 2 *pi*, cosine of *pi* over half is zero plus one is one. So this whole section has a surface of one.

Y: A probability? Is that what you are saying?

B: The probability I am now approaching.

Y: You said it had a something of one. I missed the word.

B: Ah ha! Yes, the surface.

Y: Surface.

B: Surface, yes.

Y: Ok.

B: This surface is one. So the surface of positive cases, for instance, for us it could be states, being in states of direct knowledge, for instance. And the overall…the number of all possible cases is the ratio of this surface here which half of the sine and the whole surface. So the…we count the intersections which is N. And we count all the possible cases, intersections and not intersections, which is N. And this is like that ratio of the surface of the intersection which we found to be one over the whole surface. And the whole surface is one times *pi* over 2. One times *pi* over 2. So this number here which is actually Monte Carlo method, this is simulation of Monte Carlo. And we could use the simulation because it is an inter? 13:38 We could use the product of the?13:39 simulation. And use it for Lila. And we have here one over *pi* over 2. So here M is *pi* over 2 N. And in our case, N is the number of individuals. So we get actually the inflection point which could be visible here also in the picture because this resembles the curve we are getting. So the inflection point at which we have an air/R line? 14:11 which is subject of another discussion is actually *pi* over 2N. This is the inflection point because we have the similar random process. We have similar here, similar moving…

Y: (acknowledges)

B: Similar moving through a Hamiltonian. This is one line of thinking. And the other line of thinking is also very significant. And it is inspired by a notion in your paper with Seeley and Baker where at one point it is stated that *pi* is the limit, the fork limit over the average number of states of direct knowledge or relations on the first appearance of the circuit. At one point, by adding more and more and more arrows and by finding the probability for a forked structure, we come to the conclusion that the limit is 23…is a forked structure of twenty three. When we add another twenty fourth arrow, then the probability is greater than, we shall have a circuit. And up to this point by adding more and more arrows actually we get more and more circuits, circuits, circuits, circuits, like an avalanche of circuits. And this is what inflection point is. It is an avalanche of circuits. It is like an inflection point. It is point when…after which we have avalanche of circuits. But it is significant that the…this forked limit number of twenty three when divided by the average number of relations in the first circuit to appear according to probability done by Poisson distributions is *pi*. So it is like we have twenty three arrows which could be…because we have F of 23 actually.

Y: Where did that number come from?

B: This F of 23 is twenty third square of twenty three.

Y: Yes, I know that but why twenty three?

B: Because it is shown that the probability when you reach this point, you have greatest probability to have circuit then fork. This is the limit-fork structure.

Y: I think it is twenty seven.

Don: Yeah. It is twenty seven.

B: Yes. It was twenty seven; but twenty three was denoted…

Y: Yes, but that is just in Baker's paper is it?

B: This is Baker…your Baker and Seeley.

Y: F 23 is …

B: I remember…

Y: Is 6.9…

B: 27 being pointed out several times.

Y: Yes I…you remember correctly. But I'm questioning. The circuit is 1.1 times 10^{23}, and F 23 is 6.9 times 10^{22}. And the one that is the closest to the circuit which is .9N is F 27 which is 1.1 times 10^{23} which is just short of 1.2 times 10^{23} of the circuit. So I am not sure where you are getting the number 23.

B: Let us look at the paper. So even if it is 27…but then if it is speculative even if it is 27, there is one point.

Y: Yes, the reasoning is the same.

B: One point at which these sequence of arrows shrinks into its diameter which makes it be t *pi,* the ratio of circumference over diameter. And it shrinks into a circuit somehow. And it shrinks into a circuit somehow; and this is inflection point because the whole is *pi*. It is *pi* over 2 N.19:48

Y: I think your reasoning is correct…is just that I think it is 27.

B: Let us look here. And let us take then the other number also. Maybe we shall still have *pi*.

Y: The other number?

B: This is the notion. It appears that the relationship *pi* is the result of both the binomic and the circuit relationship, (Ah ha!) because the…Ok, I am ahead because this inflection point is somehow at the end of the binomic and…
20:22
Y: End of the???
20:32
B: End of the binomic era, no there are recursion. You have first binomic era; or you mean original pattern.
20:39
Y: Original pattern, I call it.

B: Original pattern. And then you have first recursion, have second recursion; and then the inflection point, we have (air 20:56) line circuit, circuit, circuit.

Y: Yes.

B: Well, anyway it appears that the relationship *pi* is the result of both the binomic and the circuit relationship. Therefore, if we ratio the value of the binomic relationship 23, the number of cessations or non-denials possible if N is distributed by the Poisson series to the value of the average number of connections expected in the first circuit which is approximated as slightly more than 7.32 the result is close to *pi* Twenty three over 7.32 is *pi* if N is 1.38 times 10^{23}. And then he says, "It is as if the forking limits of the reduction bases Poisson process is the circumference of a circle with an expected magnitude of exposure as is (? 22.05). It should be diameter. It says radius. It is mistake; it should be diameter because C over D is diameter.

Y: Where did he get 23 from?

B: The number of cessations possible, if (?22:25) distributed Poisson (series?22:262 because he must have *pi* when he introduces circuit into picture.

Y: Yes.

B: This way or that way because… and even if we look at the American Flag American flag simulation process whether we shall bring the lines, the strips, closer or further away one from each other, we shall change the probability; but still it is the same.

Y: But the ratio will be the same.

B: The ratio.

Y: But…I just have an unanswered question.

B: Yes, yes. I remember that it was 27. I wondered myself, but then…

Y: Does it matter if it is 23 or 27?

B: So we should divide 27 by *pi* and see the…if we 27 what is the number of arrows in the circuit? And to see that it is.

