#32
Formal talk-01112006 Afternoon day13
Lila recording day 13, afternoon
02/11/2006
061102001
1 Hr 43 min
Recording 32

Bret: In a developing graph because we aren't looking at a developing graph, we are doing the measurements from present time looking back at the traces of an earlier universe which manifests as smaller circuits in the extant unchanging graph. And it is always from the point of view of one observer.

Y: Well, unless they're connected in a way that makes it common.

Bret: Someone is looking back from this current time and making measurement that says the universe was this big at this time, this big at this time. Those are the measurements that we are talking about, comparing to. All the measurements that we have to compare to are from the perspective of one individual measuring now, looking at echoes of an earlier universe in a static graph, that they are considering.

Y: That's partly correct in my estimation.

Bret: So the development of the graph as we add arrows is not part of the picture at all. It will give us false ideas about what happens when I am very interested in looking at the fully plumbed present graph and finding pasts within it.

Y: Well, I say that, that perspective that you're giving leads to other illusionary concepts.

Bret: Ok.

Y: That the measurements are of something, but all they are is the measurement that is of the non-physical individuals and their relations.

Bret: But time is not due to changes in the graph to addition of arrows.

Y: That's right.

Bret: Right, so we look at a fully plumbed graph with all of the arrows up to now static; and we find the echoes of pasts within it.

Y: No. That's what we do, yes. We take the extant whatever it is; and then go what would be thought of as backwards.

Bret: Right. Now backwards only in the sense that we are looking for pictures of backwards that exist in the current graph, sub-graphs of various kinds that look like a past to us. But they are part of the current graph.

Y: As long as you know you are doing it from the other way around, it is just a way of talking about it, that people don't have to change their thinking.

Bret: That maybe true; and it may not.

Y: But the numbers are the same.

Bret: That may be true and maybe not. If we talked about adding arrows and looking at expectations based on adding arrows, that's a false picture because the… If you see time as a series of increasingly larger circuits, when the circuit occurred, doesn't mean it came after this one as you are adding arrows, it just appears to be after it in time. The arrows to create this one may have occurred the very last arrow and all of these earlier times were already there as smaller circuits.

Y: But there is no very last arrow or… All there is, is the extant arrows.

Bret: Yes, I agree. But if we start looking at the question of, as you add arrows which we have, then we are looking at it in terms of a last arrow.

Y: Yes, but if we imagine that we take a sub-state of it so that one of the arrows is left out that is no different than going form one less and up to one, and add one.

Bret: Yes, it is.

Y: No, it is not.

Bret: I can explain why.

Y: Well, you have four minutes.

Bret: In order to take one out, you are creating a particular geometry and saying that's the geometry in order to add one in, unless you're doing it statistically and averaging.

Y: Well, we are doing it statistically, up to this point.

Bret: So far, but as access the drawing…

Y: All our numbers have been gotten from probabilistic.

Bret: Yes, but we need to keep this in mind so as we go forward…

Y: Ok, that I will buy.

Bret: Yeah.

Y: Now before we carry on with Charles and his confused incomplete statement about inflationary curve, what has Biljana got?

B: During this break, I have drawn all these possible corrections of the first appearance.

Y: Ah, so *this* can be drawn…

B: So what could be corrected, so to say. We shall see now because…

Y: That's two.

B: Yes, so we have two arrows, the expected number is square of two (N) the possible constellations or arrangements of two arrows is two out-going, two in-going, one out-going, one in-going which is sequence. Now we are looking for this one, so this is… So one third of all the possibilities…

Y: One third of this?

B: Yes. So this is one point.

Y: So you are going to need more arrows…

B: In order…

Y: So we have to multiply this by three.

B: The expected number, yes.

Y: Yes. Ok, go on.

B: This was one point. The other point is the sub-states and the superposing of sub-states into the consciousness. In order to find all of this and to decide which are substantial, so to speak. Maybe all of them, but they're infinite numbers taking into account the states any of each individual is not in. Not infinite, a large botan. So we have this structure which is a directed graph. And the…so out of this graph we have sub-states A to B, B to C, A in indirect direct knowledge of C, so A indirectly of C, or isn't it so, and maybe combinations of them. This and this, this and this, and this and this and all of them.
6.35
Y: Yes.

B: These are the beginning is…

Y: Yes.

B: Shown here, in order to see also the states of no knowledge, we might include into picture the complementary graph in which we have seven connections which are missing actually.

Y: (acknowledges)

B: And they might have influence in the superposing of sub-states in the consciousness of A. So A is referent. We have A to A missing, B to B missing, C to C missing, A to C missing, C to A missing directly. We have indirect connection C to B missing, and B to C not missing, but being in a state of no knowledge. So these are all states of no knowledge, seven of them because the…

Y: (acknowledges)

B: The whole…

Y: Nine minus two.

B: Nine minus two is seven, and now the sub-states arising out of this. I have written all of them. And then only the…which are relevant, taking into account that A is the referent non-physical individual.

Y: (acknowledges)

B: So maybe not (none) of them are relevant although somehow present into the picture. So the sub-states arising out of the complementary graph are these ones B to A, A to C, C to A, C to C, B to B, A to A, C to B, seven of them. And now out of them I have taken out the ones in which A is explicitly involved because A is referent. And all this superposition of sub-states happens in the consciousness of A. So if we take A as referent, we have A to B, B to C. I have taken although A is not explicitly here because B to C is state of knowledge. It is not state of no knowledge.

Y: (acknowledges)

B: Therefore, extant, so to say. So we have A to B, B to C, A indirectly to C and states of no knowledge in reference to A. B is not in a state of knowledge of A, C is not in a state of knowledge or is in a state of no knowledge of A. And A is in a state of no knowledge of itself directly.

Y: (acknowledges)
10:08
B: It is not indirectly; it is in a state of no knowledge of itself. So all of these, there are six of them for which we should also (senal) should build probability or expected numbers. And it will change this one. And I have tried to draw this somehow, all these sub-states which I have taken out when we have A as a referent to try to do a summary, somehow, or way to think about it.

