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ONTARIO COURT OF JUSTICE

HIS MAJESTY THE KING

v.

SAMER AKILA

P R O C E E D I N G S O N C H A R T E R A P P L I C A T I O N

BEFORE THE HONOURABLE JUSTICE G. ORSINI (VIA ZOOM)
on February 24, 2025, at LONDON, ONTARIO

APPEARANCES:

V. Mazza / K. Benzakein / A. Pashuk — Counsel for the PPSC

P. Lewin — Counsel for the accused

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Legend:

[*sic*] - Indicates preceding word has been reproduced verbatim and is not a transcription error.

(ph) - Indicates preceding word has been spelled phonetically.

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MONDAY, FEBRUARY 24, 2025

THE COURT: Good morning, counsel.

V. MAZZA: Good morning, Your Honour.

P. LEWIN: Morning, Your Honour.

THE COURT: Everybody's ready to proceed?

P. LEWIN: Yes.

THE COURT: All right. And I believe your next witness was going to be Professor Nutt, is that correct?

P. LEWIN: That is correct. A couple of housekeeping matters in relation to Professor Nutt's evidence. One is I just want to notify the court that Professor Nutt fractured his ankle in January, it's a bad fracture, and he's on painkillers as a result of it, and there's two issues. He might at times have spasms or cramps that cause him to have to stand up, and the other thing, it does make him tired. And I advised him of when our likely breaks would be and he expects that should work but it does affect his constitution, so....

THE COURT: All right. Well, Professor, if you need a break at an earlier time, you just let me know, we'll accommodate you as best we can. All right, I believe you're on mute, so we'll have to unmute you there. Thank you. We'll prompt you here.

PROFESSOR NUTT: Thank you.

THE COURT: There we go. Excellent, thank you.

P. LEWIN: And one other issue, Your Honour, and I think what was set out in your December 20 ruling on Professor Nutt's qualification is – it's not exactly what we had agreed to, and the fault really lies with me. You set out essentially the core part, the important part is what we agreed to, but there was sort of a caveat to it. And if you'll recall,

we had a small issue that myself and Ms. Pashuk worked out and we advised Your Honour how we framed it, and I remember reading it fast into the record and I said I'd email you the typed up version, and that week my emails weren't making it through to the court, and so I think you received imperfect information from me about that. I've resent the agreement that we formed, and the important part is really the caveat. And actually, before I say anything further, did the clerk get the emails that my assistant sent this morning?

COURT CLERK: I did. I received two of them and I forwarded them to His Honour.

P. LEWIN: Thank you.

THE COURT: Give me a moment. (...Pause...) Um, I don't seem to have them.

COURT CLERK: They may be in your junk, Your Honour, because they were in my junk.

THE COURT: Oh. (...Pause...) Okay, yes, I do have them. I apologize. So, one of them was entitled, let me just see here, "Agreement on area of expertise"?

P. LEWIN: Yes.

THE COURT: Is that what you're referring to?

P. LEWIN: Yes.

THE COURT: All right, yes. I was looking at that this morning. So, in my ruling I indicated the following: "He will not be permitted to offer an opinion in relation to use outside of the UK unless it is based on information from specific studies, surveys, questionnaires or other verifiable sources including dialogues or conversations with others." Does that not cover it?

P. LEWIN: Well, it's very similar but it is a little different in a couple of key ways. One is – so, just in terms of that whole paragraph, the first sentence is absolutely correct, and that's the main part, this is all very fringe in terms of its importance. So, first sentence is correct. The second sentence, "His evidence in this regard will be based principally upon his knowledge of psilocybin usage in the UK" I mean, Professor Nutt has incredible knowledge of psilocybin effects and benefits that have arisen all over the world. He's probably the foremost expert in the world on psilocybin effects and benefits. So, I'd be the world's worst lawyer if I inadvertently limited what he can speak about, because he's probably the number one expert. So, it'll be based on information gathered from all over the world, his knowledge. What we're really focusing on is we were just – if he goes to state how many people use in any given country, if he says this many people use psilocybin in the United States, that would have to be based on actual numbers. That was what we were directing this to. And we probably could have used – anyway, that's what that's all about, so it's a little different.

And also, actually my friend would point out that the last line that he's to rely on "specific studies, surveys, questionnaires or other verifiable sources including dialogues or conversations with others" in our version, it excludes "dialogues or conversations with others", so if someone else said, this many people use in France, then he can't use that as a source as to how many people use in France.

THE COURT: All right. I thought it included conversations with others, you're saying it excludes that?

P. LEWIN: It excludes that, yes. And it's really – I mean, if you could – and I think my preference with my friend would be just to adopt – keep the first sentence as you've done it, but the second part is all about that caveat, and if you could just adopt the paragraph....

THE COURT: All right. Are you content with that? Sorry, who's leading the case today? Is it you, Ms. Pashuk or...?

K. BENZAKEIN: It's me today, Your Honour. Good morning.

THE COURT: Oh, Ms. Benzakein? All right. So, Ms. Benzakein, is this an agreement in terms of the limitations on his expertise?

K. BENZAKEIN: Yes, Your Honour.

THE COURT: All right. I clearly misstated the latter portion of his evidence then, so I will revisit that issue. And having reviewed the materials, I agree with counsel that he does have the necessary qualifications and experience to testify and provide an opinion on the effects of psilocybin, the safety of psilocybin, the safety of psilocybin relative to the safety of other recreational drugs, and the extent of psilocybin usage in the United Kingdom. He is permitted to testify about the extent of psilocybin use outside of the United Kingdom if it is used to help form his opinion about the effects of psilocybin, its safety, and its safety relative to other drugs, provided the extent of use information is based on information

from particular studies, surveys, questionnaires or other verifiable sources. This would exclude as a source of information on extent of use dialogues or conversations with others.

P. LEWIN: Thank you, Your Honour.

THE COURT: All right.

P. LEWIN: And by way of just a further clarification, I already said this, but my friend and I had some conversations over the last week or so and if there's any ambiguity in that paragraph, and I don't think there is, but it was our intent that that refers to the extent of usage in particular countries.

THE COURT: Yes. All right.

P. LEWIN: Thank you. Thank you. So, if Professor....

K. BENZAKEIN: Your Honour, I wonder if I may just address one other housekeeping matter before we begin?

THE COURT: Sure.

K. BENZAKEIN: Thank you. Tomorrow morning, assuming that we're still engaged in the examination and cross-examination of Professor Nutt, I need to request the court's indulgence for a late start, just a half hour. I have a recurrent medical appointment on Tuesdays and it may just take me – it may make me a little bit late, so if I could ask for the court's indulgence to start at 10:30 tomorrow instead of at 10:00, please.

THE COURT: I don't have any difficulty with that. Let me just check my list for tomorrow because I may have other matters on there as well.

K. BENZAKEIN: Well, that would be perfect.

THE COURT: Actually, yes, I do. No, wait a second, that's the wrong date, sorry. Tomorrow's the 25th. Yeah, no, that's fine. We can start at 10:30 tomorrow.

K. BENZAKEIN: Thank you, Your Honour, I appreciate that.

THE COURT: All right, thank you. All right, so Professor Nutt, do you prefer to be sworn or affirmed?

PROFESSOR NUTT: I'll affirm, please.

THE COURT: All right, thank you. Mr. Clerk, if you could affirm the witness, please?

COURT CLERK: Yes, Your Honour.

DAVID NUTT: AFFIRMED

THE COURT: Yes, go ahead.

P. LEWIN: Thank you.

EXAMINATION IN-CHIEF BY P. LEWIN:

Q. Professor Nutt, where are you right now?

A. I am in my home in England, West Country, near Bristol.

Q. Thank you. And is anyone else present in the room that you're in right now?

A. No one is, the door is closed, and there is a big sign saying, "In court".

Q. Thank you. So, I understand you have your affidavit with you?

A. I do.

Q. All right. And you are familiar with this affidavit?

A. Yes.

Q. All right, you've reviewed it, and the contents are true?

A. They are.

P. LEWIN: Okay. Your Honour, I believe you should have that as I'm going to ask that be made the next exhibit.

THE COURT: Yes, I believe that would be exhibit 14?

COURT CLERK: That's correct, Your Honour.

THE COURT: Thank you.

EXHIBIT NUMBER 14: Affidavit of Professor David Nutt - produced and marked.

P. LEWIN: Thank you.

Q. So, Professor Nutt, I'll start by taking you to paragraph 27 of your affidavit.

A. Yes.

Q. All right. So, at paragraph 27 – from paragraph 27 A to G, to indicate that there's – psilocybin promotes the following effects: cognitive flexibility, spirituality, life meaning, connectivity with self, others and with nature, ego dissolution, empathy and compassion, and mindfulness. I'm going to refer to those seven effects as thought-related effects. How common is it for psilocybin consumers who take a full dose to experience these thought-related effects?

A. It is certainly the majority would have those effects.

THE COURT: What do you mean by "a full dose"?

A. So, that is a dose of 20 to 30 milligrams of psilocybin or the equivalent in dried mushrooms.

P. LEWIN: Q. Looking at all studies, historic and modern, healthy people and unwell, approximately how many studies have found psilocybin consumers experience thought-related benefits?

A. Well, I can't say that I know every single study that's been done, but I would estimate several hundred studies overall have revealed that effect – or those effects.

Q. And just for clarity, I think I referred to those seven effects as thought-related effects, I may at times say thought-related benefits, I'm talking about the same thing.

A. Okay.

Q. What is cognitive flexibility?

A. Well, cognitive flexibility in essence is the ability of a person to change the way they think. It's particularly relevant when we are looking at disorders such as mental health disorders such as depression, OCD, addiction, where people get locked into thought processes from which they wish to escape but they're not able to escape, they have inflexibility of thinking. But it also relates to every one of us in our everyday life. We have beliefs, we have attitudes, we have behaviours, we have habits which often we reflect are not ideal, but we find ourselves doing them or thinking those thoughts because that's the way we've always done it, and thoughts become quite deeply entrenched and overlearned in terms of our brain mechanisms. And psilocybin is one of the few medicines or drugs we have which can change those thinking processes to make it easier to think differently, and that's flexibility.

Q. And you were answering this to some extent, but is cognitive flexibility important for healthy people?

A. Yes, cognitive flexibility allows people to be adaptive and responsive to themselves, to others, to society, to the environment, to natural disasters. What we see is that the less flexible people are, the less adaptive they are and the more likely they are to go down a path into some forms of mental illness.

Q. Do we start out with flexible brains, or do we start out inflexible?

A. Oh, the child's brain is extremely flexible. A child's brain is essentially, as people used to say, a *tabula rasa*

on which anything can be written, but we now know that is also true at the physiological level, at the philosophical level, we know that the child's brain is extremely flexible. And one of, maybe the most important facet of education and child development pathways is to – is to make the brain less and less flexible. Now, of course, that has huge advantages in some areas of life. It is really important that we all use the same words to mean the same thing, you don't want flexibility of understanding of words. But if you get into other areas of thinking, like emotions or attitudes, or beliefs, inflexibility can lead people to develop traits which they later regret or traits which cause them problems in terms of relationships with other people or the legal system, or society in general. So, the child has a very flexible brain and over the decades of education and parental control and other forms of developmental influences, the brain becomes less and less flexible.

Q. Now, can you comment on how capable the brain could be if it's less flexible - or it's more flexible, sorry.

A. More flexible, yes. I mean, more flexible brains are associated with greater levels of creativity, of imagination, of ideas, of new solutions to old problems. And the escape, as I've mentioned already, an inflexible brain in disorders like depression or OCD is a brain which can destroy a person's life and also destroy the life of their families, because families also have to get tied up in those thought processes which are self-destructive.

Q. Is this the entropic brain that you refer to at paragraph 29 of your affidavit?

A. So, the entropic brain is a term we developed - or invented, I suppose, to explain the state that is induced by a psychedelic like psilocybin. It is a state of very much

increased flexibility. Psilocybin puts the brain back during the trip to the state it was like when you were a child, a young child, before you began to download all the thought processes, beliefs, attitudes, that gradually turn you into the adult you are. So, entropic brain means a brain that has massively enhanced flexibility. And that's measured physiologically. That is measured by comparing changes in either the brain blood flow using a technique called FMRI, or changes in electrical activity in the brain using techniques such as EEG or MEG, so it's a physiological change in the brain which correlates very well with the experience, the subjective experience of the person who is undergoing the trip.

Q. Is the entropic brain a good thing or a bad thing?

A. Well, in our experience, and I think the same is true for other people who have researched psilocybin, the entropic brain leads to increased cognitive flexibility after the trip and also leads to new insights during the trip. The current way we view the benefits of psilocybin is a series of staged processes. The entropic brain breaks down well-established, deeply entrenched ways of thinking, allows people during the trip to reframe their understandings of their past and their present, to reframe their attitudes to themselves and other people, to come to insights perhaps as to why they are depressed. Very often they retrieve traumatic memories which they have repressed. So, they get insights into how – what they need to do to change.

But after the trip the brain is left in a more flexible state. We can see that so far up to a month after the trip, we can measure using physiological measures of the brain, increased flexibility up to one month. And that accords very well with [indiscernible – someone sneezes] of the individuals

in terms of their cognitive flexibility, particularly in terms of the patients. And it also predicts improvements in clinical outcome for at least one month, in some cases for longer than that following the trip. Now, the reason the flexibility persists is not understood but it's clearly something to do with the perturbation of the brain which occurs during the trip and possibly increases in what we call neuroplasticity, increased ability of the brain for weeks or months after the trip to lay down new ways of thinking so that if people change their views they can more easily register those changes and develop those insights and those ways of thinking into new patterns of thinking and behaviour.