Y: You want the number of arrows for F 27 or you want just 27?

B: For instance, if we have 27 over *pi* how much is it?

Y: 27

B: 27 over 3.

Y: 27 divided by *pi*.

B: By *pi.*

Y: It is 8.59.

B: 8.5.

Y: 8.59.

B: Now, if we have 8.9 or 8 arrows in the circuit, then the same thing could be applied. Maybe we should. Maybe this is just a curiosity or something like…but it is, you know. Actually the curve resembles…the curve, our curve resembles somehow here the first quarter of sine. And inflection point is by *pi* over 2 even though we have random process, it is something.

Y: Strictly speaking it disappears on our graph. The inflection point appears to be here because of the log scale. If it were linear, the inflection point would be right here. This gets steeper, steeper, steeper; and then it starts to get shallow, shallow, shallower.

B: Yes.

Y: So that's the point where it inflects. But if you put…plot it on log, then it looks goes steep, steep, steep, steep etc. opps.

Don: Yeah, that point is the point at which it is equally probable for a pair to be connected or not be connected; it's symmetrical on either side of that. It's in…

Y: What?

Don: It's on page seven. Let's see page seven…

B: You know, I have an idea, between this twenty three. Maybe this…there is a jump here between twenty three, and twenty four, bigger than the previous.

Y: No.

B: No.

Y: It’s a little bit, but it is increasing all along. And it is the same.

B: Here we have 93…90 and then 97 again. Ah, this is like a change here.

Y: I don’t think so.

B: Ah, no, no. This is no.

Y: First crossover.

B: Ok, this is maybe some…

Y: I think we have to be dealing with the crossovers. So I am not sure how we get *pi* over 2N. I think *pi* over 2N is correct. But I am not sure how they got it.

B: They say empirically. Then we could just accept it as empirically and go on. It is empirically. Empirically, it releases us from responsibility.

Y: All the simulations came out that way. And this is one of them.

B: Ah ha!

Don: But, they… That *pi* over 2N, it is also argued at length and based on the probabilities in the Appendix here. So it is not just empirical. It is also saying…

B: Yes, yes. Of course.

Don: Statistically it has the…

Y: What is that channel? 28:49

B: This American Flag?

Don: Oh, this whole very long section on…

Y: On connectivity?

Don: On connectivity.

B: Ah, yes, Baker has inflection point, yes, I remember.

Don: Yes, and that point *pi* over 2N is…up to that point every…you are getting more connect…

Y: That’s right. The avalanche happens; and then it starts to slow down…

Don: Yeah.

Y: The speed of connectivity slows down because so much has already been connected.

Don: Yah. So it is equally probable that they won't be connected on one side as they are on the other. That's…

Y: It's symmetrical.

Don: Yeah. So it's summed up in the comments on page seven of that…where he gives the comments on the connectiveness. But…

B: Which one is this?

Don: This is the Appendix of the *Basics of Physics*.

B: I don't have.

Don: You don't have it? Page seven. This is the Appendix to the *Basics of Physics.* That's what it says. The original page was nine. So all the way…go forward. Keep going. Ok, here. This is the inflection point. There is growth up to; and then it slows down (at?) *pi* over 2B. You see the connectedness is symmetric about that point. That's why it's the inflection point…it changes.
30:59
B: Ok.

Y: You can look at that…

B: Yes.

Y: And see what you find.

B: Yes.

Y: Anything else?

B: It was about network planning and Hicks Trimester which since we are introducing networks into the picture, then we could take advantage methods already know for optimization of networks. We could have ones here, for instance, to denote some wave factor to the arrows in order find the Hamiltonian. So I was thinking that what is known in network planning which is method for optimization of duration of project in which we have events and activities. We have *events* which are nodes and *activities* which are the arrows. So we have the same picture. In this network planning, we have time duration for the activities. In our case, we could denote once just illusionary length or illusionary time whatever. And take advantage of the method. In this method, critical point is being obtained. And it has a starting point and a finishing point. We wish to find the circuit so we could just put this…the same event to be the starting and the ending point. Or thinking similar to this, one might help us find Hamiltonian circuits in matrices. In this method, we have, for instance… we have…for instance, this should be one, one, one, one, one, one, one, one. And in this method, we start from zero, for instance. Zero…the…every event is divided into four ranges, four pieces. The one is denoting the sequence, the number, sequence number which is identity of it; of this event, for instance. Then we have the earliest time and the latest time, illusionary in our case, but still we could…We are using the algorithm. For instance, we start from zero here; and then first events are denoted to have identity. And there is a rule name Flukerson'rule for it. For instance, we denote the first event with zero; and then we denote all the activities arising from this event. And then with the next number, we denote the event in which all the incoming arrows are already (What is the expression when I do this?)

Bret: What do you intend by that?

Don: To negate?

B: Negate or not negate, just this. What is?

Don: Cancelled?

Bret: What do you intend by that symbol. What are you actually trying to show?

B: I denote them. I just denote them. I just want to find another expression for denoting.

Bret: Identify them…

B: Ok, denoting.

Y: That which is to be known.

B: So there is a focus on rule in which, actually, provides that we won't come to collision and not be able to do the whole algorithm. So the algorithm demands that with the next number, we denote this event in which all the arrows are already denoted. I am searching for another expression.

Bret: Denoted by who for what reason?

B: To know that all the incoming arrows are…

Bret: Have been considered by the algorithm.

Don: The activities are completed.

Darshana: Indicated.

B: Yes, indicated.

Bret: Someone is doing the denoting. Who in this case is doing the denoting?

B: I am the one doing the denoting.

Bret: Ok. And why are you denoting those arrows because you have done something with them?