Bret: I am curious.

B: Hum?

Bret: You add the negative state of C has no knowledge of A.

B: Yes.

Bret: Where is the state of A as no knowledge of C because A specifically chooses not to have knowledge of C.? How does that come in if negatives are allowed? (contribute)
11:02
B: This one, you mean.

Bret: No. A has chosen not to have knowledge of C.

B: Yes.

Bret: Where is that represented?

B: It is the indirect direct knowledge of A in C.

Bret: If B…

B: It has indirect direct knowledge of C because it is not the same. If we have, for instance… it is not the same. If we have this situation in which A also chooses not to be in state of direct knowledge of C, and this extant situation in which A is not in a state of direct knowledge C, but in a indirect direct of C, these two are different although here and here they are always missing.

Bret: What is the….

B: So I differentiate between them somehow.

Bret: Yeah, that is what I want to know. Where is the A that has chosen not to have knowledge of C represented in here?

B: This one.

Bret: No, that's C chooses not to have knowledge of A as you drew it.

B: Yes, yes, I…this one that you are mentioning, for instance, was…I was thinking of it because it was, for instance…it was even not my idea. But this one you are talking what is present here. For instance, in the…in article of Charles and Seeley and…so it is; but the others are missing so…not now. This is what you are talking about. It was at certain point of development of Lila…it was so; but the others are missing; the others are missing.

Bret: Yep. What we have been talking though suggest that…

B: So this is why I put it here. I put it…I had this in mind, you know, because at least it is here.

Bret: (acknowledges)

B: I thought of it. But then finally I decided to put this. A is not in a state of direct…

Bret: I am wondering about having both of them as it's different.

B: It is. It is here. Ah ha! This…here it is. Here it is.

Bret: Where?

B: This is the…these are the states of no knowledge. And we have A in state of no knowledge of C. So it is here.

Bret: But you dropped it. You don't mention it. And I am curious why not? Inherently if you don't list it, you are saying it doesn't make a difference.

B: Ah, yes, it is here. Yes, it is here. Yes, it should be here.

Don: Good.

B: It should because it is…

Bret: It is different.

B: Because A is a referent, yes.

Bret: If A did chose C all…

B: Yes, yes, because here.

Bret: …of this would remain the same.

B: We have four in which A appears: one, two, three, four.

Bret: (acknowledges)

B: One, two, three, four; it was missed. Ok.

Bret: I was just wondering if you had a reason for that.

B: Ah! No, no, the reason for it was I was thinking whether I would put it this way as it was here. But then the other are missing so…

Don: Should we consider the possibility that an individual would choose themselves in this…in saying all the possibilities of N number of arrows? Because we specifically…we have excluded that here. We have included it here in states of no knowledge. But we are not including it here because you could have A choosing to know B and A choosing to know itself.

B: Ah ha! You mean this one; this, yes, and this one.

Bret: Or the other way, yeah.

Don: A known by B. And…

B: And this one.

Don: (acknowledges)

B: Yes, because they are here.

Bret: That's five states.

Don: Yeah.

Bret: Two arrows.

Don: And it really… (bells)
15:30
Y: This should be one fifth/ ($1/5^{th}$); no, it should be…

B: Two.

Y: Yes, so it should be five times the square root of 2(N).

B: There are more of them because we have, then, this one also. This and this.

Don: (acknowledges)

Bret: And what about choosing each other?

B: Yes, this also. This and this. There are more.

Bret: Two, three, four, five, six, seven, eight.

B: I have seen it was strange because this is for…

Y: This is in and out. But this…the probabilities are…have to include all of these.

B: Yes.

Don: Well, we don't have to include A and B separately because that's not a configuration involving a connectedness, a pattern of two arrows…

Y: Two.

Don: …that are connected. The others are.

Bret: Well, then we have to have a way to differentiate the connected ones from the others.

B: But now.

Bret: This is the any arrangement of two arrows.

B: No, no, this also connectedness of two arrows. This also belongs to the picture.

Bret: Statistically (fine?)
16:35
B: It is connectedness of two arrows. This formula is for undirected graphs; this is why.

Bret: Hum. And you want to make it valid for our types of directed graphs, our purposes? So, undirected graphs give all of these possibilities. And one of them is the only one that we're…maybe three of them or four of them are the only ones that we care about. Are these useful? Is this useful? This is…
17:05

Y: This one is useful, or is it? We need something that is reducible. He is in a state of consciousness of B. And he is in a state of consciousness of A, of those two. This one is not true. Now this is the same as this.

B: No, this is B in state of knowledge of B.

Bret: Yeah, without C.

B: A is in state of knowledge of B; and B is self-enlightened.

Bret: And there is no C. This one has C; this one doesn't.

B: But we have two arrows; and it is about two arrows; so it is included.

Don: The way. The reason that I don't believe that this is included because when you are looking at the those probabilities, if the probability that you will choose as a source or terminus of an arrow and individual who already has made a choice or been chosen.

Bret: If that is so then, yes.

Don: Well, if you look at the way the probabilities are derived, you know it's specifically (N) individuals, (N) minus one.

Bret: So that is taken care of.

Don: Yeah, but it is always…a choice has been made.

B: This is for people graphs.

Y: Baker didn't look into any of this.
18:52
B: Yes. The simple graphs…these graphs…these under active graphs, for instance, are called simple graphs. And these graphs which include loops are celda graphs. These are in the other category in undirected graphs. We might (rost) through the book. We have it in .pdf format. We might…maybe some picture will be…

Bret: Do they have pictures up to 10^{28} individuals? We will have to generalize somehow.

B: There is a chapter of connectivity.

Bret: So, did you decide which of these were valid? I mean Don just pointed out that this actually won't be predicted by that formula.

B: Yes, it is not because it is for simple graphs.

Bret: So of the remaining ones, which ones form valid…for us to consider? Three of them or four of them?

B: Three, four, five, six…

Y: This many may be valid graph; but if this is not reducible…

Bret: Right, one down.

B: Five to go.