Q. And these changes do they persist after the one month – after the trip and after the one month?

A. Well, the subjective personal experiences usually last for the rest of people's lives. One of the most interesting aspects from a scientific point of view as a neuroscientist is the fact that the psychedelic experience is independent of consciousness, the traditional model of consciousness as whether you're awake or asleep. Psychedelics do not impede memory, which is I think largely why the benefits they produce during the trip are registered in memory and therefore can persist for the rest of people's lives. Now, no one has measured the brains of people through a trip and then 'til they die, but we presume that there would be physiological equivalents to those subjective changes that do persist.

Q. You've used an analogy with the entropic brain, you used a skiing analogy, can you explain that to the court?

A. Yes. The psychedelic experience is a very difficult experience to explain to someone who hasn't had it, but the change in flexibility is something that is understandable with this example, for instance. So, you start off as a child,

you have a brain which is like a virgin ski slope, and you ski down the ski slope once and you get some ruts from your skis and there is an inevitable tendency over time, as any of you who ski know, that as the snow field gets more rutted, it's more likely you're going to go into the ruts. And eventually, you can get snow fields where the ruts are so deep you can't get out of them, and that's obviously pretty dangerous if you're skiing, and quite terrifying, as I can recall. How do you stop a ski field being rutted? Well, the best way is to have another snowfall, so that you overwrite all those ruts and then you're allowed to ski freely again. So, that analogy I think is helpful. What psilocybin does during the trip is to put the brain back into a state before the deeply rutted thought processes developed over, as I say, many years or decades. It can take a long time to develop ruts, it can be almost immediate. If somebody's traumatized as a child, that memory, that trauma will be there ingrained in their brain forever. And in fact, the only medicines we know, or the only treatments we know which can target something as deeply ingrained as that are psychedelics.

Q. At paragraph 33 of your affidavit...

A. Yes?

Q. ...you describe the default mode network as encoding all aspects of a person's sense of self, both in terms of location in time and space, as well as in terms of self-value. You also say that some would call it the location of the ego. How does psilocybin impact the default mode network?

A. So, psilocybin like other psychedelics, disrupts the default mode network, profoundly. And that is why a trip occurs. The default mode network is the – I have said in my affidavit, is where the ego, your sense of self is encoded in the brain, and it's a complicated circuit that involves several

different lobes of the brain. It is the circuit in which you do all your thinking about your past, your present, your future, and you integrate your memories with your other cognitive processes like imagination, and planning, analysis, etcetera. Psychedelics disrupt that and that allows people to think very differently. It also explains why your sense of self can be changed because the default mode network being disorganized by psilocybin changes your sense of self, it can disorder your sense of place in space, in the universe, because the default mode network doesn't just encode your thinking about yourself, but your perceptions as to where you are in space, i.e. where you are sitting or lying when you have the trip. It breaks down the complex convergence of different sensory inputs which define where you are and where you feel you are. And that is why people often feel that they have atomized, that they have spread out into the universe. Some go into other dimensions, some go to heaven, some go to other places which are interesting and attractive. Some meet other creatures or people, good entities, and those experiences occur because the traditional way in which your brain has been organizing its understanding of the world is broken down by psychedelics.

Q. Are there positive benefits to turning off the default mode network?

A. Look, there is no doubt that if you want to think differently, you have to change the brain circuit which defines how you think. And interestingly, most people benefit from a psychedelic trip and our research and other's research suggests that the magnitude of that benefit has got something to do with the switching off of the default mode.

Q. Why do you think that is?

A. Well, as I've said already, breaking down the default mode allows people to think differently. It forces

people to experience different ways of thinking. That is what a psychedelic trip is. That is what the breakdown of the default mode does. Now, the fact that during the trip people see that they can think differently has two implications. The first, it makes them realize that they can change the way they think, and secondly, as I already mentioned, it also allows them, and very often they come out of the trip thinking differently about things that have bugged them, that have worried them, things that they've done which they feel regretful about, that they feel guilty about. They often come out and say 'Wow, I need to go apologize to that person' or 'My parents weren't that bad actually, really, why do I hate them when actually they did their best for me?' So, people reappraise many of their personal relationships as a result of breaking down this overlearned, deeply rutted form of thinking, driven by the default mode network.

Q. A study that you were involved in called "Increased global integration in the brain after psilocybin therapy for depression", the lead authors were Daws, Timmermann...

A. Mm-hmm.

Q. ...looked at the brain during the psilocybin experience. I'll just pause to make sure, Professor Nutt, you have that there. I see you holding up a paper. Your Honour, do you have that?

THE COURT: Just give me a moment.

P. LEWIN: Perhaps I'll ask....

THE COURT: Is this something that you referred.... Did you refer to this in your affidavit?

P. LEWIN: It's not in the affidavit, it would be in the doc – it is cited in the affidavit, but you received it, it was one of the documents sent along with the affidavit.

THE COURT: All right. So let me just.... Who are the major authors again?

P. LEWIN: Daws, D-A-W-S, Timmermann.

THE COURT: Yes, I do have that.

P. LEWIN: Thank you.

Q. So, Professor Nutt, you're familiar with this study?

A. I am, I'm one of the authors. It was done in my work at Imperial College.

P. LEWIN: Thank you. Your Honour, I'm gonna ask that this be made an exhibit.

THE COURT: Any objection to that, Ms. Benzakein?

K. BENZAKEIN: [Indiscernible]

THE COURT: Sorry, did I hear "No"? All right, thank you.

K. BENZAKEIN: No.

THE COURT: All right, that'll be exhibit 15 then?

COURT CLERK: Yes, Your Honour.

THE COURT: Thank you.

COURT CLERK: I'm sorry, what was the name of it?

THE COURT: Call it study, and the authors are Daws, D-A-W-S and Timmermann, T-I-M-M-E-R-M-A-N-N.

COURT CLERK: Thank you, Your Honour.

EXHIBIT NUMBER 15: Daws, Timmerman study - produced and marked.

P. LEWIN: Thank you.

Q. And Professor Nutt, just before we get into the substance of it, I'll note at page 846 on the right-hand side column, second paragraph, it appears that there were 22 patients – actually maybe the bottom line in that paragraph....

THE COURT: Sorry, what paragraph are we at?

P. LEWIN: Q. This is on page 846, and on the right-hand column, the second paragraph, it sets out how many participants, and it appears that from the – that there were 22 patients received psilocybin and 21 received the placebo. Professor Nutt, have I got that right?

A. So, let me explain the study. It's two – this is an analysis of two separate studies. Both studies gave psilocybin to people with treatment-resistant depression. Both studies had brain imaging of depressed patients before and after the psilocybin treatment. The first study had 20 patients, the second study had 30 patients. The timing of the imaging was different in both studies. In the first study the imaging was done one day after the trip, in the second study it was done three weeks after what was the second of a psilocybin trip.

The measure used was a measure we call modularity, it's a measure of how rigid are the circuits of the brain, the networks of the brain. Rigidity is the opposite of flexibility. So, the measure of increased flexibility is effectively the [indiscernible – someone coughs] of modularity. We measured how flexible the brain was in those two patient populations at those two different times, and both studies showed increased flexibility following psilocybin, either at one day or at three weeks. And on top of that, both studies showed that increased flexibility predicted clinical benefits, either at six weeks or at six months.

Q. I'll take you to page 848...

A. Mm-hmm.

Q. ...and on the right-hand column...

A. Mm-hmm.

Q. ...the second paragraph – oh, sorry, yeah, on the right-hand column, about the bottom eight lines, and I'll read it and then I'll ask you about that.

A. Mm-hmm.

Q. ...beginning with "In contrast":

> "In contrast, psilocybin seems to increase the brain's ability to visit a broader state space, both acutely and after psilocybin therapy in patients who are depressed and shown here. Moreover, this liberating action of psilocybin is parallelled by subjective reports of emotional release as well as subacute increases in behavioural optimism, cognitive flexibility and psychological flexibility after taking a psychedelic drug."

Does that make sense based on what was going on inside the brain?

A. Yes, it – so obviously those subjective reports were achieved sometime before, they were published in papers from the same group of patients. The Daws paper is actually unique so far in showing that the subjective experiences have a brain – have brain correlates. We can measure flexibility in the brain, and it correlates very well with cognitive flexibility that the patients express.

Q. Now, you have a preprint of a study, it's called "Human brain changes after first psilocybin use", and you understand it as "The insight study"?

A. Yes.

P. LEWIN: And Your Honour and my friend, the lead authors are Lyons, L-Y-O-N-S, Spriggs and Kerkelä, K-E-R-K-E-L-A.

THE COURT: Sorry, just give me a moment, I'm still copying the last one.

... PAUSE

THE COURT: Sorry, the next study you're referring to again, the authors are?

P. LEWIN: Lyons with a Y, Spriggs, two Gs, and Kerkela with two Ks.

THE COURT: Do you have that, Mr. Clerk? Study, Lyons, L-Y-O-N-S.

COURT CLERK: Is that going to be the next exhibit, Your Honour?

THE COURT: Yes, it'll be exhibit 16. Is that what you're going to be asking?

P. LEWIN: Yes, Your Honour.

THE COURT: All right. Lyons, L-Y-O-N-S, Spriggs, S-P-R-I-G-G-S, just leave it at that, that'll be sufficient to identify it.

COURT CLERK: Thank you, Your Honour.

THE COURT: That'll be exhibit 16 then?

COURT CLERK: Yes, Your Honour.

EXHIBIT NUMBER 16: Lyons, Spriggs study - produced and marked.

P. LEWIN: Thank you. So, Professor Nutt, I see you're one of the authors, so I take it you're familiar with this study?

A. Yes.

Q. Okay. And just tell us briefly this study is not yet published, what's the state of this study?

A. Well, yes, so this is a preprint, it's under review by one of the nature journals at present.

THE COURT: Sorry, just give me a moment. I'm having difficulty opening this. Yes, okay. Thank you. Go ahead.

P. LEWIN: Q. Thank you. So, if you could tell the court what was found in this study?

A. So, this was, I believe, the first study of psychedelic naïve volunteers, healthy volunteers that measured changes in the brain one month after a single high dose, a 25-milligram trip dose of psilocybin. So, it was a unique study

particularly because the comparison in the same people was a very low dose of psilocybin, a one-milligram placebo equivalent dose. So, we were able to compare the changes that were due to the psilocybin producing a trip, independent of all the other supportive measures that we put in around giving people psychedelics so we can eliminate the psychological elements of the presence of therapists, guides, etcetera, we can look very discretely at the impact of a trip on the brain. And what we found was that the trip dose produced profound changes in brain function during the trip but that these endured, there were changes that persisted up to one month afterwards.

THE COURT: Sorry, the changes again were to what?

A. Yes, sorry, I should have explained. So, the changes were the same changes as we were measuring in the previous study, the Daw study, which were patients. So, in this study they are healthy volunteers, but they showed reduced modularity, increased flexibility in terms of the physiology of their brains at one month after the trip. And that increased flexibility correlated with wellbeing.

P. LEWIN: Q. And wellbeing, I take it, were subjective effects that....

A. Yes.

Q. Okay.

A. What we found was this – so this may be a little bit more granular. We found that there were increases in cognitive flexibility, psychological insight and wellbeing. And when we correlated each of those with the flexibility, there was a significant correlation with the flexibility and wellbeing. And I could just say it’s extremely unusual, I’m not sure I can give an example in neuroscience where you can measure a change in brain connectivity and correlate it with a subjective benefit.

I think this is if not unique, certainly very unusual. So, this is quite a profound finding.

Q. And when you say that Professor Nutt, you're talking about other drugs and their impact on the brain?

A. No, I'm talking about the inability of brain imaging to correlate with psychological states of wellbeing or cognitive flexibility. I mean, obviously you can image the brain and tell whether people are awake or asleep, but to provide physiological brain measures that correlate with wellbeing is very special.

Q. And so, I guess that beyond drugs, any type of wellbeing is what you're talking about?

A. Yes. Let's just be very clear, psilocybin is only present in the brain for about four hours. So, these effects have been occasioned by the presence of psilocybin, but they massively outlive the duration of the psilocybin in the brain. And I believe this is an example, perhaps the best example we have today, to support the ski slope, the snow analogy, people think differently a month later as a result of having a short trip, because the psilocybin has disrupted thinking that's broken even in healthy people, the constraints and the habits and some of the less adaptive ways of viewing life, and allow them then to maintain that increased flexibility and a sense of wellbeing at one month.

Q. So, I'm going to take you to the next study and this one is attached at Exhibit B as in Bob, to your affidavit. And this one is Watts, Day, and I see you were also one of the authors of this study? Your Honour, you've got that?

THE COURT: Just give me a moment. Is this one of the ones you sent this morning as well?

P. LEWIN: No. Well, in a way, yes, it's part of the affidavit, Exhibit B of the affidavit.

THE COURT: But it's not one of the ones you sent this morning?

P. LEWIN: No.

THE COURT: All right. That's fine. I understand what you're saying. Just give me a moment to find that. (...Pause...) Yes, I have that.

P. LEWIN: Thank you.

Q. So, Professor, where did this data in Watts, Day come from?

A. So, this is what we call a narrative analysis of the patients in the first trial of psilocybin for treatment-resistant depression that my group conducted back in 2012 with MRC funding. This was a first ever trial of psilocybin or any psychedelic in treatment-resistant depression and it showed very clear, immediate and powerful therapeutic benefits. And it was then subject to detailed analysis of the individual patients who gave accounts, narrative accounts of what the trip was like and how it affected their outcomes. And the team of Watts and Day and Krzanowski, they conducted the interviews and analyzed data and came up with some very interesting and I think important understandings as to how psilocybin benefitted those patients.

Q. I'll start by taking you to page 10, which is - page 10 of the study or page 47 of the application record. And I'm gonna read a couple of quotes and then I'm gonna ask you about it. So, beginning around the middle of the page, "Many describe the sense of mental clarity, sometimes likened to a light going on or fog evaporating." And then there's a quote from a participant, "It flipped on a switch [indiscernible] inside out. It was like...." I'm just gonna hold on a second. Ms. Benzakein, do you have it there? Oh, okay. "It was like the light switch being turned on in a dark house." What does

this tell you about the experiences that these people are having? Is this a thought-related benefit that we're seeing?