B: Later on, it will be clear because I don't want to come into… the be…in a situation to have to find, for instance, the earliest possible time for an event and not having data to do so because the algorithm goes from one event to another. And then when I taking into consideration the times, all the arrows leading to these events should already denoted. Well, anyway…what is this?

Bret: In what context. There are a million reasons to make a crossover in this paper; and we don't know which one you are speaking of.
37:52
B: To cancel, to have it out of picture.

Bret: Ah, Ok. Cancel is a good word.

B: Cancel. So, Ok, all the cancelled lines. So, Ok, the next is two; then I cancel all the arrows out-going, or denote all the arrows out-going of an event. Then the next is three, then the next is four. It is just an algorithm to denote all the events in the increasing sequence, and being sure that you won't come into situation to have to find a sine here, illusionary time and not have all the data needed. This is the way. Later on it will be clear. So the next step in the algorithm is to find…here I…I superimpose, I summarize, all the first possible time and the duration of the activity. So the earliest possible time for the next event is one. Then I go to the next denoted. And this is why all the in-coming arrows should already be denoted, should be cancelled. This is why because this…is insures me that I won't be in a situation to summarize this one which is empty. This is the whole idea by this denoting.

Bret: I think, in this case, your reason for denoting arrows was to eliminate them from consideration.

B: Yes, eliminate. Maybe eliminate is the right word. And then, I have one plus one the earliest possible time for the previous event plus the duration of the activity. I have two here. Then I go to the next one and this. Since this is already eliminated or cancelled, I'm sure that I won't jump to the fourth event and not have all the data which (40:21) requires. So this was the reason why this have been denoted or eliminated. I come to the next; then I have two plus one. One possibility is to have three for the earliest denoted time for the next event; or one plus one is two. I picked the biggest. Then I go to the fourth. In the fourth, I have just one in-coming arrow so zero plus one is one. Then I go to the last one. I have one plus one is two and one plus… and one is three. So I picked the biggest; it is three. Then I denote the latest possible time, the same as the earliest possible time for the last event. And then I go backwards. And I find all the numbers for the latest allowed time for the event to appear. And finally, by going so I'll find the critical path. And now my idea was to close this critical path and to have a Hamiltonian circuit to start in critical path method which was presented. Here we have a starting event, or starting agent, and final one. But we might close the circuit and say the starting and the final will be the same. And in this way, I will close the Hamiltonian because when I was thinking over the way to find the Hamiltonian in matrices, I find the methods. And I presented it. But in this method, still we might find a way to eliminate all the smaller circuits in order to find the biggest one. So this Critical Path method provided the initial and the final event is the same, might help us. This will be (42:48). I believe at certain point this should be useful, the way of thinking done in Critical Path Method in natural planning to find Hamiltonian.

Y: Yes, I can see how that might work.

B: Maybe I'll do a better example in which this will be visible.

Y: Ok.

B: I haven't had opportunity over the night, but I'll do the whole example with ones. And then we shall see how that works.

Y: Ok. All right. I did a little overnight, not much, but I found the things that I couldn't find yesterday. I found them in about thirty seconds after I had a night's rest. So we were working on trying to get the beginning time for the first circuit which is the monopole core which we got here. What is this hash mark?

Don: What, where are you looking at?

Bret: Lila formula and first circuit monopole core intersection.

Y: Then it is 9002976N hash mark 2.

Don: That's a note. So that's the footnote.

Y: Footnote that shows where that came from.

Don: Yes, I haven't supplied the sheet of footnotes on.

Y: Using the formula, then we got this time. Now this is what I was looking for which is…which was a printout of all the F numbers from F1 to log 4N which is about equivalent to N to F35. Anyway, there's some things to be found from this but…I see he got a different number here than this number of 10^{-38} of a second. That can't be right. It has to be 32 of a second not minus 38.

Don: Minus 32, Ok.

Y: 10^{-32}. Now here is something. What was used to calculate this value that is on the table that was prepared yesterday is 1.44048 times 10^{-32} of a second. So when you take all the factors into consideration using a slightly modified formula, we get, that is the recursive formula, is we get 1.438811388 10^{-32}. So it's a one percent difference. And instead of the square root of 2N being used to calculate the value, the formula is ½ times the Ike root of [I] factorial times N to the [I] minus 1 times *pi* times (e) to the F divided by N where F is the recursive value. And this is the final formula we ended up with. Do you need me to repeat that?

Don: Yes, please.

Y: That is F sub [I] is equal to ½ times the Ike root of [I] factorial times N to the [I] minus 1 times *pi* times (e) to the F divided by N.
48:25
B: This is why they have 27 and not 23 because they used different formula.

Y: Maybe, might be. This is based upon Wanniski's random walk analysis.

B: Ah ha, random walk, another reason why *pi* over 2N.

Y: Yes.

B: Because there we have two-dimensional space. We have for the distance which is random walk which is adding arrows just the same is…we have square of *pi* over 2N, and for three-dimensional, it might be *pi* of 2N.

Y: So…

B: So this formula should be used.

Y: This is the time of the first circuit and monopole core comes into existence.

Don: Didn't you?

Y: Ah. What?

Don: Would you repeat that…the number of…that you stated.

Y: You want the number again. That's different than the one that was given.

Don: That's good.

Y: Yes.

Don: Make sure I have written it down correctly.