Y: This reduction has no meaning, but this is. And I think this is too because this is a state of consciousness even if it is of himself. And A is conscious of B in that state of consciousness of himself. So there is two consciousnesses which are reducible. So this is valid.

Bret: What about…

Y: What about this one?

Bret: Yeah.

Y: A is in consciousness of himself and of B. That should be valid.

Bret: So, three out of six.

B: This is most…in a way because A is self-enlightened.

Don: This is reducible also.

Bret: Yeah.

Bret: Four out of six.

Y: Yes, it is. We just have to be sure that we've thought it out correctly.

Don: (acknowledges) Yes.

Bret: Maybe we want to look at degrees of graphs. Does that distinguish between the cases we want and the cases we don't?

B: The degrees of the nodes is two here.

Bret: Right.

B: Two.

Bret: I don't know if that is helpful for a formula.

Y: So to find our zero point or first unit of space. To find the very first one right here where there's one Planck time, one arrow, two arrows. A W [I] I have here. We're going to have to change that because the relationship…we have to count the number of arrows that are necessary instead of counting every electric charge. We're counting every arrow. So that is going to change where this is, where this point is; and it will take more arrows. So it is going to move point this way. So first we have to work out the formula. This is based on this. So do we multiply this by four in order to get the reducible ones? But which ones are time? This isn't time. This isn't time. I don't know what it is. This is time.

B: You said, "This is love."

Y: Yes, but love doesn't belong on the graph.

Don: Doesn't calculate.

Bret: We can go by the number of arrows then. That can't be what we…

Y: No, we have to look at physical meaning in the consciousness of the referent individual. A rule.

Don: Yes.

Y: Write it down.

Bret: That's what I was saying, actually. I am going to bring it up. And I disagree that it is symmetric, that it works both ways. We don't care, I mean, if you go by the number of arrows like you do here equating the number of arrows with time.

Y: Yes.

Bret: Then you are looking for the first circuit, but…

Y: I am not looking for any circuit at all. There are no circuits here until you get off over here.

Bret: I understand; but it is an example.

Y: It's one I don't like because it makes it so that we can't talk about it together because you think one thing's true about circuits; and I think another thing's true about them. Until we fight that out, we can't use it.

Bret: Ok. Let me try it differently, adding arrows until you expect a certain structure to exist, whatever it is, circuit, fork, straight line, for the first instant of time, whatever.

Y: We are adding arrows randomly.

Bret: Right…and then suggesting that the first one that appears is somehow relevant because it is the first one. But what I don't…

Y: First one of what?

Bret: Structure that you are looking for, whatever it happens to be.

Y: (acknowledges) Yes.

Bret: However, if you take the fully populated graph and consider it instead and look for sub-states, you will look for the structure in those sub-states. Regardless of where in the sequence it came into existence, it will appear to be that structure.

Y: Well, yes. It will not appear to be; it is that structure.

Bret: Right. But adding arrows…looking at it from the point of view of adding arrows, puts a fake sequence to it that doesn't have anything to do with it, and may fool us. I think it will.

Y: Well, in order to answer that, we will have to get into the question of attention if you will forgive me taking just a few moments here to do this. We have randomly distributed arrows over the huge graph. And we keep…we just have a whole bunch of arrows; and some of them are going to be like that. This is sub-states. Now if our referent individual is here, all he has to do is to accept this one. Now, he is going to…or he could accept this one. And that would give him…do it. So you could say that this time unit exists. And now he has put his attention on it by accepting this one.

Bret: Yeah.

Y: And so for him, he is conscious of one unit of time passing with regard to this and this.

Bret: Right, that structure provides that consciousness.

Y: And so…but we have to look at how many arrows that is going to require to be in the graph in order to expect one of these to exist that he can connect to.

Bret: I am not sure that is true. Instead what I would suggest is that we look at the wholly populated graph and say, "Given this number of arrows out of this number of individuals, how many of these are there going to be?"

Y: Yes.

Bret: That's a different question.

Y: That's what I meant to say. But I didn't say it. But I agree with what you just said.

Bret: It is a different question though, and probably a different formula.

Y: Well, I assumed that it was the same when I asked Michael if it was the same. He thought about it and said it was the same. Now you are saying maybe not.

Bret: I am not certain that it is; it doesn't seem to me that it would be.

Y: Check it out.

Bret: Ok.

Y: That is what you were asking about?

Don: Yes.

Y: These sub-states. You connect up to the sub-state. You have the consciousness of the content of the sub-state. Then you have one like this and a sub-state that includes these two arrows. And the sub-state that includes these and this one, and depending on where you put your attention, you have to be connected to be a sub-state. But where you put…this is the attention arrow. And you will be conscious of all these collapsing on each other into a single state of consciousness. And you say, "Oh! That's a molecule of a protein."

Bret: And that's last Thursday when Amy's dog …
28:59
Y: That's right.

Bret: Yeah…

Y: Or we're sitting here at this table and being conscious of this situation.

Don: But doesn't one exclude…put the consciousness on a particular sub-state so it's not just a selection of that one individual, but the exclusion (?)...
29:18
Y: It is, if you are capable of your attention on one thing.

Don: (acknowledges)

Y: That's what Kripalu calls one pointedness.

Don: Yes.

Y: Does it exclude the others?

Don: So the attention is on the sub-state.

Y: Yes. You choose…you put your…you accept someone in the sub-state.

Don: (acknowledges)

Y: Now, that doesn't mean that…like when you looked at this paper…"Would you look at it, please?" You are looking at the paper that you are not conscious of some other stuff; but this is the focus. If you get completely one-pointed, you could put it on that; and that is all you would have. So it's a matter of accepting enough individuals. If you accepted every individual here, you would have this.

Don: Ok. Thank you.