A. Well, very definitely because yes, depression - and all these people were depressed, they'd all failed on conventional psychotherapy, they'd all failed to respond to at least two separate antidepressants, some have failed on more than ten. And they all got better to some extent and some got extremely better, some are still well now 15 years later maybe. And the response was so fast and that is why this light switch analogy is very powerful, because depression is very often described as a black cloud hanging over you, a black fog, a black dog, and the light switch analogy is that suddenly psilocybin breaks down the thought loops which make you think that, so you can think and see differently and feel differently. You are no longer depressed because you have switched out of a depressive circuit into a non-depressed circuit, which is now the dominant circuit relating to emotion.

Q. Is this what you were talking about when you discussed cognitive flexibility?

A. This is the start of it, but there's more to it than that. And so, switching out of it is obviously a necessary prelude to staying well. But in the brain of depressed people, there is something which drives their thinking in a depressive mode. Obviously, we know what starts it. We know that depression is strongly associated with deprivation, with trauma, with loss events like losing your job, or losing your spouse, so we know what causes depression, but we don't know where in the brain depression is encoded, but we know it's there because we can switch out of it. And this is one of the examples of how you can switch out of depression. But even though you've switched out of depression, you haven't got rid of the processes of

depression, and we know this from lots of other work that we and others have done with conventional antidepressants. Conventional antidepressants, they stop you being depressed but if you take them away the depression is still there. They're like wallpapering over the crack of a wall, you don't see that the wall's got a crack but you're not healing it.

Psychedelics do better than that. Psychedelics do disrupt thinking, they can in a way seal the crack in a wall, but they don't in some people, for reasons we don't understand, the pressure, the underlying drive to be depressed, the underlying deeply ingrained processes of depression come back. They fight back, they're like a weed, they regrow. And what people describe is that over time the depressive thoughts start to come back. But the ones who've had a psychedelic, they're more able to push them down. They can cut their heads off them, they can switch out of the depressive thought to a non-depressed thought, and that's [indiscernible].

Q. I'll take you to page 12, page 49 of the application record, and I'll read you a portion here from 2.3.1 [indiscernible].

> "Nearly half of the sample had realizations of being a good person and feelings of self-worth and self-compassion. 'I realized how nurturing and protective I am', said one participant, and another said 'I had an encounter with a being with a strong feeling that that was myself telling me it's all right. I don't need to be sorry for all the things I've done. I had an experience of tenderness towards myself. During that experience there was a feeling of true compassion I had never felt before.'"

A. So, those are two experiences of change, and they highlight – well, in a very profound way psilocybin can allow people to see their true self. Depressed people paradoxically

believe they are to blame for their depression, even if they have been traumatized, even if they've been abused, the brain turns on itself. And you can see that, people say, 'Well, I shouldn't have done this. Maybe it was my fault that, you know, I was attacked. Maybe it was my fault that my mother was nasty to me, maybe I was a bad child.' And depression is a particularly evil disorder because it starts off with people saying 'Well, I'm not really', but in the end they get to believe, that thought eventually takes over and becomes a belief rather than just a possibility. And these descriptions of people breaking away from their self-criticism and understanding and having compassion for themselves is truly remarkable because there are other forms of psychotherapy. There's compassion focused psychotherapy which is a growing and important branch of psychotherapy but it takes months or years for that to break through these barriers of depressive thinking whereas psilocybin can knock them down the space of a few hours.

Q. Are these observations relevant for people who don't have serious depression?

A. Yes, I think they're what you might call clinical manifestations of the phenomenon of changing the way people think - thinking in a more positive way, thinking in a more objective truthful about themselves. People who do commit nasty activities to other people don't get depressed, they're psychopaths. Depressed people are victims, and they punish themselves. Psychedelics allow them to escape from that in the same way healthy people will be able to see in a more clear way their relationships with thoughts, beliefs, attitudes which they have inculcated, allowed to happen to a lesser extent than in depression, but I think everyone has a degree of self-criticism which is probably inappropriate, to be full of anxiety which is probably not necessary.

K. BENZAKEIN: Your Honour, I'm sorry to interrupt, I have an objection. I wonder if the witness could be excused, please.

THE COURT: All right. We're just going to put you in the waiting room. No, you don't have to leave the room, we'll just turn you off and have you back in a few minutes, all right?

WITNESS: Okay.

THE COURT: Thank you.

COURT CLERK: He's in the waiting room, Your Honour.

THE COURT: Yes?

K. BENZAKEIN: Thank you. And I have no idea how to lower my hand. Okay. Yes, thank you, Your Honour. You know I've waited some time to make this objection to see if we were going to get out of this loop, but....

THE COURT: You're talking about out of the medical use loop? Yes.

K. BENZAKEIN: Thank you, Your Honour. Exactly. And I wanted to see how, if we were going to get out of it or how long it was gonna take, but I think we've gotten really far afield. This is not an application related to the medical use of psilocybin.

THE COURT: Right.

K. BENZAKEIN: It has to do with the thought-related effects of psilocybin and the freedom to exercise those thought-related effects. So, I have a few concerns, one is that this isn't relevant to the application, and the other much more practical concern perhaps is that I do not have the information or

expertise that I would need to challenge these assertions by Dr. Nutt. I only have what's been provided to me by my friend and I've assessed and analyzed it based on the application as it's been framed by my friend and the notice and Your Honour's ruling about expert testimony that we've received. So, I know this is a judge alone trial, Your Honour can disabuse your mind of anything, but I just – I'm concerned that as we continue to go down this path and we're hearing evidence like, you know, this is the only treatment that has worked for depression, I'm not in a position to challenge that assertion because I have no idea if this is the only treatment that's worked for depression because I don't have any data about it, it's not strictly speaking within the expertise for opinion evidence that Your Honour has provided to the witness. Anyway, I don't need to catalogue all of my concerns, but just to put it mostly as Your Honour did.

THE COURT: Well, I appreciate what you're saying that this is not a medical use case, it's a freedom of thought more broadly speaking. But as I understand what Mr. Lewin is trying to do is that he's saying, look, this is the effect it has on individuals with treatment-resistant depression, and this is where we get to the last part of his evidence before we excluded the witness, that these effects are also available to individuals who are not suffering from treatment-resistant depression to the extent that it allows them to develop other pathways of thinking, remove anxiety or bad thought processes, bad thoughts

about themselves, is that essentially what you're saying, Mr. Lewin, is that it's analogous – although it does seem to show some promise with treatment-resistant depression, that's not necessarily the issue we're dealing with, but it assists in evaluating its effect on others who don't suffer from treatment-resistant depression.

P. LEWIN: Yes, that's absolutely correct. He did speak a little bit more about the treatment-resistant depression than I had intended to elicit from him.

THE COURT: Sure.

P. LEWIN: He was thinking about the study and talking about that, but that – it is correct, it's not a medical case and we're not....

THE COURT: So, it's really by analogy?

P. LEWIN: Yeah. And what you said a minute ago, it is relevant to people who don't have treatment-resistant depression, everybody – nobody's perfectly well, and this does have – so it's relevant to the thought, yes, the medical is not there, that wasn't something that I intended to elicit, just he started thinking about the depression stuff and started talking about it, but that's not what this is going to be about at the end of the day. And I'll try and steer him towards - away from the medical issues.

THE COURT: All right. Well, that was my understanding, unless you have some issue with that, Ms. Benzakein, that it's basically by analogy, that it helps people with treatment-resistant depression and I suppose to the extent that we all have bad thoughts or experience bad moods from time to time or may be stuck in certain

thought processes that don't amount to clinical depression, that this might also assist. Fair enough?

K. BENZAKEIN: Yes, thank you.

THE COURT: All right.

P. LEWIN: Thank you.

COURT CLERK: Should I...

THE COURT: Yes, you can bring the witness back.

COURT CLERK: Thank you, Your Honour. He's now returned.

THE COURT: Yes, thank you. Continue then, Mr. Lewin.

P. LEWIN: Thank you, Your Honour. And Professor Nutt, I'll just say as much as possible - and you explained that depression can be felt with people who don't have - aren't sick, clinically diagnosed with serious depression, but I would ask you to – we are less interested in people with serious depression and at times we may have to talk about it to explain a point, but just so you know our focus in court is less about that.

WITNESS: Sorry. Okay.

Q. So, I have a question for you and of course my interest here is in people who are not seriously depressed, but in your view, why would psilocybin consumers have increased compassion for themselves?

A. Because they have a better appraisal of themselves. Because they are more able to see both sides of any position, feeling, emotion they have taken which may be negative towards themselves.

Q. And we talked about connectivity as one of the thought-related benefits, is connectivity relevant here?

A. Yes. So, just to elaborate for the court, one of the most obvious and reported effects of psilocybin is increased connectedness. The vast majority of people who use psychedelics get a sense in which they are more connected either to themselves or to other people or to the world in general, or to nature. And that is, I think, a direct consequence of the breaking down of the default mode network. The default mode network, as I explained, is an internally focused network which creates a sense of self by pulling together memories, attitudes, hopes, aspirations, etcetera, it's internally driven. By breaking that down, people see the world in a way as it is rather than as they have come to believe it to be, and often that results in people feeling more in touch with the world, because they're less internally focused.

Q. Thank you. And I'm going to take you to page 13, page 50 of the application record, and this is "Discovering new values and perspectives":

> "A sense of connecting to a new version of themselves was a very strong theme. Most patients reported having gained a fresh perspective on their lives. 'I was thinking about relationships I had with other people and thinking I could see them clearly as if for the first time. I had fresh insight into things. It was almost as if suddenly the scales dropped from my eyes. I could see things as they really are.'"

How common is it for a person who uses psilocybin to develop new values or perspectives?

A. Well, it's very common. It is I suppose one of the most reliable outcomes of a psychedelic experience. The ability to see things differently, to understand that you can think differently. I think the term "scales dropping from your eyes" is one that's very commonly used. Most people don't

understand how – maybe all of us are biased in that way, we create an internal narrative of ourselves on the world which generally suits our purpose and is to some extent constrained and driven by external pressures and other people, and psychedelics allow you to see, for a period anyway, whether that's [indiscernible] representation of yourself or not. And if you want to change you have the cognitive flexibility to change.

Q. I'm gonna now take you to page – or actually, we're there and I'll take you to a little over halfway down the page and I'm gonna read the first sentence then I'm gonna ask you about that. So, the first sentence is:

> "As a result of these lessons, there were some major lifestyle changes. Nearly half of the sample reported improvements to diet, exercise and cutting down on drinking alcohol."

What are your thoughts on this?

A. I mean, this is truly fascinating but it's not the first time this has been discussed, this actually just confirms. We know now that many addictions can be helped by taking psychedelics. Historic data shows us that, but modern data shows us that. And what is very interesting is that in America now the National Institute of Drug Abuse is conducting a major trial of psilocybin in smoking quitting. Why? Because 15 years ago Matthew Johnson there, asked people who'd stopped smoking why they stopped smoking to try to get insights into what the best ways of stopping smoking were. And he was astounded how many people had stopped smoking as a result of taking magic mushrooms. He then went on to do two studies which confirmed that in the experimental setting psilocybin [indiscernible] people from smoking. But the remarkable outcome, in one of his studies he shows that I think it was 12 out of 15 patients stopped smoking completely following two or three psilocybin treatments. That

is an unprecedented ability of any – no treatment for smoking cessation has ever gotten remotely that kind of outcome, which is why NIDA are now funding a big trial, because this could be a revolution in the treatment of tobacco addiction. But it's come from population studies showing many, many people change their attitude to drugs.

There's a subsequent study going on looking at helping people who are alcoholics cut down their drinking, published just a couple of years ago in the *American Journal of Psychiatry*, now going into a much larger study. So, people reframe their attitude to many things including food and drugs, almost always in a direction of being better for their health.

Q. And in this study where these observations were made, this was not about smoking cessation, this study?

A. This study....

Q. [Indiscernible] study we're looking at.

A. The Watt's study – no, the Watts study is just depressed people who often smoke more than they should because smoking is often used as sort of a surrogate treatment, self-medication, they were able to cut it down because it shows that depressed people respond to psilocybin in the same way as non-depressed people, reframing their attitude to being addicted.

Q. I'm gonna take you to page 15 of the study, page 52 of the application record, and I'm going to go to 2.5, "Connection to the world", I'm gonna read a little bit and then I'm gonna ask you a question about it.

> "Four patients described having powerful insights about the European refugee crisis during the dose which was unexpected and uncharacteristic for them. And some others reported becoming more concerned about global issues in the months after their treatment."

And then just continuing, skipping the quote but continuing one line down,

> "Some patients thought more about climate change, and many felt more connected to nature."

Do these thought-related benefits impact how people live their lives? And I know you've touched upon this, but have you seen these types of thought-related, these changes in attitudes impacting people's lives?

A. Yes, I have. The most remarkable example, I think, is not someone who is in a study of ours but in the UK the woman who leads Extinction Rebellion, they campaign to try to stop the loss of species, said that her whole life changed. She took a psilocybin trip and she realized that her purpose in life was not to be a sales person but to actually try to save species, and she's become an extremely effective campaigner and someone who is encouraging people who doubt the value of campaigning to help save species to use psychedelics to see it they can improve their understanding of their connectedness to nature. So, these are very common experiences. The connectedness to other people and the increased connectedness to nature, and therefore the desire to do the right things for other people and for nature.

Q. So, are you able to say are there certain themes that tend to emerge in terms of the changed focus in people's lives?

A. Yes, it is very common – it is the connectedness to the family, to friends, to the outside world, enjoying nature more rather than just observing nature, and being concerned to maximize the value of those connections to themselves and to encourage other people to engage in them.