Y: In terms of time, 1.43981388 times 10^{-32} of a second. Now what we want to do is to square that and this is going to be…will be…well, it is not squared yet. And the reason it is not squared is because we need a second recursion or recursion to take place. A crossover has to happen. So you have got first crossover, the start of unbounded one-dimensional space. And it should be capital D for 1-D. That's the custom. So the first crossover, I want to give you the time for that. I'll give you the Lila calculated time, 1.81079539 times 10^{-32} of a second. Now when we get the second crossover, we get a second dimension and it will, should square that value that I just gave you. Or is it…square…the time of the second crossover which needs to be squared? Do you understand my question? So when we get the second crossover, there is a certain number of arrows which is equivalent to a certain amount of time. Now, when the second arrow shows up at a certain time not much later, we get a second crossover. At that time which time do we square? Do we square the one crossover time or do we square the times on the second crossover occurs? Every time I ask myself the question, it feels like God reaches into brain and erases everything. I'll be right back. Do I have an answer?

Don: Well, make sure I understand here the squaring occurs at the second crossover for time is that correct?

Y: You're asking me to answer my question.

Don: I am just…was there a squaring that occurred at the first crossover?

Y: No.

Don: Ok.

Y: But what got squared? The squaring take place at the time of the second crossover but what time is being squared? Is it…? Have we squared the first crossover time or second crossover time?

Don: Off the top of my head, it sounds like the second crossover time gets squared rather than the first crossover time.

Y: So we can ask it another way. Instead of saying time, we'll say how many arrows? Are we squaring the number of arrows that it takes to get one crossover? Or are we squaring the number of arrows to get the second crossover?

Don: I understand that question, and just off the top of my head I would say the second. But…

Y: At least I get and answer from you; I haven't got an answer from the other two. I am not going to get…

Bret: Till I solve that question, I can't think about this stuff because I don't think it's true.

Y: Or you can think about something that you might think is untrue if you chose to.

Bret: No, someone might, but I can't.

Y: Ok I'll take that.

Don: Yogeshwar, on time…

Y: Just a moment, I did give an answer. I said, "What it says in the article on *The Lila Paradigm of Ultimate Reality,"* that what I say about time is I consider that to be correct. And…so if you are working on another premise, and you won't go ahead until I convince you, well, so be it.

Bret: No, that's not the question I am referring to. It's the one you suggested I pursue the other day.

Y: Which one was that?

Bret: I wanted to talk to Darshana. There is an inconsistency between thinking that the first circuit that occurs as a result of the sequence of adding arrows has anything to do with being the earliest time that a physicist observing the universe measures. There is no obvious relationship between the two at all.

Y: I did think about it. And I came up with the answer that it doesn't matter.

Bret: I think that it does. And I think that I can prove it once I work through it.

Y: Well.

Bret: It isn't obvious to me that it doesn't matter.

Y: Ok.

Bret: That's what I wanted to tell Darshana.

Y: Then I will wait for the answer pending. All right, now.

Don; I'll leave that till later. I'll bring it up later at a break or something.

Y: I just wonder what Biljana…What do you think? What are we squaring?

B: My first thought is that now we are introducing the notion of dimensionality which is not due to Lila only. Isn't it so? Although it is due to Lila, we…once circuit is established, the illusionary signal, so to speak, circles around. But somehow as if we are introducing what two-dimensionality is in physics not in Lila, somehow. Isn't it so? As if we are…

Y: I don't think so, no.

B: Ok then, no, then maybe not.

Y: I think this is the point of…that needs discussion. That…

B: That…actually, yes. Lila alone brings recursion. Yes, it is so. And it might be perceived as dimensionality. I don't want us to be influenced in any way by physics until we come to firm statement this is our curve.

Y: Yes, well, I don't think it is introduced from physics.

B: You are right, this is…

Y: Orthogonality

B: Orthogonality, yes, it is orthogonal. So it is second-dimension.

Y: Is that the experience of a unit of space between two apparent particles? And then, another experience of…that is of…between two particles where one of those particles is in common reduced to a single state because there is a difference between them? That difference we call orthogonality. And we experience in our consciousness that these are particles; and that difference in the states of consciousness reduced to single states from a single particle to two different particles is what we call orthogonality or dimensionality, or two-dimensionality in that case. I see no fault with that argument.

B: Yes.

Y: And I have been over it a thousand times.

B: Yes, yes, it is great. It is so, I agree fully. When we come to the point to decide whether to square and what to square…

Y: Yes.

B: We should draw a clear picture of this in the consciousness of which of the individuals' the reduction occurs to draw a clear picture, to have a clear picture as we have so far.

Y: Well, this is clear without the circuit.

B: This is clear without the circuit.

Y: All you have to do is put this into a circuit.

B: Yes, yes, yes. We'll put it later, but we'll go step by step to know what…to have a clear notion because, for instance, the paper which Baker and Seeley… You state the orthogonality is my assumption; and it sounds weak although it is not weak. It is based on firm statements. But it should be, maybe, emphasized in the future article. It is…

Bret: Pardon me, this is one-dimension. There is no orthogonality until we get two-dimensions.

Y: That is correct.

B: I am starting…

Y: That's one-dimension; and you need another arrow here.

B: Ah ha, yes, yes. This is just the start. This is…

Y: Would you put another arrow here? All right. Now draw this; now this is orthogonal to this.

B: Yes.

Y: There is no orthogonality amongst the individuals; there is only differences.

B: Yes.

Don: So we are saying that…

B: We should put it in a circuit, and find this. And these should be also…

Y: This is in the circuit.

B: Part of the circuit.

Y: Yes. They are all in the circuit.

B: Yes. They are all in the circuit.

Bret: If you make two crossovers, you will create a dot.

Y: Yes, one, two, and this happens.

B: Yes.

Y: And this is another one arrow.

B: Another one.

Y: Which is this one?

B: Which is this one?

Y: Yes, you can imagine he is here.

B: Yes.

Y: But that applies to everyone in this circuit, so that second arrow there.

B: This is here.

Y: Yes.