Y: All right. I am ready to go into this. This is Guth's book on *The Inflationary Universe.* And this is my graph of the same thing. This…if you drew a line like that, that would be this line. You have this line here…that is this line here. That's his, like that. So you can see how closely the Lila Paradigm mimics it. Now what we want to do is to just get the formula for this, get the formula for the first crossover circuit. And get the…and for the end of the recursion; get the formula for it, and the formula for the end of the first original pattern, and for the recursion, and for the second crossover. So if we have all those, we will have all the times in which each pattern occurs. Then we'll work out the radius of the universe as he calls it, the radius of the universe. Guth says he has figured out the radius; whereas ours is the diameter. We will have to divide ours by two to match his. So to do that what I would like to do is one of us take column…a paper like that, a line paper and draw some columns on it saying what the events are and a column for the formulas, a column for our calculated values from the formulas, and a column for what the measured value is. If you want to write what the…you are going to need to be wider if that's for saying what the event is.

Don: Right, I was going to put the event here.

Y: Hum?

Don: I was going to put the event down here. These are the values. This is the columns.

Y: That's the column, I understand; but you have to put the event next to the position in the row.

Don: Here, Ok.

Y: I am just saying that you need more room for what the event is because we are going to say something like, time of the first unbounded three-dimensional space. You would be hard press to get that in there.

Bret: We could use a spread sheet.

Y: On the computer. What is that called on Microsoft?

Bret: Excel is Microsoft's spreadsheet.

Y: Excel. Yes.

Bret: I could bring down my little travel printer; and we could just run them off.

Don: How wide should the columns be? Other than…

Y: Well, the columns are going to be smaller like just to write the formula; and then a little wider for the…much wider for the result. Well, yes, if depends on how many digits you put in. And then the final ones will be the measured value.

Don: So the first column is formula?

Y: Yes.

Don: Next column is result, measured or last…

Y: Calculated result.

Don: Calculated result.

Y: And then the measurement, whatever value the measurement is. And we'll start with zero. So what did you have there?

Don: Time of 3-D space; Time of first 3-D space.

Y: Oh, I just meant that as an example. That goes way down.

Don: That's Ok.

Y: You should be using a pencil that can be erased.

Bret: How do you calculate zero?

Don: I'll pretty it up.

Y: We'll just pretend. We'll imagine.

Don: I'll pretty it up and put it in Excel or something; but I am just recording.

Y: Just use the next row there.

Don: So.

Y: So we are going to start with zero time or the beginning of time, if you like. And we need to work out what our formula is for it. We were working on it. We said square root of 2 (N) arrows. How many arrows do we need if we assume that one? Well, just how many do we need in order to have an A → B →C arrangement? Well, we have…we did. The way I did this was to say it was the square root of 2 (N); but now we have drawn this into question. So we need the formula. So, you were wanting to know what we want to know. We're making this in order to see what we don't know. And we don't know the answer to that. So that is one thing that has to be worked out. Now, we'll go to the next point. The next point will be the first unit of time. Is that what it should be called? Now, one unit of time that should be the square root of 2 (N). Zero time, it would be anything less than the square root of 2 (N), huh?

Bret: Would it be then one imaginary time unit?

Y: Zero?

Bret: If the square root of 2 (N) is the first real time unit, then we work out what imaginary time is. And we go to less than one unit of imaginary time for zero.

Y: So it would be; imaginary time would be one arrow.

Bret: Right.

Don: Or two.

Bret: So, zero arrows.

Y: No, it would be one arrow.

Don: Oh, yeah, the first.

Y: It's imaginary.

Don: Ok.

Y: On one of my graphs, I have this labeled as imaginary time.

Bret: Sorry, one arrow is one unit of imaginary time.

Y: Yeah.

Bret: So what what's zero? No units? That's no arrows. Or there is not zero.

B: The Planck time.

Y: Well, zero is not really zero. It is just the absence of time.

Bret: Right. So is there zero time in this at all?

Y: No, but people will think of that.

Bret: But what do we tell them?

Y: We have to tell them something. Instead of the formula, we tell them that in the little box where the formula would go, we explain what zero is.

Don: The beginning of time, I have put.

Y: So you have got the beginning of time in there some place.

Don: Yes, right at the top.

Bret: But there is zero time, interesting!

Y: Zero time?

Bret: There is none.

Y: Yes. We already…we agreed on it. In this article they say the…you start from the beginning with the Big Bang; and then it says that the time and space become disentangled which is a correct statement. In the next step…you see, I explained this to Biljana this morning. But…there is a paper written by Steven Hawking and a physicist name Hartel called *The Quantum Wave Function of the Universe.* What they quantum… in order to do it, they had to quantize space and time and assume that there is a smallest unit. And the smallest unit could be taken either as time or space. And that is what we are doing. But it is an OR. So their time and space are entangled. And they have understood this now. And in this article he talks about the next step is that time and space become disentangled. And you get space this way and time this way. So where do we? What is the formula for space? It takes three arrows. But what is the formula for it? Is it…it takes three arrows, so…

B: Third square of 6 sense squared (so?)
41:22

Y: But we are going to have to modify it, that formula.

Bret: Yeah.

Y: So that is the next thing that we need to do.

Don: So the next event is the beginning of space.

Y: Space separate from time.

Bret: Disentanglement.

Y: Or the disentanglement of them.

Don: Space/Time disentanglement.

Y: Yes. But we are going to get a unit of space. But I don't have any space here. Why is that? I must have had it (?). I have all this other stuff.
42:02
Bret: Is the light good enough for you?

Y: Yeah. The light is fine. I don't see any other way than to just put it together piece by piece. So we should have one. This is not imaginary space it is bounded one-dimensional space.

Bret: That's a circuit.

Y: Bounded?

B: Unbounded.

Bret: Pardon me.

Y: Yes. And it's…

B: Forked.

Y: Yes, it's a fork. But how much space is it? What is this one length imaginary? Is it one imaginary length? Is it one LQ? Is it one length divided by F3 or the square root of 2 (N)? All those questions have occurred to me before. And how much time is there at this point when there is…? because we can draw another three arrows. How much time is that? Well, that's the F3 formula. So this is acceptable as time and drawn this way, it's space.

B: There is a separate formula for forked structures and some calculations here, frequency of forked structures. Is there something like this number? Because this is for two [I] 2 which means fork or 2? 0.1839.

Y: What is this column, probability?

B: Probability.