Q. I'm gonna.... Yes?

A. And I think sort of as a coda to that, this is a positive feedback loop, engagement with nature tends to enhance a sense of wellbeing. And I don't need to go into it, but we know there's parallel campaigns to encourage people into nature for various reasons, but being in nature seems to promote wellbeing.

Q. So, I'm gonna take you to page 14 of the Watts study, page 51....

A. Mm-hmm.

K. BENZAKEIN: I'm sorry, one more time?

P. LEWIN: Oh, that's page 14 of Watts, page 51 of the application record.

K. BENZAKEIN: Thank you.

P. LEWIN: Q. And I'm gonna read you a series of quotes and then I'm gonna ask you to comment about it. Each of them are very short. 2.4, "Connection to others":

> "Some patients felt that they gained understanding about the circumstances of abuse that they reported having suffered in childhood. One participant felt a sense of compassion toward his mother, whom he said had inflicted unbearable suffering on him."

Jumping down a little bit to 2.4.2:

> "Patients described strengthening bonds with loved ones."

2.4.3 which is on the next page:

> "This sense of connection to people often extended to strangers such as shop assistants, people on trains and in the street."

And then 2.44, "All humanity":

> "Many patients described how the sense of connection seemed to spread wider, a deep connection to everyone."

And you've talked about this sense of connection that people have – first of all, do these quotes surprise you at all?

A. No. No, I think they just show that depressed people respond in the same way as non-depressed people who use psilocybin.

Q. And in terms of is this sense of connection – we described the separate thought-related benefit of empathy and compassion, is there a connection between a sense of connection and empathy and compassion?

A. Well, I suppose they're all part of the same collection of psychological processes which are essentially self-fulfilling, self-perpetuating, self-supporting, compassion, connectedness. It's difficult to be compassionate with someone you're not connected to. And if you're connected with someone, I think compassion comes along with it.

Q. Okay, there's one last quote I'm gonna read from Watts to you, and it's on page 40 of Watts and that would be page 77 of the application record.

THE COURT: Sorry, just give me a moment. Page 40 of Watts?

P. LEWIN: Yes. And I'm going to refer to six lines from the top.

WITNESS: Mm-hmm.

P. LEWIN: Your Honour, you're there?

THE COURT: Yes.

P. LEWIN: All right. So, I'm gonna read this sentence and then ask you about it. "It could be said that patients were not just losing symptoms of depression, but were in many cases gaining happiness...."

THE COURT: Sorry, this is at page 40? I don't see that.

P. LEWIN: Oh, so page 40 of Watts, or page 77 of the application record.

THE COURT: I'm sorry. I'm sorry. Just give me a moment. Page 77. (...Pause...) Yes, I see that. I see that. Go ahead.

P. LEWIN: Okay, thank you.

Q. So, beginning six lines from the top of the page, the sentence is:

> "It could be said that patients were not just losing symptoms of depression, but were in many cases gaining happiness, which has been defined as pleasure, engagement and meaning."

Professor Nutt, what do you think of that statement?

A. I have no doubt it is true. And the reason I say that is that following this study we went on to do another study where we – a second study already mentioned where it came out, the imaging data was in the Daws paper but the clinical data we've not talked about yet. That study was a larger number of people and as well as focusing on a reduction in depression scores, we specifically asked questions about wellbeing. So, we used a range of questionnaires, but the one that's perhaps most relevant here is a very validated scale, it's called the Warwick Edinburg Mental Wellbeing Scale, and it's a scale that measures wellbeing in populations wherever there's a concern about mental distress, mental illness. And the remarkable outcome of the psilocybin treatment in that second study was the profound and enduring increases in wellbeing that parallelled the reductions in depression score. So, psilocybin increases wellbeing almost certainly independent or at least wellbeing, as Watts says here, is not simply the absence of depression, it is those other changes we've talked about, like increased connectedness, increased compassion with self, increased interest in nature. Those changes I believe are fueling the long-term wellbeing that is experienced by people who take psychedelics, certainly a significant proportion of them, do improve wellbeing, whether they're depressed or not.

P. LEWIN: Okay, thank you. Your Honour, I'm going to move on from that. I'm not going to make Watts an exhibit because it's already an exhibit to his affidavit.

THE COURT: That's fine. Would this be an appropriate time for a break? Doctor, are you okay to continue?

WITNESS: I can continue, yes.

THE COURT: All right, go ahead.

P. LEWIN: Thank you.

Q. So, Professor Nutt, I am going to refer you to the next exhibit in your affidavit, that's Exhibit C, and this is the Griffiths, Richards study, 2008?

A. Yes.

Q. And this study begins at page 84 of the application record. And where did the data from this study come from?

A. This came from a study that was published two years before in 2006. And that 2006 study was very – the first modern era scientific study of the psychological effects of psilocybin, and it was done by a group - Roland Griffiths who is sadly no longer with us, but he was one of the leading psychopharmacologists in the world who had worked on a range of different drugs, caffeine, benzodiazepines, heroin, cocaine, and then began to explore psilocybin – psychedelics, but particularly psilocybin from the perspective of how it worked in the brain, how it produced changes that people reported previously it changed, and in a systematic way he showed in the 2006 paper you could have profound alterations in consciousness, in feeling, with significant benefits for the individual after. And now this is the 14-month follow-up to see how enduring were those changes following that single trip.

Q. Thank you. And the methodology is on page three of the study, which is page 86 of the application record under "Study Design".

A. Yes.

Q. And the number of participants in the study, Professor, can you just state that for the record?

A. Thirty-six volunteers.

Q. Okay. And how many received psilocybin?

A. So, all of them in the end received psilocybin.

Q. Okay. And then at the top of page four, page 87 of the application record, it indicates, "When the major drug effects have subsided the participants completed two questionnaires assessing subject drug effects", and they set out the rating scales, one is hallucinogen rating scale, and the other is assessing altered states of consciousness?

A. Mm-hmm.

Q. And then in the next paragraph I see they discuss the mysticism scale, are these rating systems well validated?

A. They are. They've been studied by numerous groups for the last 30 years.

Q. And what is a mystical experience?

A. Well, that's a good question. It's an experience - I suppose simply put, it's an experience that people find so far removed from the normal way of thinking that it seen as something that is in a sense beyond – something that can't be achieved in any simple way, it's not something that has been experienced. So, something that's got a magical, very difficult to explain, often associated with a strong sense of [indiscernible] meaning, a sense of understanding of self, of understanding the universe, of possibly even meeting God or other spiritual leaders. So, it's a whole collection of different experiences which can be rated separately.

Q. Is there a similarity to a non-psychedelic religious experience?

A. Yes, there is a very significant overlap between religious experiences that most religious don't have but are seeking. When they do achieve it, they describe it in the same terms of becoming one with a greater being, with a holy spirit or with God and therefore become very different usually in their attitudes. So, a spiritual experience is something that I think humans have over millennia happened upon and probably in the last 2000 years after Jesus, have been seeking to try to understand his, or become closer to his understandings, his teachings and get closer to the goal that they believe in but find it quite hard to actually become – to understand in a sort of emotional, personal sense.

Q. So, at page nine – and I'm not gonna read it but I'll paraphrase, but I'll take you to the page, page nine of the study, page 92 of the application record, and you discuss this in your affidavit. So, I'll just paraphrase the comment and this is really in the first two paragraphs under "Comment":

> The authors indicate that at the 14-month follow-up a large proportion of volunteers rated their psilocybin experience as among the most personally meaningful and spiritually significant of their lives. Fifty-eight percent and sixty-seven percent of volunteers respectively rated the experience as being among the five most personally meaningful experiences of their lives and the five most spiritually significant experiences of their lives.

Is this briefly felt or more sustained?

A. So, the experience of unity or understanding of a greater being or a greater presence or something beyond the human psyche, that is very common. The persistent – the memory, as I said earlier, persists forever. The relationship – whether that experience turns you into a believer or turns you into

someone that engages in other religious and spiritual practices obviously varies from individual to individual. But the people who have that experience tend to report themselves as being more spiritual ever after.

Q. Can you comment on the importance people place on these spiritual effects?

A. Well, this study was interesting because it was conducted in people who weren't particularly looking for spirituality, and I think that's why the paper became so important. It was conducted on people interested in consciousness, and it exposed – but I think Griffiths himself was surprised by it, that changes in consciousness tend to go hand – sorry, psychedelics, psilocybin induced changes in consciousness tend to go hand in hand with changes in spiritual feelings and mysticism during the trip, and that those changes during the trip were predictive of the benefits subsequently. And I can just quote you on page seven there, the bottom of that paragraph:

> "Sixty-four percent of the volunteers rated their experiences as increased wellbeing, life satisfaction either moderately or very much so, and sixty percent that experience of the trip was [indiscernible] with moderate or extreme positive behavioural change."

So, these are clearly enduring effects that continue in the real world, so to speak.

Q. Does ego dissolution have a relationship with spirituality? And this is of course in the context of a psilocybin experience.

A. Oh, I very much believe it does. The concept of the ego is obviously a concept developed by Freud, but it has always been known that within each individual human there is a sense of self, and it's been known certainly since modern Christian times that the breaking down of the sense of self is

a necessary, or certainly a helpful steppingstone to getting spiritual insight and understanding. The ego gets in the way of truly communing with a higher being. So, prior to psychedelics in western culture – obviously, in many other cultures psychedelics were used widely to help people get closer to God, their gods, but in western culture we have – weren't knowledgeable about this, but we know historically, you know, centuries, maybe millennia, monks used behaviours which would break down the ego, would break down their sense of individuality. They lived in communes, they worked together as teams, they deprived themselves of sleep, they prayed enormously throughout the day. They were part of a process which was essentially to break down the individual, individual's beliefs and therefore break down the default mode.

And of course, I mean, you can make the case as I have made in one of my books, that the whole experience that Jesus had of becoming – of understanding he was the son of God emerged as a result of 40 days, 40 nights in the desert, which would be extent of extreme metabolic health challenge which would certainly have made it easier for him to experience God, his God, because it would have changed the ability of his brain to maintain a prior sense that he wasn't. And we know – we have for centuries people seeking that kind of insight, like knights, you know, hunting for the holy grail, they would put themselves through extreme stress overnight, sleep deprivation, praying in pain for hours in order to break down their resistance to their being something greater than them.

Q. And if I have this right then, the ego dissolution is a natural byproduct of the default mode network being deactivated?

A. Correct. Correct.

Q. So now I'm going to finish off with Griffiths. I'll take you to page 10, page 93 of the application record, this will be my last question about Griffiths. Four lines down....

K. BENZAKEIN: I'm sorry, the page one more time?

P. LEWIN: Page 10 of Griffiths, page 93 of the application record.

K. BENZAKEIN: Thank you.

P. LEWIN: So, Professor Nutt, I'm gonna read this and I'm gonna ask you about it.

> "Finally, unstructured written comments in a retrospective questionnaire completed a follow-up, asked what was most memorable and spiritually significant about the experience. Responses were suggestive of a sense of unity, the unity of all things and merging and/or encounter with alternate reality which is a core aspect of mystical experience as described by James and Stace and as assessed by the mysticism scale."

And you've touched on this already, what role does unity play in a mystical experience?

A. So, a mystical experience is associated with a sense in the individual of understanding things that they were seeking. And that understanding is usually accompanied by a sense of being part of everything, being part of the universe, being part of the Christian brotherhood, being part of the world in a physical sense much more than being an individual.

THE COURT: Would you describe that as being more communal and less autonomous?

A. Well, that is – indeed, that's right. Yeah, becoming part of a greater – a greater thing than oneself, whether it's a community or whether it's life. People often see in a psychedelic experience, they see that – they understand what they are which is what we all are. I mean, we are all made up of atoms which were made 14 billion years ago, and

they've come together in different ways to make us different people. But surprisingly, during trips people see that we are – as religion teaches us, we are from dust and to dust we will go, but we are an interesting - a phase of creation in that particular 14 billion years of activity. And that understanding is strangely often quite positive for several reasons, particularly it means you never die. You know, you get rearranged, your body will get rearranged, but you never die, and that is where psychedelics have such powerful value in helping people deal with end-of-life distress.

P. LEWIN: Thank you, Professor. Your Honour, I'm moving on to the next study, should I keep trucking or is now a good time for a break?

THE COURT: No, now would be a good time. Let's take 20 minutes and we'll return at noon, all right? Or at least our time. Thank you.

WITNESS: That's perfect. Thank you from me too.

R E C E S S

U P O N R E S U M I N G :

THE COURT: All right, so let's return to the Akila matter then.

P. LEWIN: Thank you, Your Honour.

DAVID NUTT: PREVIOUSLY AFFIRMED

EXAMINATION IN-CHIEF BY P. LEWIN CONTINUES:

Q. So, Professor Nutt, I'd like to now refer you to the Belser, Agin-Liebes study. And Your Honour, this is one of the studies that was forwarded this morning.

THE COURT: All right, just give me a moment. (Pause) Belser, Agin-Liebes study.

P. LEWIN: Yes, please.

COURT CLERK: Will this be the next exhibit, Your Honour?

THE COURT: Just give me a moment. And is this a study that was referred to in the affidavit as well?

P. LEWIN: It was not referred to in the affidavit.

THE COURT: All right, but he wishes to rely on it?

P. LEWIN: Yes.

THE COURT: Any issue with marking that as the next exhibit, Ms. Benzakein?

K. BENZAKEIN: No. Thank you, Your Honour.

THE COURT: What are we up to, exhibit?

COURT CLERK: Seventeen, Your Honour.

THE COURT: So, exhibit 17 will be the study of Belser, B-E-L-S-E-R, - just leave it at that, that's fine that'll identify it sufficiently. Thank you.

COURT CLERK: Thank you, Your Honour.

EXHIBIT NUMBER 17: Belser study - produced and marked.