B: This is here; this is there. So we should put on paper, the orthogonality. So the orthogonality is not here, the orthogonality is…this is C.

Y: This is C. This is D and E.

B: D and E.

Don: Where is E in the circuit?

B: A to B, B…here.

Y: This one, yes.

B: It's C. So orthogonality is here. It should be stressed. But it could be understood that orthogonality is here somehow.

Y: I agree. So this is a point.

Bret: The orthogonality is not a geometric property.

B: Yes, even so…and now to decide what to square. We should know what squaring is. So this is…

Y: So we have a double illusion. We have an illusion that there is space here. We have an illusion that there is a space here. Then those two consciousnesses are merged into one. And we get the illusion of two dimensional space. And it's no reference to physics.

B: Yes, yes, I agree. I fully agree, only the squaring was the reference to physics. Not…this is pure; this is excellent. This is the beauty of Lila. This is recognized. No question of it.

Y: Now we have so many arrows…

B: The squaring was introducing physics; the square and this bothers me. But squaring could also occur out of Lila, only we should know exactly.

Y: So how many arrows has to happen to produce a structure like this, including the circuit. So we need a circuit that is crossed over one, crossed over twice. And I have the number of arrows that needs to happen in order for that to take place. I have that calculated here.

B: You know because when we look at…when you look at the arrangements, you might think the circling is here. The three arrows denotes three-dimensionality which is not correct. We have a forked structure of three here; and somehow it might be understood that it is three-dimensionality.

Y: But it's not.

B: But it's not.

Y: It's two.

B: It should be somehow clearly illustrated.

Y: That's good; that's what we…

B: And so…

Y: We are finding out.

B: Yes. And so this also should be three-dimensional picture just the same as we did for time which is essential actually. And this easily…more easily could be understand, easier to understand. Still we need a three-dimensional even more. We need here…this should be three-dimensional. This picture should be somehow three-dimensional.

Y: Three-dimensional to show two dimensions.

B: To show two-dimensions. Yes, it will be (stealing?1:08:06) on plane which is two-dimensional.

Y: Ok. I am for it.

B: So this should be done. I'll think about it, palpably already I see. This should be a ball not a circuit. This should be a ball; it should be three-dimensional. So the notion will be the ball, and this, a line on the ball. We have a ball here; we have a ball. And then this shouldn't be on the edge of the circuit. It should be intersected somehow. We have B here; A is anywhere on the ball. But let us pick our reference A, A referent point A.

Y: You can use different colors if you need to.

B: Yes. And now we have one going to B over the ball. Over to C, we have B→C. Then we have another. And now we have notion of orthogonality to B. And we have another one to E. And now this and this are orthogonal; and on the ball, it should be seen. And we have 1-D here, 1-D here. 1-C, 1-D, 1-E, A is any point on the ball is A. And all this happens in the consciousness of A. This superposed illusionary perceptions of illusionary one-dimensionality. And we have two-dimensionality. But, you know, when you look at the two-dimensional, then you have idea that this is three-dimensionality in terms of Lila which it is not because at B, we have three fork. We have fork of three. We have here fork of three which might be wrongly understood. We have A→B, C, D, E. And this fork of three could be understood as three-dimensionality which was done in papers of Baker and Seeley and yours. So it is easy to confuse even by physicists and mathematicians. But this is correct. So it should be drawn like this. And we have orthogonality here. And now we could easily decide about.

Y: Now my question is…

B: Multiplication.

Y: To have a single crossed over circuit, there is to be expected we need a certain number of randomly selected arrows to exist.

B: This is the circuit; this is the Hamiltonian which goes over all of them. All of them are here. Including (K?1:11:46) which is just a referent point. Anyone has a common perception of 1-D and 1-D orthogonal making 2-D and now in terms of arrows and probability should think.

Y: Ok I'll ask the question then. In order to have one-dimensional this one, there is a certain number of arrows that have to be randomly selected in order to expect that.

B: Yes.

Y: That's one crossover.

B: Yes. Let us denote it on picture.
1:12:21
Y: The second crossover. But one crossover didn't… doesn't create; but the second crossover…

B: This one creates one-dimensional. This is the second crossover from B to D.

Y: Yes.

B: From B to D. This is the second. So let us denote here the probability. The probability in terms of either…

Y: Number of arrows.

B: Either Seeley or Poisy?1:12:52.

Y: For two crossovers.

B: Now. we should here clearly written the probability for this to happen. And this is the first crossover. And the probability is what now? Not in numbers but in formula. We should find it.

Y: The formula is on that graph; and it is really difficult.

B: Here first crossover fork, but in circuit.

Don: That's the one above, W shell first crossover circuit.

B: In Baker's?

Don: It's here.

B: Do we have this? We have, huh?

Don: Yes. I just…I gave it to you this morning?

B: No. Ah! Maybe.

Y: 10 times the square root of 2N L2.

B: No, this morning you gave me just this one. Ah! Thank you. (Receives paper from Don.) And there is now first crossover. Ah ha! This is Arc tangents?1:14:28.

Don: That's here, first crossover circuit.

B: Where we stopped yesterday. Now, I remember. Yes, yesterday we stopped by first crossover. So this is…this here is first crossover fork into a circuit, not just fork, but first in a circuit.

Don: No, it says so here, first crossover circuit.

Y: Well, that's if it's labeled correctly. That's my handwriting…

Don: Ok.

Y: So, I know there's a question.

B: But Arcos cosines of arc cosine of 1 over 2, here in the paper although he mentions here differently, but still the formula is the same.

Don: They don't match.

Y: They're different ways of saying the same thing.

B: So I am looking for this arcos cosine? Ah ha! This formula…so this is the formula, isn't it? This formula is this one. We have N…

Y: What does he say that it is?