Y: And what is the probability of this? This is going to give us what the time would be; and this is going to give us one unit of space.

B: This is F of 3.

Y: So how many arrows would have to exist in order to expect this? Is it the same for this? Or does this have a different probability?

B: As we have been thinking so far, it is (save/space?) three. It is (safe?) three. Because…
45:54
Y: Yes, that's what…

B: Of the number of arrows.

Y: Yeah, that is what we were thinking; but now we are thinking twice.

B: This is a forked structure for [I] is two.

Y: All right. So there is another thing that we don't know. Now, we're going to jump over several of these now. We're going to…

B: Are all these based on?
46:34
Y: We're going go to four arrows, five arrows, six arrow structure. And the space is gradually increasing. But on a log to log graph, it's pretty flat.

B: Maybe we could refine later; and first just we find.

Y: Yes, we can. That's why I am skipping over. We're just seeing what we don't know. So leave some spaces there.

Don: (acknowledges)

Y: For four, five, and six, where we have bounded 1-D space, bounded 2-D space, and bounded 3-d space, but the formulas are uncertain.

Don: I now have beginning of time, bounded 1-D space,

Y: Bounded 2-D space.

Don: Ok, and then bounded 3-D.

Y: This is bounded, yes. And then we have…that takes us to F…

Don: Five.

Y: Huh?

Don: F5 is bounded 3-D space.

Y: Yes. And bounded 3-D space is F5, yes. So F7 I have got down for the start of inflation. But we don't know what F7 is anymore. So that is the start of inflation. And now we are going to swing clear over to the first circuit. Now, some place I have the equation for the first circuit. Maybe you can find it in his book (Speaking to Biljana).

B: Number of circuits.

Y: I don't know. It's right after F 27. You get the first circuit; and that is about…
48:54
B: Not twenty three?

Y: 10^{23} but that's seven arrows, just after seven arrows. After F27, then we could expect a circuit of seven arrows.

B: Yes.

Don: Is this F27?

B: When we have 0.9002976 N.

Y: Yes, that's the result of his formula.

B: Here is the average length of circuit. Here is given the average length of circuit.

Y: I have lost track what I was looking for.

B: The average length of a circuit. Arrow average is sum of [I] is from 3 to Q L multiplied by KNLQ. Where KNLQ is KNL of Q is Q over N to the L over L. And this over sum of K sum [I] from 3 to Q, KNL of Q.

Y: How many arrows would have to exist in order to expect that there would be such an F 27 structure that would give the circuit of 7 arrows? There would be other arrows in the graph that would have to exist in order to expect there would be one such circuit. And next to that should also say…we said, "First circuit?"

Don: (acknowledges)

Y: This should be comma monopole core. Now the figure for that, of the monopole core, comes out of the book by Byro?Adro Boses? on the bottom shelf, the gray…a little further over, further, further, there. (Instruction to find book) You don't happen to have one of those little things you put recording on and stick it in.
51:45
Don: (acknowledges)

Y: You carry them with you?

Don: Yes. But there…it is sort of…

Y: They have been around.

Don: The little ones, yeah, they went inside. But you can grab one from there. Well, you can keep that whole thing; and just tear them off as you need them.

Y: Which place do I put them?

Don: The clear part has got the sticky part on it.

Y: Like this? And it is…core is about 10^{-25} of a centimeter.

Don: Should that be the measurement amount.

Y: That's the measured or we'll call that measured. Or science calculated, this is actually calculated. But it is based on measurement and 'guesstimations.'

Don: I'll put science calculation that we're measuring.

Y: The central core diameter is about 10^{-25} of a centimeter. I think we should use meters through out. Rather than centimeters so we…you have to add two10-27 meters.

B: Maybe you should write here the page where it was found. 600…

Don: I'll make a footnote.

Y: Footnote.

Don: But what's the…

B: Page 656…

Y: Footnote is page 656 the *Antropic Cosmological Principle*.

B: (acknowledges) We must have copies of this and this.

Don: Yes, I will make it. I will put this in a spread sheet.

B: Yes, but also on this one, on this one. To have this one, you know, copy of this page.

Y: You mean this page?

B: Yes.

Y: (acknowledges)

B: To know where this came from. 656.

Y: Now, there's also in the references here; you can look up those references. I don't know if they are on the web or. Your students can look them up. Or they can dig out the papers from the library that give…from which is man who wrote the book got the information from if you want to go to that level. Right now we don't need to do that. So we have then… lost again. Where's the one that is of the monopole? Can't believe it! There it is. So knowing where that point is in time, the size of it… What did I say was 25?

Don: Minus 10^{-27} meters.

Y: 27 meters, yes, is 25 centimeters…makes…should be…fall right here. Should be right about where that top part of the 8 is. And that's for the size. And if we follow down from that point, we can intersect this curve. This gives the time 10^{-32} of a second. Or it's actually about 1.25. And some place, we have F27. It's just a little more than F27. But I have a whole graph or a table giving the values for all the F numbers which Michael computed for me on his computer. But that doesn't mean his F27 calculation is correct because we are finding that the F numbers, the F formula numbers need further inspection. And he has the equivalent in seconds printed on it too. Anyway it comes out in terms of seconds, about 1.2 times 10^{-32} of a second, be our/ (The R?) calculation.

Don: The (arch/R?). So the next event after the first circuit is what?

Y: After the first wicket.

Don: Circuit.

Y: Oh, circuit. No, this is before, this F27.

Don: Ok. And that is?

Y: Because I don't see his…does he have equations for how many arrows would have to exit in a random graph in order to expect the first circuit?

B: Yes, he has.

Y: Is it 9? That's the first circuit. Yes, Ok, first circuit.

B: First circuit.

Y: So if we multiply that times T [I]. What happen to my…? Here it is. Give me the number 09. Would you read that off?

B: 09002976 N

Y: 6 what?

B: 6 N.

Y: Times big N, right.

B: Big N, right, yes, 138.

Y: All right, yes. Now I need to multiply that. The number of those is 1.24474 times 10^{23} arrows. But each arrow is T [I] value. And he wrote down some place what that was.