P. LEWIN: Thank you, Your Honour.

Q. Professor Nutt, so you are familiar with this study?

A. Yes, I am.

Q. All right. Was it a good quality study?

A. It was.

Q. What was it about?

A. It was about the experience of patients who had a cancer diagnosis, a terminal cancer diagnosis being given psilocybin to see if it would improve their quality of life.

Q. And in terms of numbers, on page five under "Method" I see at the very top it indicates there were 13 participants, have I got that correct?

A. Um, yes.

Q. And then a little lower down in that "Method" paragraph, it looks like, and this is just about nine lines from the bottom, the sentence that begins with "Participants were randomly", have you got that?

A. Yes.

THE COURT: What page are we on?

P. LEWIN: Oh, that's still on page five.

THE COURT: All right, thank you.

P. LEWIN: Q. So, the paragraph under "Method" about nine lines from the bottom of that paragraph – actually more like six lines from the bottom, it indicates "Participants were randomly assigned to one of two oral dosing sequences, first psilocybin, and second niacin or first niacin and second psilocybin", does that sound right?

A. Correct.

Q. Okay. And then I'll take you to page 17, under "Wisdom Lessons", the first sentence states, "Every participant expressed gaining transpersonal insights into the nature of the universe or existence during the course of their psilocybin session." What are transpersonal insights?

THE COURT: Sorry, just give me a moment to catch up here. This is on page 17?

P. LEWIN: Page 17.

THE COURT: Yes?

P. LEWIN: Under "Wisdom Lessons".

WITNESS: At the bottom of the page.

THE COURT: Yes, I see that. Just give me a moment. Yes, go ahead.

P. LEWIN: Thank you.

Q. So, Professor Nutt, I'll just read this sentence for you: "Every participant expressed gaining transpersonal insights into the nature of the universe or existence during the course of their psilocybin session." What are transpersonal insights?

A. They are experiences of, or understandings that oneself isn't the sole source of knowledge or arbiter of experience and that in the psilocybin trip you can experience things which were beyond your comprehension until you had the trip.

Q. And in terms of whether this is a thought-related benefit, would this be life meaning?

A. Well, these experiences are in many ways comparable with mystical experiences. The sense of – I mentioned this in the answer to my last question, the sense of being more than just the human being suffering from cancer and about to die, that you actually are part of a greater existence which is meaningful beyond you as a living entity.

Q. And you mentioned about a human being who is about to die, but in your view, is this an experience that could be had by a healthy person?

A. Oh yes, it's part of the experience of mind expanding, of understanding that the way every person's mind assesses the world and themselves is – can be expanded, is limited, there are extra perspectives, extra insights which can be generated and are generated during a psilocybin administration.

Q. Are we using the full capacity of our minds?

A. Well, clearly not.

Q. Okay. In your view, does psilocybin impact how much of the mind we can use?

A. Well, what it does is allow us to use our minds I think more creatively, more efficiently and with more flexibility,

but for some people and not everyone, it can allow people to see, to experience things which they didn't dream they could experience.

Q. All right, I'm going to take you to page 22 of Belser and I'll take you to the top sentence on page 22:

> "Participants described the shift in their life priorities away from the busy demands of modern work life to find a deeper or more authentic mode of existence."

Is this move after psilocybin away from the busy demands of modern work life" common?

A. It is. People see that – they see two things. They see that there are alternatives and they also see that they have perhaps been seduced or commandeered or coerced into a way of living/thinking which they might not have particularly wanted but have not had [indiscernible] desire to challenge, and psychedelics give them the confidence, I think, that there is an alternative perspective which for many people is quite enlightening and does contribute to wellbeing, that there are better ways in which they can live which will sustain them. And this term "authenticity" is commonly used, they understand that the way in which they have thought about life up to that point hasn't been entirely under their own volition and after psilocybin they can make more of a choice.

Q. Thank you. And then I'll take you to page 23 of Belser, and this is at the top of the page.

THE COURT: Sorry, page?

P. LEWIN: Page 23.

THE COURT: Yes?

P. LEWIN:

> "Some participants describe the sense of empowerment lasting well after their psilocybin experience. 'I'm so much more

> able to do things that I wanted to do and didn't know I could, something always holding me back.' Participants described other ways in which they connected to a new sense of themselves as a result of the treatment."

Are you surprised by these comments and the fact that it lasted well after the psilocybin experience?

A. No, this is a common experience for healthy people taking psilocybin. What is interesting is that it is also seen in these people with these terminal diagnoses. And actually, what's quite interesting also, we can't prove it statistically, there is a suggestion that this change in attitude and personal insight may actually have prolonged their lives. We can't say that categorically, but they all had terminal diagnoses but some of them lived quite a long time, and it may be that improved wellbeing contributes to longevity.

Q. So, just before I leave Belser, I'll just take you to page six and confirm when the interviews were conducted. And I believe this is set out at the top of page six. So, there were 13 participants, and it looks like it says, tell me if I have this right, five of the participants were interviewed within one week, following their second psilocybin dosage session, and eight of these participants were interviewed at approximately one year follow-up?

A. Correct.

Q. Okay. Now I'm going to take you to Leary, Litwin, Metzner, which is one of the studies that was emailed this morning.

K. BENZAKEIN: Your Honour, could I just have a moment? My computer is doing a funny thing.

THE COURT: Is this the one on religious experience?

P. LEWIN: No, this is "Reactions to psilocybin administered in a supportive environment".

THE COURT: Sorry, the name of the authors?

P. LEWIN: Leary, Litwin, Metzner.

THE COURT: Oh yes, I see that. All right. Just give me a moment. (...Pause...) Yes?

P. LEWIN: Thank you. And is Ms. Benzakein's computer...?

K. BENZAKEIN: Yes, I'm there. Thank you.

THE COURT: All right, thank you. And do you wish to have this marked as the next exhibit, ultimately?

P. LEWIN: Yes, please.

THE COURT: No objection, Ms. Benzakein?

K. BENZAKEIN: None, thank you.

THE COURT: All right, exhibit 18 will be the study of Leary, Litwin and Metzner.

EXHIBIT NUMBER 18: Leary, Litwin, Metzner study - produced and marked.

P. LEWIN: Thank you.

Q. Professor Nutt, you are familiar with this study?

A. I am.

Q. All right. What is it about? Actually, before I ask you that let me ask you who is Ralph Metzner?

A. Oh, Metzner is one of the pioneers of understanding psychedelics as consciousness enhancing agents and his work has underpinned our understanding of their impact on the brain and also one of the platforms on which the therapeutic work has developed.

Q. Is he respected?

A. He's highly respected. In fact, he has - one of my trainees is now the Ralph Metzner professor at the University of California, San Diego, so they named a chair after Metzner in honour of his contributions.

Q. So, what is this study about?

A. This really is the beginnings of the modern era of psychedelic – sorry, psilocybin research. It was done by Timothy Leary, who is obviously very famous for his work with LSD, but Metzner was particularly interested in plant products. And as I guess most of you will probably know, the vast majority of psychedelics including LSD are originally derived from plants, LSD is a semisynthetic plant product. The point about that is that these – the plants have been used for many thousands of years in many different cultures around the world. Metzner was particularly interested in the revelations of the use of psychedelic mushrooms, psilocybin mushrooms in Mexico, and how they have had a very strong cultural importance, particularly in terms of helping people deal with life problems and building social cohesion. And Leary - you may not know, but Leary's original psychedelic experience was also with Mexican psilocybin before he moved on to study LSD. But this study is one of the first systematic studies of psilocybin in a semi-scientific setting since he tried to bridge the gap from shamanistic use in Mexico to the modern era.

Q. And at the top of the first page, on the top left, about seven lines down, the authors state:

> "Interest in substances has been stimulated by the achievement of chemists, most notably Dr. Albert Hofmann of the Sandoz Laboratories in Basel, Switzerland, who have successfully synthesized the active agents in these plants."

And I know you described this as – well, I won't say more, let me ask you, what are the authors discussing?

A. So, psilocybin as we use it scientifically in scientific studies today is a specific molecule, synthesized to be purer. Obviously, it exists in the mushrooms, but other things exist in the mushrooms too. Now, psilocybin can be extracted

from mushrooms and there are some companies now that are developing that extract for therapy. But Hofmann made LSD from another plant called lysergic acid which is in ergot. And then he got hold of psilocybin mushrooms, extracted the active ingredient and identified it as psilocybin. And then he said this is actually structurally similar to LSD, a smaller molecule, it turns out its effects are much shorter acting than LSD that he made it. And then the company he worked for, Sandoz, who by that point were allowing LSD for research in many centres around the world, they made this molecule, the synthetic psilocybin available as a medicine called Indocybin and for about ten years it was available for clinical research and treatment in various countries, particularly Switzerland and the USA.

THE COURT: So, do I understand correctly, Doctor, that the psilocybin that's being used now in most trials is a synthetic?

A. Most trials, but we are doing trials with the plant extract as well. But let me be clear, no one is doing trials with the mushroom.

THE COURT: Right.

A. Because with the mushroom you can't be absolutely sure how much there is in every dried mushroom.

THE COURT: All right, it's either an extract or a synthetic.

A. Correct.

THE COURT: All right.

P. LEWIN: Q. And how widely used was the Sandoz psilocybin product?

A. Well, it was a medicine, I think it was probably used by many hundreds of doctors around the world, more particularly in Europe and North America, and Australia too.

Q. And when did Sandoz stop making psilocybin available?

A. In the mid-1960s, the early ’60s there was concern in the USA about the impact that LSD was having on the anti-Vietnam war movement and there was pressure put on Sandoz to stop making it available, but they effectively gave all their supplies to the US government. Research carried on, particularly at the university in Baltimore, that’s the University of Maryland in Baltimore which was sort of the national centre for psychedelic research. I think Sandoz stopped making psilocybin unavailable about the same time. But I must say, it has been continued to be used in Switzerland for research and for some patients since.

Q. So now, in this study the authors on page 563 of the study top left, second line under “Subjects”, the authors indicate that “Psilocybin was administered to 175 Ss”, that would be 175 participants?

A. Yes, that’s right, yes.

Q. Okay. And then on the right-hand side, page 563 – actually, you know what, I’ll take you to page 564, and I’ll go down, right-hand column, 13 lines from the bottom...

A. Mm-hmm.

Q. ...the authors state, “88 percent learned something or had insights, 62 percent reported that the experience changed their lives for the better.” So, is that your understanding of...?

A. That is.

Q. Okay.

THE COURT: Sorry, page 564 you said, on the left-hand side?

P. LEWIN: Right-hand side.

THE COURT: Oh, right-hand side. I’m sorry. How far down?

P. LEWIN: Um, how far down? It is about – about 13 lines from the bottom, beginning with "88 percent".

THE COURT: Oh, I see that, yes.

P. LEWIN: "88 percent learned something or had insights, 62 percent reported that the experience changed their lives for the better."

Q. And actually, just to be clear, at the very top of page 564, they state "A total of 157 Ss were asked to complete the questionnaire after their initial sessions, 98 or 62 percent returned them", is that correct, Professor Nutt?

A. Correct.

Q. Okay. And then on page 570 left side, second paragraph down, and I'll read that paragraph:

> "In a supportive setting with a positive set, experiences with psilocybin tended to be reported by Ss as pleasant, educational and life-changing."

And do you agree with those findings?

A. I do.

THE COURT: Sorry, page 570?

P. LEWIN: Left-hand column, second paragraph down.

THE COURT: Yes.

P. LEWIN: Q. So, Professor Nutt, what did you think of the methodology in this study?

A. I think it's perfectly appropriate for that time and working with a very new kind of medicine.

Q. Would it meet current criteria?

A. Well, it's similar to the data we collect from people having experiences in retreats and other centres today. We ask them about the experience, and we get them to rate it both positively and negatively.

THE COURT: The results are the same but is the methodology something that would be accepted today?

A. Well this at the time it was cutting edge...

THE COURT: Sure.

A. ...because it was published in what is now the [indiscernible] of psychiatry. Today, we would probably want to do better blinding, have some placebo, but in effect they did that because they used – they basically were collating data from a range of different doses and some of the doses didn't do much and some of the doses did. So, I think we're in a situation today where we – we would have probably done a more systematic blinding, but they happened upon some real blinding anyway.

COURT CLERK: Court's indulgence, Your Honour. I just want to make sure. There's someone who joined named Val, is this a future witness?

VAL: Yes?

THE COURT: I'm sorry, who are you?

VAL: I'm Val Curren, Professor Val Curren from London.

THE COURT: Oh, are you expecting to call this person as a witness?

P. LEWIN: No, Your Honour.

THE COURT: All right, she's an observer, that's fine. Thank you.

P. LEWIN: Q. So now I'm gonna take you to Leary, "The Religious Experience" and I'm not gonna make this next one an exhibit, and I'm providing it just so that you can follow along, but I'm not gonna make that an exhibit. Professor, you're familiar with this, I'll call it a review, is that correct?

A. I am.

Q. Okay. And on page 325, and that's the first page, on the right side, four lines down...

A. Yes.

Q. ...they say, "We have arranged transcendent experiences for over one thousand persons from all walks of life."

THE COURT: Sorry, can you just tell me what page again. You're going a little too fast for me, Mr. Lewin.

P. LEWIN: Oh, my apologies. So, it's marked page 325, it's actually the first page 'cause the first page has 324 and 325.

THE COURT: All right.

P. LEWIN: So, the right-hand side of that first page, and then four lines down from the top.

THE COURT: Beginning with "We have arranged"?

P. LEWIN: Yes.

THE COURT: Yes, all right.

P. LEWIN: Q. "We have arranged transcendent experiences for over one thousand persons from all walks of life." And have I got that right, that that's what they did in this review?

A. Yes. So, this is an extension of the previous paper where at the time Leary and Metzner and colleagues were exploring the dose effects of psilocybin, working out what the appropriate dose was, coming to the conclusion interestingly that we ourselves came to independently in the modern era, that 25 milligrams was about the optimal dose. And then looking at the impact on over a thousand people, and also looking at the safety too.