B: Here the notions are different for the dimensions.

Y: That's for one crossover.

B: Yes, but still the formula is the same. First crossover circuit, which is this…this, is…So we name this first. I'll redraw this, maybe, for the afternoon session; or maybe now. First crossed over circuit, and we have PC which is the expected number multiplied by elementary time units, is N arcos cosine, 1 over 2. And we have E 2 ½ the same PC because we have recursion over N squared. And now, maybe, we know. Maybe it shouldn't be square. It is just the…

Y: It would have to be squared to make it recurse.

B: To make it recurse, first we have recursion due to our objective to make it more accurate. We do recursions here in the formula; but this is something else, isn't it?

Y: That's a different kind of…Yes. It is a different recursion.

B: We put it out of picture. But this is also into picture. So this is another type of recursion. And now…

Y: So, if we put another arrow…

B: First, let us see if we have the right formula. Let us compare. We have PC is in arc cosine of 1 over 2. Now, you don't have (e) here; and here you have…

Y: I think he had Q, didn't he?

Don: Yes, it's Q.

Y: Q squared divided by 2N squared.

B: Ah, Q squared. Let us decide. So we have N arc cosine of 1 over 2 Q squared over…This is Q, TC over N is Q maybe.

Don: Wasn't Q the number of choices at the point.

B: Ah ha! Small q in Baker's paper is, yes, the number of choices at that point. But this is different. What did you say, Wanniski or Seeley?

Y: This is based on Wanniski.
1:12:21
B: Wanniski.

Y: But Wanniski is a modified version.
1:18:41

B: Yes, it is.

Y: It is just a little (book) more… It makes a difference of one percent.

B: Yes, yes.

Y: In the value of the number of arrows.

B: In formula, he has one half and so on. So this Q might be something else in his thinking.

Don: But at the beginning here, Biljana, he has got an N times the square root of 2N as the formula.

Y: LQ.

B: What is this 2N? What is this?

Don: 2N squared.

B: 2N squared.

Don: Yeah, I enlarged it trying to get it readable. I believe it is 2N squared.

B: 2N squared.

Y: But this…That is the value not for the amount of space of radius or the diameter at that point. So those first numbers before the semicolon is the values for space which is equal to one Planck length. Then semicolon, then I gives the time coordinate. But I am giving two coordinate; the time coordinate is given second.

B: Let us draw it. Maybe we, because in order to clear thinking, we have here the curve. This is nineteen; and we have here at this point, observing this point. What does it mean W shell? It is W boson or not?

Y: Yes.

B: Ah, yes, because it is the first crossover…is boson. It is boson. So we have W and plus minus, anti-boson and so on. So this is the first crossover and the occurrence of boson. And we have coordinates; we have space and we have time. So coordinates for the occurrence of first boson are space…is N square of 2 N L Q which is…?

Y: Which is…?

B: Planck length.

Y: Which is the same as one Planck length.

B: Which is the same as one Planck length. Or there is something else or not?

Y: Then there is… ?
1:21:22
B: So…

Y: And that's all…

B: Ok. This is the space; and now time, the coordinates for time is…

Y: Is the one.

B: N arc cosine of 1 over 2 to Q squared over 2…

Y: N squared.

B: N squared. N is the number of non-physical individuals.

Y: The number of time, imaginary time units.

Don: N is?

B: The dimensionality is the imaginary time units for the… ?
1:21:50
Y: Sometimes called the time quanta, sometimes called TI or imaginary time.

Don: (acknowledges)

B: Time quanta.

Y: The value for one arrow.

B: Yes.

Y: Because the computations are all in terms of arrows.

Don: (acknowledges)

B: N is the number of non-physical individuals. N is 1.038…

Y: 7 times 10^{23}…

B: 10 to 23 and now Q. And now what is Q, we must know.

Y: You'll have to look in his paper for Q.

B: In this one.

Y: Yes. He introduced the idea of Q; I think it's…

B: But he has TC. If this TC over N…but then it is (e) to (e), not 2; but (e) to (e) square. Not…This is not 2 but (e) in his formula, you see?
1:22:38
Y: I think he gave it to me two different ways.

B: Yes, arc cosine.

Y: Ah ha! And I don't know which one it is…

B: Now, this Q because it is squared, but we are not sure, so we are asking. We must find out. I'll brows through the paper whether this Q is TC over N. But it might not… It is, Ah! It is TC actually because N squared we have here. N squared is still in the picture. N squared and this Q is TC actually because he has here in his formula or even here. He has TC is N. Then we shall compare to Baker also for the first crossover circuit because also he has not the same but similar. Arc cosine the C, is missing here, arc cosine of ½ (e) to ½ TC over N square. This is how it is written here. And it is a self-reference formula actually an iteration process. And what is Q?

Y: I think the number of arrows.

B: Little q is the number of arrows in Baker's paper, yes, small q. In Baker's paper, q is the number of the arrows in the extant arrangement.

Y: Yes.

B: Here he has capital Q. So let us compare now to the Baker's paper because he also has the first crossover circuit. We go to the Baker's. First Crossover circuit, it is

23. Ah ha! Ah ha! He has arc cosine. So Baker's page 24 for little l, for small r, he has arc cosine of 1 over 2 (e) to one half air/R squared. So…

Y: I think R stands for round.

B: We shall find what is air/R in his writings; but then we should…we should compare to this. We are searching for Q actually. Ah ha! Q knowledge choice, Q he has here if it is the same. Yes, here it is, you know. Is A to (e)? This is (e) to Q squared over 2N squared.

Y: (acknowledges)

B: So this is the right. So this…we have here when introducing one-dimensionality because here, it is different. So this one and this one are the same.