B: So, as far as I see, now he is finding the circuits. The first circuit could appear with three arrows. So if the extant arrangement has Q arrows…

Y: Sorry. I will be right back.

B: He is supposing either we will have a circuit or 3, or and this is plus a circuit of 4, or a circuit of 5, or and so on, and then finding the probabilities for each of them normalized. So out of Q, we have Q arrows in the arrangement out of N possible. So the probability is cubed for a circuit of 3, and the normalized by 3. Or we should have out of Q arrows over the total number of N, probability to have one of those, then probability to only one of those. So this is 1/4 over 4 (over and so on?).

Y: So, it's a sum.

B: It is. He is supposing that…he asks, "What is the expected number for a circuit?" The circuit could have minimum of 3 arrows, then 4, then 5.

Y: (acknowledges)

B: If in the extant arrangement, we have Q arrows of total number of N probabilities is Q over N. And have Q over N probability for this, Q over N probability for this, and have Q over N probability for this. And these are cubed. And then they are normalized by dividing to 3. And then…or we could have 4 arrows probability…

Y: And so on.

B: And so on. So this is the formula. But what makes them closed not open? I am trying to see.

Y: I don't think he took that into account, did he?
1:04:32
B: Probably he did, but we should look earlier. He is using some (Stealings?) approximation which gives that. So it is known somehow. Maybe we should open this chapter *Connectivity of Graphs in Discrete Mathematics* which we have in (pedia?1:04:36) format to see. This is the idea. But then how could he differentiate that the circuit is closed? This is the question. Somehow the minimal circuit is out of 3 arrows. So he begins with 3. Q over N is… And we could look earlier but Q is the number of the arrows in extant arrangement; and N is the total number supposing that he associate one arrow to each non-physical individual, otherwise, should be N squared. So this is the probability. We have this probability for the one arrow, for the second arrows, for the third arrow. So it is cubed. And it is overall normalized over 3 to have a common parameter for each. Or we could 4 and 5 and so on and finally he… So this is this formula; this is multiplied by L where L is the length of the arrow. The average is sum of all of them over the total. This is the average each of them normalized by the total length. Then because we are searching for the average length, we multiply this by the length which is the length quanta actually. And then the average is the sum of all of them because either we should have 3 to 4 or…this is written here.

Y: So, I don't think we want to write that formula on your table. I think we want to refer to it like, "See…see back of…

B: He doesn't start from the beginning; he's referring to Stirling's Approximation. This makes it difficult to see what he (?1:07:14)

Y: Yes, so the thing to do would be to cite it. And then anybody who would be checking the math carefully probably would know Stirling's or know where to find it. Or you could reference it.

B: We might find Stirling's Approximation, next step.

Y: Well, that's up to you.

Don: No, I…I have that, not handy, but I have got it at home. And I thought he mentioned it in here. It's well-known.

B: Maybe.

Don: It's a well-known formula for approximating.

Y: Well, anyway. I have calculated a value here for the time of the first circuit.

B: Ah ha! Here's Stirling's Approximation once again. And where is the first?

Y: I have…you could put down the formula that he has for the first circuit time which was…did you copy that down about 0.900? She read it off.

Don: Ok.

B: Ah, yes, 0.9002976N

Y: Big N.

B: Big N.

Y: T [I].

Don: 0.9002976N.

Y: This is the time of the first circuit. And our calculated value using that is 1.44048 times 10^{-32} of a second which is right at that point right there.

B: And this is the diameter which they have used to obtain *pi*.

Y: That is when the first circuit occurs. And that is the monopole core. So we're getting just a few key points. And now we will skip over these, and just get the point of inflection. And we wait until he is finished with that.

Don: Ah! The units in this is what?

Y: That's the formula.

Don: Yes.

Y: For the first circuit. So this goes next to the first circuit.

Don: So that's the expectation number.

Y: That's the number of arrows; and then I multiplied it by T [I]

Don: Ok.

Y: Giving the time. And did you write down the time so that…?

Don: 1.44

Y: 1.44, yes.

Don: 1.44048 times 10^{-38}.

Y: Seconds.

Don: Seconds, yes.

Y: All right. Now we'll use that when we recurse. Now, the point of inflection, we wrote that down a little while ago. I said it was…

B: *Pi* half and…

Y: *Pi* over 2N T [I]. So the next point is the point of inflection. The next thing on your column, point of inflection, you should have left some room for ones we skipped over.

Don: Ok. Before we go to that, for F27, you have an event. Did you have a name for that event?

Y: Yeah, it's called F27.

Don: Got it.

Y: But we haven't found a formula for it yet.

Don: Yeah, I just wondered if there was another name for that event other than F27.

Y: It's the one that comes almost at the same point as the first circuit. So we got the point of inflection there. Did you put the formula down for it? *Pi* over 2N T [I]. And I have got N divided by *Pi* times 2. Why is that different? N divided by *Pi*?

B: I am searching for this point of inflection.

Y: Have you found it?

B: The point of inflection of the inflationary curve was estimated by the New Inflationary Theory (GUT) at about 6 times 10^{-33} three seconds.

Y: Yes.

B: Later GUT 1997 estimate is about 10^{-34} seconds. Due to many parameters being guessed at in the theory the time of inflection could vary from about 10^{-35} seconds to about 10^{-31} seconds. The information model formula for the point of inflection is given by *pi* over 2N TQ, see section seven. So this is…and N is 6 times 10^{-33} over *pi* half.

According to this, N is about 3 times 10^{22} using the 1984 estimate. However, this could vary from 6 to 6 times 10^{19} for the 10^{-35} of a second estimated to about 5.5 times 10^{23} for the 10^{-31} seconds estimate. He is referring here to section seven. So back to section seven, section seven…

Y: So next…

B: The first appearance here, the point of inflection of this inflationary curve, is at *pi* N over 2 PQ which 2.17176339 times 10^{23} TQ. This is *pi* over 2N. This is the value.

Y: That's what I give there.

B: Which is…?