Q. And then staying with page 325, the second paragraph, and I'm gonna go to the last sentence in the second paragraph, and I'll read this beginning with "At this point".

A. Yes.

Q.

> "At this point, it is conservative to state that over 75 percent of the subjects report intense mystical religious responses and

considerably more than half claim that they have had the deepest spiritual experience of their life."

A. Well, that is consistent with very much the - our modern data.

Q. And was this done individually or in groups?

A. Some of it was individual, some of it was in groups.

Q. All right, thank you. And now I'm gonna move on to Weiss, Roseman, Giribaldi, Nutt, which is one of the studies that was emailed.

K. BENZAKEIN: Your Honour, before my friend moves on, I would like this study to be made an exhibit. My friend's read from it, he's put it to the witness...

THE COURT: I think it should be as well.

K. BENZAKEIN: Thank you.

THE COURT: I'm going to mark it as the next exhibit. That will be – just give me a moment.

COURT CLERK: Exhibit number 19, Your Honour.

THE COURT: Exhibit 19, call it study, Leary, "Religious Experience".

EXHIBIT NUMBER 19: Leary, "The Religious Experience" study - produced and marked.

THE COURT: Go ahead.

P. LEWIN: Thank you.

Q. The next study that I'm going to refer to is Weiss, Roseman, Giribaldi, Nutt, 2024, which is one of the one of the emailed studies.

THE COURT: Give me a moment. All right. So, this will be exhibit 20 then, on consent?

K. BENZAKEIN: Yes, thank you.

THE COURT: Study, Weiss, Roseman, W-E-I-S-S, R-O-S-E-M-A-N.

COURT CLERK: Thank you, Your Honour.

EXHIBIT NUMBER 20: Weiss, Roseman study - produced and marked

P. LEWIN: Q. So, Professor Nutt, you are familiar with this paper, I take it?

A. I am. Shall I just explain the origins of it? It's another paper that's come from the what was the first ever controlled trial of psilocybin versus the current best standard antidepressant for depression, Escitalopram. So, the first time two different treatments for depression had been compared head-to-head. And the origins of it was a fundamental question. I have already explained that psilocybin can produce a rapid and profound benefit in reducing depressive symptoms, but it was unclear whether the actual change in depressive symptoms was produced through different mechanisms to the current treatments. The current treatments take four to six weeks to work, but it's possible in the end they may work in the same way. And what this study shows - and in fact the earlier Daws study shows, we didn't go into it - was that they don't, they work differently. There are different mechanisms underpinning psilocybin therapy for depression compared with the standard SSRI therapy, which probably explains why it works when people have tried SSRIs and they didn't work.

Q. I'll take you to page 807, and I'm gonna take you to the second large paragraph, and about nine or ten lines from the bottom of that paragraph.

THE COURT: Sorry, page 807?

P. LEWIN: Yes, please.

THE COURT: I'm not seeing page numbers on my copy but just give me a moment.

P. LEWIN: It's the second....

THE COURT: Oh, yes, I see that. Sorry. Just give me a moment.

P. LEWIN: Very good.

THE COURT: So, is this – yes, go ahead.

P. LEWIN: Q. All right. And so, we are going to the second large paragraph, nine lines from the bottom, and I'm gonna read beginning with "Outside of clinical trials".

THE COURT: Just give me a moment to find that. Nine lines from the bottom?

P. LEWIN: Yes, please.

THE COURT: Page 809 or 807, sorry?

P. LEWIN: Oh 807.

THE COURT: Give me a moment.

K. BENZAKEIN: Sorry, could my friend just confirm what page?

THE COURT: I don't see that on page 807.

P. LEWIN: Oh, so this is Weiss, Roseman, Giribaldi, and I have the second page is page 807 in the top right-hand corner. At the very top of the page it says, "Of action of psychedelic therapies".

THE COURT: Yes, I see that.

P. LEWIN: Okay. The 807 should be in the top right.

THE COURT: I'm sorry, the sentence you're referring to starts with?

P. LEWIN: Yeah, so it's the second large paragraph, nine lines from the bottom of the second large paragraph beginning with "Outside of clinical trials".

THE COURT: I see that. All right.

P. LEWIN: Q.

> "Outside of clinical trials the relevance of acute experiences to positive mental health outcomes post-psychedelic use has

> found additional support. Not only mystical experiences but also experiences of emotional breakthrough, psychological flexibility and [indiscernible] have demonstrated associations with adaptive changes in negative emotionality and wellbeing. Indeed, evidence has been found that emotional breakthrough and psychological insight are especially strong moderators of improved mental health outcomes, post-psychedelic use."

Do you agree with these comments, Professor Nutt?

A. I do.

Q. Okay. Are you familiar with these studies that were referred to in this paragraph?

A. I am, yes. Several of them again, are analyses of our own work.

Q. In this study, Weiss, large psilocybin doses were associated with thought-related benefits, am I correct?

A. They were. They were associated with improved outcomes of depression, so whereas the same was not true for the antidepressant.

Q. Okay. And you know our focus though is less on depression and more on the thought-related benefits. Was – actually, I'll take you to Table 1 on page 818, and the 818 is in the top left-hand corner.

THE COURT: Just give us a moment to find that.

WITNESS: Yes.

P. LEWIN: Q. Thank you. So, Professor Nutt, were thought-related benefits – did psilocybin produce thought-related benefits?

A. It did. It produced thought-related benefits across a range of separate variables such as mysticism, positive mood, the sense of oneness, ego dissolution, emotional intensity,

emotional insights, all very significantly greater than what was seen with the Escitalopram.

Q. All right. And if I have the numbers correct, on page 811, and I believe that is – yes, page 811, please.

THE COURT: Yes?

P. LEWIN: Q. And Professor Nutt, before I ask you about the number of participants, where did this data come from? Was it from this study or from an earlier study?

A. So, these data come from the *New England Journal of Medicine* paper, Carhart-Harris et al that we published which was the comparative study between the psilocybin treated group and the Escitalopram treated group.

Q. And would that be Carhart-Harris 2021?

A. Correct.

Q. Okay. And in terms of numbers, it looks like at the 811, they say, "Fifty-nine patients with diagnoses of MDD and they were randomized, either had the psilocybin therapy arm or the" – I'm gonna mispronounce this...

A. Escitalopram

Q. Thank you. And perhaps spell that for the record, if you could?

A. E-S-C-I-T-A-L-O-P-R-A-M.

Q. And in the ET arm there were 29 patients, is that correct?

A. Correct.

Q. Okay. All right. So, I'm gonna take you now to the next study. It is Gukasyan, Davis and it would be one of the emailed studies.

THE COURT: Sorry, what's the name of the study again?

P. LEWIN: It's called "Efficacy and safety of psilocybin assisted treatments for major depressive disorder, perspective 12-month follow-up"

THE COURT: All right. Well, I can't see that on the - but what's the name of the authors?

P. LEWIN: Gukasyan, Davis, Barrett.

THE COURT: All right, I see that. Thank you.

K. BENZAKEIN: I'm sorry to interrupt, Your Honour. I think I've lost the thread on the exhibits. Have we made Weiss and Roseman an exhibit yet?

COURT CLERK: Yes.

K. BENZAKEIN: Yes?

THE COURT: Yes, that was Exhibit 20.

K. BENZAKEIN: Thank you.

THE COURT: So this will be exhibit 21 then?

P. LEWIN: Yes, please.

THE COURT: And this is Gukasyan, Davis, Griffiths study, 2022.

COURT CLERK: Thank you, Your Honour.

EXHIBIT NUMBER 21: Gukasyan, Davis, Griffiths study, 2022 - produced and marked.

P. LEWIN: Thank you.

Q. Professor Nutt, you are familiar with this study?

A. I am.

Q. Okay. What was it about?

A. It was about the brain changes which are – it was a study exploring the mechanisms of therapeutic benefit in another trial of psilocybin for depression.

THE COURT: Sorry, can you say that again, slowly?

A. Sorry. So, this is a one-year follow-up of a group of patients who were treated with psilocybin, a single dose of psilocybin and their depression scores were monitored for a year. As well as they had measures of change in various psychological factors at the time of the trip and subsequently.

So, this study was looking at how persistent, how enduring was the benefit of the psilocybin trip on depression and whether there were any factors in the trip during the treatment that predicted outcomes.

P. LEWIN: Q. And I see on page 153 under "Results, Participants"...

A. Yes.

Q. ...and am I correct in saying 24 completed both psilocybin sessions?

A. Yeah, let me just explain. The design was quite a sophisticated design. Half the group got psilocybin and half the group were put on a waiting list. And then the second – the waiting list group did not respond because they didn't get treatment, but then they were given psilocybin. So, half – but the other group who had psilocybin first were given it again, so some of them had two doses and some had one dose.

Q. Thank you. And then there was a follow-up after one year?

A. Correct.

Q. Okay. How would you describe the thought-related effects after one year?

A. Well, if we move to the table, the Table 2 on page 156, top of page 156, and so the columns represent times and we're interested in the 12-month follow-up, the two right-hand columns.

THE COURT: Just give me a moment there while I copy and paste this.

WITNESS: Yes.

THE COURT: Just one second here.

WITNESS: Mm-hmm.

THE COURT: Yes.

A. So, there was overall a very powerful effect of the treatment to keep people out of depression for up to a year. But what this table looks at is the experiences during the treatment trip, the reports. In the left-hand column, called "Session Measures" and those are Personal Meaning, Psychological Insight, Spiritual Significance, Psychological Challenge and Mystical Experience. And then if you go across to the far end, this study is asking the question to what extent did changes in those variables during the trip, to what extent do they predict outcome at 12 months. And you see three of them were highlighted, or bolded, and one of them was starred. And the starred means significant, a very high level of significance, less than one in a hundred chance of that being an error, whereas the bold is less than one in 20 chance of it being an error.

THE COURT: Say that again. Use of star indicates?

A. The star indicates that the chance of that – so, sorry, let me explain what the numbers mean first. The numbers are the relationship between the scores in column one, the session measures, and the outcome at one year. A perfect correlation would be a score of one. No correlation would be a score of zero. So....

THE COURT: So, a .6 would be a high correlation, I can see that.

A. Yes. And you can test the significance and the significance testing says the likelihood of that happening by chance is one in a hundred. The two bold ones, .45 and .5, the chance of that happening is one in twenty. Now, typically in science we say one in twenty chance is acceptable. Data that's likely to be less chance than one in twenty is deemed significant. One in a hundred is deemed very significant. So, what this tells us is that personal meaning, what they got out of the trip, the

spiritual significance of the experience, and the mystical experience strongly correlated – or significantly, sorry, significantly correlated with wellbeing at 12 months in people with depression. And psychological challenge, having a challenging experience which many patients have when they are given this medication, that didn't correlate at all. So, the message here for us is that wellbeing was predicted, wellbeing scores were elevated at 12 months and were predicted by changes occurring during the experience and not simply by reductions in mood.

P. LEWIN: Q. So, am I correct in saying that the experience of the trip was found to be more relevant to wellbeing than depression?

A. That is correct, because if you look at the very right-hand column – if you look at the very right-hand column, those are the depression scores. There were some – almost the same for personal meaning, .43 versus .45, it didn't quite reach significance. I mean, clearly spiritual significance was not significant also. So, it goes in a similar direction, except perhaps for the mystical experience, but none of those reach significance, whereas for the wellbeing three of the [indiscernible] reached significance. And this is important because this suggests that the outcome, the difference in improvements in wellbeing are independent, or at least not driven just by the improved mood. They are separate - which is what we also found in our study which was reported in the Weiss study, that people recover from depression by losing depression scores, but also their wellbeing is another major element in the recovery, particularly with psilocybin, because in our study, escitalopram did improve wellbeing but to a very significantly lesser extent than psilocybin.

Q. Thank you. The next study is Roseman, Nutt, Carhart-Harris, 2018.

THE COURT: Yes, I see that.

P. LEWIN: Thank you.

COURT CLERK: Will this will be exhibit 22, Your Honour?

THE COURT: Do you want this marked as the next exhibit then? It'll be exhibit 22.

P. LEWIN: Thank you.

THE COURT: That's on consent, Ms. Benzakein?

K. BENZAKEIN: Yes, thank you.

THE COURT: All right.

P. LEWIN: So....

THE COURT: Sorry, just give us a moment. Thank you.

EXHIBIT NUMBER 22: Roseman, Nutt study - produced and marked.

THE COURT: Yes, go ahead.

P. LEWIN: Thank you.

THE COURT: Actually, it's one o'clock now. Would this be a good time for a break, perhaps?

P. LEWIN: Yep. Certainly.

THE COURT: All right. So, we'll take the lunch break then, return at 2:30.

K. BENZAKEIN: If Mr. Lewin could just stay for one moment please, Your Honour? I just need to ask him a clarifying question.

THE COURT: Sure. All right, I'll leave the courtroom then. Thank you.

R E C E S S

U P O N R E S U M I N G :

THE COURT: All right. Good afternoon, everyone.

K. BENZAKEIN: Your Honour, before we resume...

THE COURT: Yes?

K. BENZAKEIN: We're having ... internet ... trouble.

THE COURT: Yes, I can hear that, or not hear it, as the case may be.

K. BENZAKEIN: I'm sorry, Your Honour, I don't know if you can hear me. We're having some internet trouble at the office. IT says there's nothing they can do. ... switch between documents ... five minutes and reduces strain on my computer while it opens this document, and then hope that it's better, if that's agreeable. I think I'm hung up.

THE COURT: All right, we'll stand down for a few minutes then. Just let us know when you're ready, okay?

K. BENZAKEIN: Thank you, Your Honour.

THE COURT: All right, thank you.