Y: They are equivalent.

B: Equivalent, this is actually this member (e) to Q squared over 2N squared. And then this is used in arc cosine. What is R now? When is R introduced, small r? Second recursion, first recursion. In the first recursion, we teach new knowledge choice. All previous knowledge choices are re-experienced ignoring the period when connectivity is very low. We get…so he has here Q…Let us see when Q is first time introduced, capital Q. So actually this is why he equalizes in his handwriting paper. We have Hamiltonian; and then we have the first crossover.

Y: (acknowledges)

B: And then this Hamiltonian is of N; and this is why he says, "While X beats or X W surfing over, this should be at the same time as X minus one." And he equalizes (them) function.
1:29:19
Don: Here's where R is introduced. He substitutes R for Q over N, and then solves for R. So this is Q over N. The ratio cubed. So each individual will make 1.37 choices.

B: And you see here. So this is Q over N; and we have here TC over N. So TC is actually Q, not over N but TQ.

Y: You said 1.7?

Don: No 1.37. This is the first remote point of view or first crossover.

Y: This a crossover. So all you have to do is multiply that by N. Reducing the number of arrows.

Don: Yes.

Y: For the first crossover found, for the second crossover…

B: So Baker…

Y: Do you square that number or do you just square the number for the next crossover?

B: Here is arc cosine… (?1:30:22)

Don: Oh Q is always the number of …. The choice Q…

B: Q over N…

Don: Yes, but that's…

B: Another case.

Don; Yes, that's for what, the first…

B: Ah ha, here this is…

Don: That's the first crossed over fork.

Y: Yes, that's just a fork not in a circuit.

B: Ah ha. First crossover fork, yes.

Y: Yes that's where you get the X bosons. X bosons are free floating, you might say.

B: Ah ha!

Don: So this is a…

Y: They are not part of a circuit.

B: Ah ha, first what did you say?

Don: It is like this, if I am correct. This is the crossed over fork…

Y: Yes.

Don: See that's a crossed over fork. This is a fork and this is a crossover between…

Y: And that's the X boson, also… It is also a graviton.

B: Free floating.

Don: Ok so that's changes our…

B: Q over N is arc (co tangents?)
1:31:29
Don: (acknowledges) So, Yogeshwar, then this should be the first crossed over fork and this, the first crossed over circuit.

Y: Yes. That's because I couldn't find this (bracket? 1:32:48) yesterday evening.

Don: Good that simplifies things.

Y: So, you get arc tangent…

B: So back to the coordinate of time at this W boson or…

Y: That's arc tangent, 2 over N minus… plus one.

B: (acknowledges) Ok. Once again diagram nineteen, we have here this is the W boson which is arc cosine,

Y: Yes.

B: And prior to this is X boson.

Don: (acknowledges)

Y: X boson.

B: (That is?1:33:41) this one…

Y: (There is a whole shell of them.)

B: Ah ha.

Y: And then introduces mass, (he has?1:34:01) pictured them as a bunch of sub-states that are isolated.

B: Introduced mass, and this is (free walking?1:34:03)

Y: A long story.

B: It is not in the circuit.

Y: Yes.

B: Not in the circuit, and it is this one, and now the coordinates here are arc tangents.

Y: That's the time coordinate. F4 N…

B: The space is N4 square of 24 N third.

Y: That's…

B: Over…

Y: That's F4.

B: Ah, and this is mass, yes, yes.

Y: Over F3.

B: Over square of third square 6N squared.

Y: Six N squared.

B: LQ…

Y: LQ.

B: Length quanta…

Y: Or L [I].

B: This is the space while the time coordinate is… This is…

Y: N arc tangent.

B: N arc tangent.

Y: Of Q over N plus 1.

B: Q over N.

Y: Time quanta or T [I].

B: Time quanta. This is mass first (?:35:18). And now for the second…for W boson, we should rewrite the time coordinate.

Y: For which one?

B: For the…

Y: W.

B: For the first crossover circuit, or for the W boson.

Y: This one.

B: This one, yes.

Y: Yes. I thought you already did that one.

B: Yes, but still to re-write it once we have (? 1:35:55)

Y: Ok.

B: It was different Baker's and Wanniski's.

Y: So the space coordinate?

B: The space coordinate is…space is N W 2N L quanta, and the time coordinate?

Y: Well, that's also one Planck length.

B: (acknowledges) Also (fork?1:36:25)

Y: This is where you get the Planck's constant out of it as soon as you cross it over another time.

B: Time is N arc cosine, 1 over 2 Q squared over 2N squared. (?) N squared.

Y: Keep time quanta. TQ.

B: TQ.

Y: And that's where you get the first photon, the first electron, the first crossover circuit. Yes.

B: And now for Q. Now Q because it is different in Wanniski's and Baker's. So Q over N. We should accept that Q over N is arc tangent of Q over N plus 1. Is it so? No, it is for 3…for first crossover fork.

Don: Q over N will have different values…

B: Yes, it is.

Don: At different…

B: But what is Q now?

Don: That's the number of choices.

Y: The number of arrows that are extant in the overall graph.

Don: Yes.

B: You know there is a small q which is the number of arrows in the overall graph which is small q. And there is a capital Q. So…

Don: I understand …

B: So when we are suppose to find the concrete values for this, we shall need q/Q.
1:38:44
Don: That is the number of arrows in the…and the graph at the point at which this event occurs. So if you multiply this number times N, you'll get the number of arrows.

B: Ok, so Baker, page…my pages are different. So this is first crossover circuit in my…this…first crossover circuit. Here

Don: It's right above. (?)
1:39:20
B: First crossover circuit.

Don: (?)