Y: And what I have here is KN times 2 over *pi*. Is that different? *Pi* over 2?

B: *Pi* over 2N.

Y: And here I have 2 over *pi* times Kn. K little n.

B: This one?

Y: I can't read your writing.

B: N times K over *pi* by half.

Y: Yes. That's what I have here. But that…as I said, "I don't know which one is right."

B: This one is clear…is more clear how it is obtained. This is clear because this is…

Y: I developed it later after this…

B: Yes. We have N non-physical individuals, and K average number of arising from it. We have N times K is the total of…

Y: …of time quanta.

B: …of arrows or time quanta.

Y: For T [I].

B: And this is normalized or divided by *pi* half because *pi* half is the number you obtain when we are using crossovers.

Y: Right.

B: So this is clear. But this one, I don't know where it comes from.

Y: No, this is old.

B: Ah ha! So problem solved.

Don: So this is the formula for the point of inflection.

Y: No. No, this is the formula for the time as it is now.

Don: Ok.

B: Now.

Don: That’s now.

Y: That’s now.

Don: Ok, so I’ll…but now.

Y: In the…

B: For one-dimensional universe?

Y: For one-dimensional universe.

B: Ok, this is distinction. For one-dimensional…

Don: Now that’s…

Y: Of the original pattern, I sometimes called it.

Don: Ok, so this is…

B: Ah! Original pattern is one-dimensional.

Y: This one.

Don: That’s average…

Y: Little n.

Don: Ok, little n.

Y: Little n times K…

B: Over *pi, pi* half. This is fully clear because we have derived this.

Y: Yes.

B: By…

Y: And that is what I have here.

B: Cross arrows.

Don: So that's now; and how did you qualify that now?

B: In original.

Y: One-dimensional.

B: One-dimensional or original universe.

Y: Or original pattern.

B: Or original pattern.

Y: And it comes out to be…

B: Ok, since we are released from this…

Y: The calculation on that…a rough calculation is 10-, is 1.2 times 10^{-31} of a second.

B: The new number derived? Ah! Here, ah, yes.

Don: 1.2 times 10^{-31} seconds.

Y: 31.

Don: Yes.

B: 1.2 times $10^{-31.}$ This is derived today, today or not?

Y: Which?

B: This is what you derived now with your calculator?

Y: This is our one-dimensional now.

B: Yes, I know. Ok.

Y: Yes, well. When did I get it? Oh, about twelve years ago when I derived this.

B: Ah, yes, Ok, twelve years ago. Yes, Ok, because it differs from this one. Ok, but the number of N is different so. So Ok, now I know what is inflection point because…

Y: Now the…it is not the inflection point. This is the now. Before that is the inflection point. And I think it's… What is it here? I can't read my own writing.

B: So the inflection point is still actually *pi* over 2 times N.

Y: Yes.

B: And how is it derived?

Y: Hum? It was derived by Michael. He discovered that.

B: From the connectivity curve?

Y: Baker.

B: From the connectivity curve?

Y: Yes.

B: And what specific point of the connectivity curve is it?

Y: I don't know. I would have to go through his paper.

Don: Well, I believe it's mentioned in the paper I just gave you here.

B: Ah ha! This, maybe, it should be.

Don: Because this is a well-know figure in graph theory.

B: Connectivity.

Don: Not there.

B: No.

Y: Now, it doesn't mean that, that formula is correct. But it's close to being correct.

Don: (acknowledges)

B: In this random walk, it is the same only square root of it. And it is the distance when you take random steps into a two-dimensional space, two-dimensional plane. Shall I find it? It is the same but square and maybe for one-dimensional, I don't know.

Y: There is the next thing that you will want to insert. This, I think, after the first. We need the first crossover, do we? Did we do that?

Don: No.

Y: So that's got to be between the monopole core and the point of inflection.

Don: Ok.

Y: So that's the start of…well, it's start of unbounded two-dimensional space. Or you could say it another way, one crossover. Or you could say it another way, X-boson before we had monopole core. Now we have the X-boson. X-boson, this region of the core is ringed by a cloud of X-bosons which are in the region between 10^{-25} of a centimeter to 10^{-15} of a centimeter. So you had 10^{-27} for the core. And this goes up to 10^{-17} meters.

Don: So what should I put in for the science measured value? 10 to …

Y: 10^{-17} meters.

Don: Ok. Wasn't there a range there?

Y: There is a range, yes. It goes from 10^{-27} to 10^{-17}. But that's according to them. According to me, its 10^{-17}. And that there is not really a range. But maybe there are if we find out our formulas more exactly because it is a probabilistic formula. Now he has a time for the second crossover. Michael Baker, second crossover is..

B: So then, I should list twelfth.

Y: Does it say the time?

B: The duration of the two crossover monopole is up to K time N squared over by half.

Y: That's how long it goes, it continues. The two dimensional space doesn't end. That's the end of it I think. When is the first, second crossover start first?

B: The total number of extant non-denials that form while we are doing this, is KN over 5 half.

Don: So second crossover is unbounded 3-D space.

Y: It is unbounded 2-D space.

Don: I thought the first crossover was unbounded 2-D space.

Y: No it's 1-D. The first crossover gives one-dimensional space. Second crossover gives two-dimensional space.

Don: Ok. ( )

Y: It also gives the W-boson. But did you find the time?

B: Here.

Y: The time when it starts, first two-dimensional, second crossover.

B: The duration is here. The duration is up to this one.

Y: That's the duration.

B: So this is the end of it.

Y: Yes.

B: So beginning should be the previous one…

Y: I don't know.

B: …which is 1.294 times 10^{-31} seconds.

Don: What is that number, Biljana?

Y: Start of the…

B: If this one is the end or duration or end of…

Y: He doesn't want that. We want the start.

B: Yes, this is why I go to the previous. And in the previous, we have a time given. It is given; but it is explain that it is the total number of extant non-denials that form our universe. This is now which we have.

Don: But that first crossover, that will have a duration also, will it not?

Y: Yeah, it went up to the now.

Don: The first crossover?

Y: Its duration went up to…It's the end of time from one crossover. And I gave it to you as now, now for 1-D space.