R E C E S S

U P O N R E S U M I N G :

THE COURT: Good afternoon. All right, we got the technical difficulties worked out, Ms. Benzakein?

K. BENZAKEIN: For now. I'm advised that the internet is down across the justice network, so it may happen again.

THE COURT: All right.

K. BENZAKEIN: I'll just tell Your Honour it looks like the trouble starts when I move between documents. So I may just ask for indulgence here and there, if we're able...

DAVID NUTT: PREVIOUSLY AFFIRMED

THE COURT: All right. So, I think we ended up on Exhibit 22, which was the Roseman, Nutt study?

P. LEWIN: Yes. So, I'll pick up there, Your Honour.

EXAMINATION IN-CHIEF BY P. LEWIN CONTINUES:

Q. Professor Nutt, you are familiar with this paper?

A. I am, I'm an author, yeah.

Q. Okay, you're an author of it. And tell us what it was about? Keep in mind that of course our interest isn't primarily treatment-resistant depression, although of course you're gonna have to, by necessity, touch on it, address it to some extent.

A. Well, this was another way of addressing the question we addressed, for instance, in the Weiss paper, but this is an earlier paper. It looks at the first trial we did of psilocybin in treatment-resistant depression, and it looks at changes in psychological symptoms that occurred during the trip, and asked the question which of them predicted improvements in depression symptomatology at the end of the trial. And in essence, it showed two things. It showed that the mystical experience, which is called oceanic boundlessness, the sense of being part of a much bigger entity than oneself, predicted good outcomes. The greater the experience of what we mentioned before, the transpersonal experience, the greater, the better the outcome. And conversely, the more there was anxiety about ego dissolution, the worse the outcome. They both point to the discussion we had earlier, that ego dissolution is an important variable in achieving change in essentially feelings such as wellbeing and depression.

Q. All right. I see on page one, under "Materials and Methods" in this it appears that 20 patients for treatment-resistant depression had one session with psilocybin, have I got that right?

A. Two sessions. So, this was the first time we had given psilocybin to depressed people. The ethics committee was concerned about its safety profile because it had never been done - well, not since the '60s, so they required us to do a low dose

of 10-milligram, what you might call a safety dose, and then if that was tolerated, and they all were tolerated, we could then go the next week to give them the trip dose, 25-milligram.

THE COURT: Twenty-five, all right.

P. LEWIN: Q. And I know they refer to dread of ego dissolution or – and then they call it DED, what is dread of ego dissolution?

A. Well, it's the fear that you might change your perception of yourself. You might find that you are not the same person as you were before. During the trip, that you might actually have a profound alteration in your sense of self during the trip.

Q. And you mentioned it and I see in the study the oceanic boundlessness is referred to as OBN.

A. Yes.

Q. And what is that?

A. Well, that is the sense of there being more to you in the world than you thought before, the sense of your mind being opened and your perceptions allowing you to see things in a much broader, bigger universal fashion, that your mind is open to the scale of what your mind can take in, which is essentially opened up to the whole concept of there being a universe out there that you are part of.

Q. Now, on page four, the right-hand column, the very bottom of the page under "Discussion", I'm gonna read that and it's gonna carry over onto page six, page five are charts.

A. Mm-hmm.

Q. So, beginning at "Discussion" on page four, bottom right:

> "Consistent with our prior hypothesis, psilocybin induced high OBN, sharing features with mystical type experience, and low DED, similar to anxiety, predicted positive

> long-term clinical outcomes in a clinical trial of psilocybin for TRD, (treatment-resistant depression). This result replicates those of previous studies, showing that psychedelic induced peak or mystical type experiences are predictive of positive long-term outcomes."

And then I'll skip over cites and continue:

> "This relationship appears to be somewhat specific in that OBN was significantly more predictive of positive clinical outcomes than altered visual and auditory perception endorsing the moniker psychedelic mind reviewing over hallucinogen when referring to this class of drug, at least in the context of psychedelic therapy."

Do you agree with those comments?

A. Yeah, very much so. And it was interesting, if you remember back to the Gukasyan paper, they found something similar subsequently. And I think this talks to a very important point, which is it's not that giving psilocybin in bigger doses may produce bigger effects, but bigger is not necessarily better. Bigger visual hallucinations will not predict a better outcome, whereas bigger mystical experiences do. And it suggests that you're looking at different parts of the brain which are generating these experiences and I suppose it's sort of almost common sense, it is more likely that changes in the way you perceive yourself are likely to be more relevant to changes in the way you think in the long term than visual experiences, which come from a part of the brain that isn't particularly related to personality or imagination or other factors like that.

Q. And on page seven, on the left, and I'm looking at the third paragraph down, so this is page seven on the left, the third paragraph down, and I'm gonna read just a sentence, and it begins four lines down, and then I'm gonna ask you about it:

> "Consistently, writers on the mystical type peak experience have reliably identified loss of self or ego dissolution as one of its basic prerequisites and features."

And I see they cite James, 1902; Stace, 1960; Massel (ph), 1964, so I take this as they're not referring to psychedelic only experiences, they're talking about any type of mystical type peak experience?

A. That is correct, yes.

Q. Okay. So, I guess – I'll hand it over to you. So, first of all, you do agree with my take on that?

A. I do, yes.

Q. What do you think of what they're saying there?

A. Well, they're saying that to change the way you think you have to change the way your ego controls how you think. You've got to dissolve the current ego and therefore allow its constraints over the brain to be broken down so that you can reform your ego in a new manner with less of the problems or with less of the constraints that it was imposing on your cognitive processes before.

Q. Thank you. So, is it fair to say based on that and what you said just now that a mystical experience even without psychedelics usually involves ego dissolution?

A. It does, as I explained before lunch that people seeking mystical religious experiences over the years have been – over the millennia having conscious that the ego, the sense of self which is generated over one's lifetime in some ways is a block to achieving that spiritual union with a higher being, you have to break it down in order to get to where you want to in a spiritual sense.

Q. So, I'm going to now move on to the next study which is Carhart-Harris, Erritzoe, or for those going by their

title, "Neural correlates of the psychedelic state". And I'm just gonna hang on a second, to make sure our switch to the next study was smooth for everybody. I'm not looking at anyone in particular but...

THE COURT: Just give me a moment here. Carhart-Harris, Erritzoe, yes, and Williams. All right?

P. LEWIN: Ms. Benzakein, are you good?

K. BENZAKEIN: I'm there, thank you.

THE COURT: Content we mark that as the next exhibit? It'll be exhibit 23.

P. LEWIN: Thank you.

THE COURT: All right.

EXHIBIT NUMBER 23: Carhart-Harris, Erritzoe study - produced and marked.

P. LEWIN: Q. So, Professor Nutt, you are familiar with this paper?

A. Yes, it's again another one from my team.

Q. All right, I see your name on there. What's this paper about?

A. Well, this is a landmark paper because this was the first paper to properly explain how psilocybin worked in the brain. And it uses an imaging technique called MRI, two different MRI modality were used, two different experiments, to valuate what the acute psychedelic experience was, and it showed profound changes in neural activity, particularly in the default mode network.

Q. What were the changes in the default mode network?

A. Well, the network became very much less coordinated, it began to dissolve. In fact, the network dissolved as the ego dissolved.

THE COURT: What do we call that network again, the...?

A. Default mode network, DMN.

P. LEWIN: Q. So, I am going to refer you now to the next paper. This is Goodwin, Aaronson, Alvarez also known as "The role of the psychedelic experience in psilocybin treatment".

COURT CLERK: That's exhibit 24.

THE COURT: Sorry, just give me a moment. Goodwin, yes, just give me one second here. Yes, on consent, Ms. Benzakein, exhibit 24?

K. BENZAKEIN: Yes, thank you.

THE COURT: Thank you.

EXHIBIT NUMBER 24: Goodwin, Aaronson, Alvarez study - produced and marked.

P. LEWIN: Q. All right. So, Professor Nutt, you are familiar with this paper?

A. I am.

Q. And what is this paper about?

A. Well, this paper is an attempt to address the question of how you deal with the blind – how you deal with making - in clinical studies, avoiding people knowing what they're taking. So, if one gives one person a high dose of psilocybin and another person a placebo, it's very likely in the most cases the person who gets the high dose of psilocybin will know they've had a high dose of psilocybin. So, you get – it's very difficult to maintain what we call a blind between those people who have not had psilocybin and those who have. There is a possibility that knowing you've had psilocybin or it's true for any [indiscernible] knowing that you're on a particular medicine, which you believe may help you because otherwise why would the study be being done, [indiscernible] in favour reporting it has helped you. And even if you're looking at healthy volunteers, it is possible that knowing what you're on may change, you know, your rating scales on the subjective measures.

So, what this study does, this study takes out data from what is currently the biggest and best trial of psilocybin in depression that has been done. It was a unique study, a multi-centre study conducted, I believe, in eleven different countries with people who had treatment-resistant depression and they were randomized to three doses of psilocybin, a low dose, a very low dose, a one-milligram dose, an ineffective dose, which in the insight study we have confirmed has no impact on the brain or on changes in connectivity. A middle dose, a 10-milligram dose, I would call that a midi-dose, and a high dose, a trip dose, the standard dose we used in our treatment-resistant depression studies, in fact this study is a direct, sort of replica, it derives from our study which we just discussed in the Roseman paper.

So, this clinical trial showed really quite convincingly - convincingly to the point where now they have moved on to a much larger study, which is the last steppingstone towards clinical approval, it showed very clearly that the 25-milligram dose produced a significantly better clinical outcome in depression than either the one-milligram or 10-milligram dose. But, of course, the criticism is still there. People know that the 10-milligram dose is generally less likely to produce effects than a 25-milligram dose, and a one-milligram dose is almost unlikely to produce effects other than psychological effects that you're in a trial and you're being treated by a therapist, etcetera.

So, Goodwin said, well, hang on, maybe there's some data within the low doses which could address the question of was the study fully blinded. And he discovered that significant number of people, particularly in the 10-milligram dose, did have quite powerful experiences. And he was able then to correlate the size of the experience in each of those three dose arms with the outcomes,

and he showed where there was a significant psychological experience then there was in parallel or consequentially, I would say, clinical benefits.

THE COURT: Right, but the people getting the 10-milligram dose would presumably know they're getting 10 milligrams, right?

A. No, this is the point. No one – these studies are completely blinded. It's a clever design, it's a design we actually invented but which they've used. Everyone gets to know – everyone knows they're getting psilocybin. Everyone gets the full range of preparation, support, integration, debriefing afterwards, all the psychology or preparation is the same, it's just that they either get a low dose, a middle dose or big dose. And it turns out that the 10-milligram dose some people did have profound breakthrough experiences, mystical type experiences. Why that is, is not yet fully known. It's likely that some people are more sensitive than others. It may be in some people they absorb it faster or to a higher level than others. But the point is it wasn't the dose that predicted outcome. Yes, the different doses gave different outcomes but within any dose, the magnitude of the experience, the psychedelic experience, was also predictive of outcome.

P. LEWIN: Q. And the numbers here, Professor, and I believe this is set out on page 525....

A. Yes, this was the biggest study done to-date.

Q. I think under "Participants" it states 233 participants, does that sound right?

A. Yup.

Q. Okay.

A. Equally divided between the three doses, 79, 75 and 79.

Q. Okay. And you've kind of addressed this already, but participants did experience thought-related benefits in the high dose and some in the 10-milligram dose?

A. Correct.

Q. Okay. So, is there a link between psilocybin and seizures?

A. Only in people on lithium.

Q. Okay. All right. So, now I'm going to move on to the next study, and this one is called "The abuse potential of medical psilocybin according to the 8 factors of the Controlled Substances Act" or it's also you might have it under Johnson, Griffiths, Hendricks.

COURT CLERK: That'll be exhibit 25.

THE COURT: Yes, just give me a moment. All right, Johnson, Griffiths, Hendricks, exhibit 25, on consent, Ms. Benzakein?

K. BENZAKEIN: Yes, thank you.

THE COURT: All right.

EXHIBIT NUMBER 25: Johnson, Griffiths, Hendricks study - produced and marked.

P. LEWIN: Q. So, Professor Nutt, you are familiar with this paper?

A. I am.

Q. And what is it about?

A. It addresses the very vexed question of the scheduling of psilocybin which, as you may know, is currently scheduled within the schedule that contains the most harmful and dangerous recreational drugs. So, in my country, the UK, it's Schedule I, in America it's Schedule I, in the UN Conventions

it's Schedule I, I'm not entirely sure [indiscernible] the Canadian scheduling but it will be alongside other drugs that are deemed both very harmful and without medical value, such as crack cocaine, crystal meth.

K. BENZAKEIN: Your Honour, I have an objection.

THE COURT: Yes. Let's put the witness in a breakout room then, or in another room. Thank you. Just give me a moment.

COURT CLERK: He's in the waiting room.

K. BENZAKEIN: Your Honour, its Schedule III.

THE COURT: I was gonna say. I thought so, yes.

K. BENZAKEIN: I see you with your Code open. So, I mean I think it's likely obvious – I mean, the witness is wrong, I can certainly cross-examine him about that. But I think more to the point, the witness has not been qualified as an expert in Canadian drug law and, you know, I'll happily cross-examine him about it later, but in the meantime it would be my submission that that's not what he's here to tell the court about and he's not qualified to give an expert opinion about that.

THE COURT: About where it should be on a schedule?

K. BENZAKEIN: And what the scheduling means in Canada. He's referenced like, what it means in the UK, what it means in the US, these aren't areas in which he's been qualified, the scheduling of controlled substances.

THE COURT: Just give me a moment.

K. BENZAKEIN: Of course.

THE COURT: What do you say to that, Mr. Lewin?