B: Here…

Don: Yeah. But it (?)

B: Here is Q over N. Ok. We have different versions.

Don: No.

B: Slightly.

Don: Just a page might be slightly different because of the way it was printed.

B: Page 24. So air/R which is Q over N. Ah ha! Ok.

Don: Just substitutes to simplify.

B: Yeah, I know, but it normalized somehow. It normalizes because it is not the same number of arrows if N is small or big. So this is normalization in…to have notion of N.

Y: Yes.

B: So Q over N is 1375376343. So we have Q over N. So we shall have actually here. We shall have this R over square of 2. Since we have R, we should re-write the formula here, this coordinate of time, so once again I have a curve here. I have the first crossover fork which is X boson, this is one. Then I have the second one which is W boson or first crossover circuit. And since we have R, we have R which is Q over N. It should be rewritten in terms Q square (?), Q square or N square. So it will be R over square of 2.
1:42:34
Y: Square root of 2.

B: Square root of 2, yes. So the coordinates should be rewritten. The coordinates of W plus/minus boson should be rewritten as space coordinate is N square of 2N LQ (or arc?) cosine, Planck length. And the second coordinate is N arc cosine of 1 over 2 R over square of 2 time quanta. And now to find R; it is Q over N, and Q. Ok, it is the arrows in the extant arrangement but…
1:43:07
Don: You can see here which one.

B: I know we have R. We have R. R we have and we just…

Don: The probability (?) first Q. That's on the previous page.
1:44:17
B: (acknowledges) We have probability (?) of (?) which is…

Don: Remote viewpoint.

B: Remote viewpoint although I know we have R is so on, so on, so on, so on, we just replace and we have the coordinate. But to know the origin, so P is… Maybe one day, maybe in the afternoon session, one of the session, we should browse through the whole paper of Baker and decide what we…what is here. Ok, but we have all the data…
1:45:20
Y: It would be useful if Baker were here.

Don: (?) conference.
1:45:46

B: This is the doctoral thesis of (?)

Y: I still have my question.

B: Ah ha, when do…

Y: Now, we have for the second crossover. So do we square the value for one crossover or do we square the value for the second crossover?

Don: I don't think it is a simple matter of squaring the values. I think it is a matter of looking at the combinatorics of the additional sub-states introduced by that other crossover which comes out to…might come out to squaring the numbers.
1:46:28
Y: I don't think so.

Don: Ok.

Y: The reason why I don't think so is that we have two sub-states that are responsible to for two different states of consciousness, one-dimensional space and other dimension of one-dimensional space. We have got those two…are combined into one. So that's not a matter of combinatorics that reduction process. It is not a matter of what is probabilistic about it as far as I can see. It's probabilistic about what would be the probability of having a forked relationship. But you have two states of consciousness, one is…for one-dimension of the orthogonal situation. And then there is the other. These two are brought together. And they are made orthogonal in a single state of consciousness. I think we are multiplying what it is for one crossover times what it is for one crossover.

Don: Yeah.

B: But…

Don: Well, the combinatorics does not imply any probabilities; it is just how we count up the combinations.

Y: Combinations of?

Don: Of the sub-states when we look at patterns. It has nothing to do with probabilities unless we are trying to estimate them.

Y: Well, that's why we found a number of arrows would have to exist in order to have one crossover over a circuit.

Don: (acknowledges)

Y: That's by probability.

Don: Yes.

Y: So why would it be different for the other dimension?

Don: Let me play with it.

Y: Or there could be the probability of having a fork in a circuit. How many arrows for that?

B: Yes.

Y: And that I haven't been able to sort out. That is why I ask for help.

B: Yes. You know here…

Y: Keep hearing.

B: Here, when we have… here when we have the first notion of two-dimensionality, actually, this is clearly a first fork of three in case when all these are in the circuit.

Y: Then you have another one.

B: One, two, three. Another one is this one. The overall…

Y: Yes.

B: Yes, this is another one. So we have fork here. And now we want to jump to what situation. Now let us clearly draw this other situation. And then we shall see. We have this one. And now we are deciding…

Y: This is one dimension of space, this in another.

B: Which is orthogonal and this is…and in the consciousness of A they're reduced into a perception of two-dimension.

Y: But how many times/arrows have to exist in order to have not only this; but this one too.

B: Not all… You mean not only this; but this one too?

Y: This…

B: So in the first, we have without this one.

Y: Yes.

B: And in the second, this one.

Y: And without this one. Well, you…but we have to have it orthogonal spaces. And has to be…both of them have to exist. And I want to know how many arrows have to exist in order to have this whole, the two-dimensional space.

B: So this is the objective? This is what we should obtain, this picture? This picture as it is with two…this is what we should obtain?

Y: Yes.

B: And the starting…then we should draw the starting; then we should…shall see.

Y: The starting.

B: I mean what you will…what you were explaining. We should draw it in another picture.

Y: This and, then this. You multiply the number of arrows for just this times that, the number of arrows to have that. Or do we have some other calculation because I see that there...one state of consciousness for one and another state of consciousness for the other? And those two states of consciousness come to one state of consciousness so that you get orthogonality.

B: Yes, superimposed.

Y: But how many arrows? Is it the number of arrows for one, the number of arrows times the number of arrows for the other?

B: Then it is clearly seen here. Now I'll…it is the number of arrows for the first fork of two in a circuit.

Y: Yes.

B: Where all these are in a circuit, multiplied by the number of arrows for another.

Y: Another dimension.

B: Yes, for another fork of two in circuit. It is…now it is visible here. We have…if we look at this one-dimensionally…

Y: Ok, you got the question now.

B: Yes, I have got them; and then the answer…

Y: And it is time for a break before the class.