Don: Ok. So these over lap then?

Y: Oh, yes.

Don: (?1:29:33) 2-D crossovers.

Y: Oh, yes.

Don: Ok, got it.

Y: Oh, yes.

Don: But…we still do not have a time for the start of the 2-D crossover.

B: He says, "Even though the time aspect of the space/time generated by a single crossover ends at 10^{-31} seconds."

Y: For a single crossover?

B: Yes, the end, even though the time aspect of the space/time generated by a single crossover ends at this one, not starts, but ends.

Y: Yes, that's the now that we have.

B: At about to the minus 31, the time aspects of the space/time generated by the monopole core by the two crossover continues until color confinement which is described (in Fell ?1:30:25).

Y: Well, this is from the *Radical Theory.* In Michael's paper there should be a formula for when the second crossover happens. That's *Radical Theory* you are looking at. Michael…Do you have Michael's Appendix too? Not the Appendix of the *Radical Theory,* but of the…Michael's derivation.

B: (acknowledges)

Y: There you go. Now, he should have something on the second crossover of the circuit. That's his paper is it?

B: Yes.

Y: Yes.

Don: All pretty up.

Y: Yeah.
1:32.03
B: ( ) the mathematical bases for… Ah ha! This is t' Hooft, second recursion.

Y: Yes that's the one.

B: Ninety six. He has N here for circuit. Second recursion, in the second recursion each individual gets to re-experience every other individual's experience of the first recursion. R2 is N times R1 is N times Q squared over 2. Capital Q, and this Q… Q here…

Y: So far I have the formula for it here which is F2 squared T [I] for the start of the first recursion.

B: Q over (1:33:30) N is (Arco standens?) which he also had in this paper with you and Seeley. It is Q over N is (Arco standens?) Q over N plus 1 which can be solved (?1:32:43) activity to give Q over N is 1.13226772527.

Y: You should write that down.

B: Hum?

Y: He needs to write that down. Is that the time?

B: I'm just…I don't know the time. This is Q…

Y: Doesn't say TQ?

B: No. It is…this capital Q over N, and then this Capital Q over N.

Y: He doesn't give a value for it? You can write down my formula.

Don: Yeah. You had F2 squared what?

B: Second (?1:34:33)

Y: We are using T [I], yes, T [I].

Don: F2 square

Y: T [I]

Don: T sub [I]. Ok. And that is the formula for the first recursion.

Y: The start of the first recursion.

Don: Ok.

Y: It has some other meaning also.

Don: And the first recursion is the first crossover? Is that another way of saying it?

Y: No, it's the second crossover.

B: The first recursion is the second crossover.

Y: The first crossover is what is being recursed.

Don: Ok.

Y: And that is the W-boson. I gave you a size of the W-boson; remember I gave you a range.

Don: I got one for the X-boson and measured one that I thought was the X-boson of 10^{-17} meters.

Y: That's the X-boson. So I need to give you a value for the…

Don: The W boson

Y: W because that's what we are talking about now. Am I saying it right? No the X-boson is the start of the first recursion from first crossover? (Talks?:36:11) a recursion. And that's the X-boson. So you have that.

Don: But again to be clear here.

Y: Is that the first crossover or is it the second crossover? I got lost. And you got lost. The second crossover starts the first recursion. You have a note on that? And I gave you the formula for that which is F sub 2 squared T [I].

Don: Yes. And that's W-boson.

Y: All right. Now let me give you a value for that if he has something here.

B: Here we have this (circle standee?) to see what Q is. Here, he is here on Q and recursion.

Y: Ah ha!

B: Here (Archastanga) first is introduced.

Y: So the X-bosons you have has 10^{-27} on the X, is that right?

Don: X-boson, so are we talking about the Lila calculated result?

Y: No, they're measured.

Don: The measured? No, I had something different for that, but you tell me it is 10^{-27}

Y: 10^{-27} of a meter.

Don: 10^{-27}.

B: This boson is massless connection boson?

Don: 10^{-27} meters.

Y: Meters. And for the W, we're 10^{-15}.

Don: Meters?

B: 10^{-32}

Y: That's time. Is that what you've got?

B: Yes.

Y: What is this whole?

B: The electroweak force which is boson and the photon because I see here (Achcostanen?1:39:16)… He has here massless boson connected.

Y: Those are photons if they are massless.

B: Yes they are photons. And then he has…

Y: But they don't come until about…the next thing I am going to give with the W and the Z-bosons exist.

B: He has other type of bosons; but I am looking for it.

Y: I am going to have to give up for today and start fresh. But I think we made a little progress.

B: Maybe we should read once again this article.

Y: Is that by Baker?

B: Yes, Baker and Seeley. And they have this other type of boson if it is called, heavy boson, somehow. I found it; now I am looking because this is very nice article although the dimension is differently defined, but still. Here is the curve, here. Here is the curve.

Y: (acknowledges)

B: And we have all this characteristic points.

Y: He has got… some of the formulas are here too.

B: Ah, yes, some of the formulas. It should be looked…

Y: Yes, we'll have to compare those to the ones we're…that we've got there.

B: First, are the recursions.

Y: And I can tell you which is the most recent.

B: Here we have the first order recursion, 2 times 10^{-32}.

Y: That's correct.

B: And some of these. This should be read carefully. Second order recursion. But here because the dimensionality is differently given, we should look for the boson earlier here in this earlier article of yours when this circuit is perceived as one dimensional.

Y: First crossover. Yes.

B: Now in now (in nowadays? 1:42:19) theory, but in this earlier article; it is differently. Ok.

Y: Tomorrow I'll take some Paracetamol; and we'll do some more.

Bret: Punita, do you have the *Scientific American* article.

Don: Yes.

Bret: I also have a suggestion for a protocol. If you plug in that wireless adapter every time when you set up the computer, then we can automatically connect to you in an ad hoc network. And if you have a…

Y: Is that blue one over there.

Bret: If you have a directory that you establish as a shared one, you can just drop things in it.   And we can copy them during the session or whenever.