P. LEWIN: The point – what he's going to get into here, this is not about how psilocybin should be

scheduled in Canada, and it's not even about how psilocybin should be scheduled in the United States, US specific. But it's about the safety discussion within the study. So, I just asked him to give us some broad context about what the study is about, and he explained that it is a discussion in the context of how psilocybin should be scheduled in the US. But that is not the takeaway at all, that's not what I'm getting at. I'm not going to be talking about that later about how it should be scheduled or how it should be scheduled in Canada. So, he's not talking about scheduling in Canada, and he's not really talking about scheduling in the US, that's not really what we're getting into this about. It talks extensively about psilocybin safety and the bigger picture of psilocybin safety and why – so that's what this is about, so....

THE COURT: Well, if I could, I'm assuming he's going to say that, for example in the UK, that psilocybin is in the same schedule as another drug, X, and that the dangers of the two drugs are different, in his opinion?

P. LEWIN: No. No. Actually, it'll be – there's eight factors in the *Controlled Substances Act* in the US, that's actually in the title, and so he's just – they just look at the different factors and discuss the extent – where psilocybin fits from a safety perspective.

THE COURT: All right.

P. LEWIN: So, it's really just a – it's like a tool to examine the different safety aspects of psilocybin. So, there are some comparative aspects, so don't get

me wrong, for sure there's comparison to other drugs as part of this and he's qualified to give that evidence. But it's not so much about – it's not about the scheduling at all, it's about the discussion underlying how it fits in safety-wise. It's a safety discussion that we're into.

THE COURT: Ms. Benzakein, does that satisfy you or not? He's not going to tell us where it should be scheduled, although I suppose indirectly he is, but he's saying it may not have the dangerousness that it's listed under, would that be fair to say, Mr. Lewin?

P. LEWIN: Well, even more so – like, the safety discussion helps us understand how safe this is. Like, there's a lot more – we have a lot more information at our hands than just clinical studies is what we're gonna see here. And so, that's really what it's about is all the different ways we can learn about safety. And yeah, it's not a commentary on – I mean, it does indirectly talk about how it's scheduled in the States, but that is not what I'm asking him to testify about. I want him to testify about the different safety measures, what we've learned about psilocybin from a safety perspective. And it does look at it relative to other drugs though, so....

K. BENZAKEIN: Your Honour, I think the difficulty is how the witness framed it. The witness told the court with certainty that because the drug is scheduled in Schedule I then that means it's the most dangerous drug with the worst safety profile. And I'm not giving evidence, just as part of my submission, I'll tell the court that I also understand that Schedule I – when drugs are scheduled in the UK

under Schedule I you can't do any medical – clinical trials on them. That's a big part of Dr. Nutt's research and a big part of his advocacy. So, my concern here - and of course I'll say again, it's a judge alone trial, Your Honour will hear submissions from my colleague, you'll be able to sort out the weight of it, but my concern is that we're hearing from this witness his opinion cloaked in his expertise, about what it means for something to be put in one schedule or another, and I think that exceeds his expertise as Your Honour has defined it. So, I'm very happy....

THE COURT: Is that an opinion though? Is that an opinion or is that just stating what the legislation says?

K. BENZAKEIN: Well, the legislation doesn't say it.

THE COURT: All right.

K. BENZAKEIN: I think what Your Honour would find if we explore this area, which I don't think we should do, is that scheduling decisions are a matter for Parliament or Congress, and that they reflect certain political aims, certain – and this is the witness's position in some of his own writings, that scheduling reflects a lot more than dangerousness. And so, entering into this field of what gets a drug scheduled in Schedule I, II, III or whatever, I think it gets into something far more expansive than the way my friend's framing it.

THE COURT: All right.

K. BENZAKEIN: But Your Honour has my submission. Again, Your Honour will hear me or my colleague on the weight to be given to it, so I put that out there

for Your Honour to bear in mind and see where we go from there, if the court's content.

THE COURT: Anything to add there, Mr. Lewin?

P. LEWIN: Um, well, as I say, like, within the study – I guess there's two parts to this. One is can he discuss scheduling at all, and I think he's qualified to talk about the safety of psilocybin relative to other drugs, but this is really a vehicle for us to get into the underlying discussion about the safety, which is much more important than how they scheduled it. I mean, in fact....

THE COURT: He doesn't really need to get into why it's in a particular schedule per se, he can certainly talk about the dangerousness of psilocybin relative to other drugs that happen to be in the same schedule. But as to why they're there or whether they should be there, that really is getting into an area that I don't think he's been properly qualified to opine on. It's just a question of comparative, I suppose a comparative analysis of psilocybin and its effects versus other drugs. That's what I'll take from it in any event.

P. LEWIN: Okay. All right.

THE COURT: All right. Thank you.

COURT CLERK: Should I bring him back in, Your Honour?

THE COURT: Yes.

COURT CLERK: He's returned.

PROFESSOR NUTT: Hello?

THE COURT: Yes. So, Doctor, I appreciate you're going to talk about scheduling and I want to stay

away from why things are scheduled – or I want you to stay away from why things are scheduled as they are, because as I understand it, there are some policies in there. I appreciate you want to comment on the dangerousness or lack thereof of psilocybin as compared to other drugs that may perhaps be in the same schedule, and that is clearly permissible. So, let's try to keep it within that range of evidence, okay? Thank you.

WITNESS: Okay.

P. LEWIN: And Your Honour, just one more thing, and this is just a small – I don't think we have to have the witness go out for this, but the paper – he will at times refer to these eight factors in discussing the safety, but he's not gonna talk about the merits of those eight factors.

THE COURT: Right. They're in the article, so he can – yeah, he'll refer to them. All right. Thank you.

P. LEWIN: Thank you.

Q. So, Professor Nutt, I'll start you off on page 144, and I'll take you to the right column, so that's the second page of the study, and I'll take you to the right column.

A. Yes.

Q. And I'm gonna read a passage to you and I'm gonna ask you to comment:

> "The 1970 placement of psilocybin, LSD, and other hallucinogens in Schedule I of the *Controlled Substances Act* did not reflect an absence of therapeutic benefit although the scientific evidence at the time was mixed."

THE COURT: Sorry, I apologize, Mr. Lewin, I'm just getting there, and I have to find it.

P. LEWIN: Oh.

THE COURT: So, it's the first page of the article?

P. LEWIN: Yes – oh, second page of the article, page 144, and I'll just go at that again – and so this is right-hand column, second line from the top.

> "The 1970 placement of psilocybin, LSD, and other hallucinogens..."

And Your Honour, again, I'm going to be talking a little bit about the why, that's not where I'm going but just a warning.

> "The 1970 placement of psilocybin, LSD, and other hallucinogens in Schedule I of the *Controlled Substances Act* did not reflect an absence of therapeutic benefit, although the scientific evidence at the time was mixed. This mixed evidence included strong, at least for the time, pharmacological studies as discussed later in this review, although with clinical studies suggesting potential safety and efficacy that were nonetheless considered by leading researchers during the 1960s to be limited and not sufficient to support efficacy and safety claims for LSD or other hallucinogens."

So, in terms of the evidence, what's your view of the early clinical studies on psilocybin?

A. Well, the evidence was clearly supportive of it having therapeutic potential. I think further down that paragraph you get a statement relating to the – the drug that was controlled was LSD because LSD was seen as being – as causing social unrest, particularly in relation to the Vietnam war and being associated with the anti-war, anti-bomb protesters. And psilocybin was sucked in because, as we said earlier, Hoffman showing it was chemically, structurally, and as others have shown, functionally

similar to LSD, there was never any concern whatsoever at the time, and I think [indiscernible] says that, that psilocybin was a problem. But it, along with a number of other drugs like dimethyltryptamine, [indiscernible] were also banned because of chemical similarities, not because there was any evidence or misuse or harm, it was just – almost a generic ban on drugs with a similar pharmacology.

Q. I'll take you to page 145, and the column on the right and I will begin six lines down, so I'll read you this and then I'll ask you about it:

> "Since the 1970s extensive national drug use and effects surveillance systems have been developed in the US which show that the prevalence of abuse and serious adverse events associated with psilocybin and other classic psychedelics are relatively low compared to other major classes of abused drugs."

So, what are they referring to when they say "extensive national drug use and effects surveillance systems"?

A. Well, they're referring to studies which you come to further on in the paper, like Table 4 and Table 5, which look at the prevalence of use of these drugs, or psilocybin, as you can see from Table 5, it's up to five percent of Americans have used it. And if you go to Table 4, you can see that very few of those hundreds of thousands – well, it would be 8.5 percent of Americans is what that 8, that 30 million people have used it and you've got very, very small percentage of those getting into harm and needing visits to emergency rooms, Table 4, and very, very few of them having any call on the services which treat people with drug abuse and drug addiction, which is also in Table 3. So, basically, they're saying psilocybin has been used by many, many millions of people and there's very little evidence that many of them come to any harm.

Q. What's an effects surveillance system?

A. So, the surveillance systems are systems which collate information from different sources. It can be from reports of adverse effects, the DAWN system, it can be for people attending emergency rooms with drug-related problems, or it can be for people seeking treatment, as in the TED system. These are independent ways of assessing potential harms of different drugs, and they all give you an aggregate estimate of comparative harms.

Q. I'll take you to page 146 – actually, you know what, let me go back to 145, bottom of the page, on the right-hand column, bottom paragraph, and I'm gonna read that, it's gonna spill over a little bit into 146 and then I'll ask you about that.

> "The scientific assessment of the abuse potential is based on the scientific evaluation of substances going back to the early 20th century search for abusable analgesics."

A. Less abusable.

Q. Sorry?

A. It's for less abusable.

Q. Oh, thank you. Thank you.

> "By the 1960s such evaluations included stimulants, sedatives and psychedelics. This science and its methods of assessment along with other considerations including population level, public health impact, were brought together in the 1970 CSA in the form of the eight specific factors for the assessment of what has been termed abuse potential. The term recognized that problematic use of substances could occur in people who were not physiologically dependent or addicted."

I'll stop there. So, tell us a little bit about what you know about this early review of the evidence evaluating the safety of substances going back to the early 20th century?

A. Well, abuse was initially thought – the major concern with drug use in the first part of the century was dependence and withdrawal. And what this development was directed towards was trying to get a more valid measure of the different elements of abuse and the harms of abuse. So, rather than just thinking clinical cases of people who were, say, in alcohol withdrawal, it was trying to collect in a more systematic way across these eight separate dimensions of potential harm which could be applied to drugs weren't necessarily limited to drugs which were already widely used. Because obviously if a new drug comes along and it's not much used, then you won't see much harm, but you can potentially estimate harms using other methods, not least of which was the propensity of animals to self-administer a drug which is liked by animals and they administer a lot, could be predicted to be abused and liked in humans. And that's now been a major factor in determining whether new analgesics, painkillers, should be released. If animals like them greatly it's likely humans will like them greatly. So, that was one of the ways of expanding the scientific base, the scientific basis on which we understand the potential harms of drugs and the likelihood of them being misused. A drug that is liked is more likely to be misused than a drug that isn't liked.

Q. So, taking you to page 146, left column, fourth paragraph down, and this is the paragraph just before number 2, "Evaluation", and I'll read it and ask you what the authors are saying.

> "The present eight factor analysis benefits from the fact that psilocybin is not a new chemical entity devoid of real-world data. Rather, we have been able to draw from more than half a century of research and various types of therapeutic use as well as surveillance epidemiology. However, it suffers from the

> fact that most of the research has not been conducted as part of a cohesive sponsored drug development program that had FDA input throughout much of the development. Thus, in this review, we attempt to note particular strengths and weaknesses in studies and gaps in the study portfolio that will likely need to be addressed before filing an NDA."

So, what are they talking about there when they talk about it's not devoid of real-world data?

A. Well, they're pointing out that over history hundreds of thousands of people have been exposed or taken psilocybin without any noticeable negative effects. In the '50s psilocybin was a medicine, was made available by Sandoz from '57 to about '64, widely used by educated doctors in carefully monitored fashion, without any evidence of significant harms. Those response relationships were defined – it was a medicine, it just wasn't a medicine that had gone through the new system which was - at that time the FDA was beginning to orchestrate a much more rigid set of guidance for approval of medicines which included pre-clinical toxicology studies on animals. Psilocybin hadn't been through that because it didn't need to be because it was a medicine before those rules were brought in. They're simply saying, well, if you require that to know a drug is not harmful, then you couldn't say that psilocybin wasn't harmful, even though of course it obviously wasn't because it had been a medicine.

Q. So, staying on page 146, under "Pre-clinical Studies 2.11"...

A. Mm-hmm.

Q. ...this is page 146, the top right, I'm gonna read that and....

THE COURT: Just give me a moment to get there.

Top right, yes?

P. LEWIN: Thank you.

> "Psilocybin has been evaluated in a variety of pre-clinical models of physical dependence and abuse potential yielding qualitative generally similar findings with LSD. These similarities included increased pulse, respiratory rate, and pupil diameter but no physical dependence or withdrawal. Pre-clinical models of abuse potential suggest weak reinforcing effects and weak stimulus generalization to substances of high abuse potential."

Professor Nutt, what are they talking about there when they talk about "weak reinforcing effects and weak stimulus generalization"?

A. What they're saying is that animals will not administer psilocybin whereas they will self-administer cocaine, amphetamine, opiates and to some extent, alcohol and nicotine. So, they're saying essentially psilocybin is not addictive.

Q. And then if I could take you down to – staying with page 146, right side, the large bottom paragraph...

A. Mm-hmm.

Q. ...six lines down from the top of the paragraph, and I'm gonna read the passage and then ask you to explain what's being said, beginning with "Discriminative stimulus".

A. Yes.

THE COURT: Sorry, just give me a moment. This is page 146, you said?

P. LEWIN: Yes.

THE COURT: Bottom right? All right.

P. LEWIN: Bottom right, yeah. Bottom, big paragraph, six lines from the top of the paragraph.

> "Discriminative stimulus effects refer to the ability of a drug, upon administration,

> to serve as cue that can predict environmental contingencies, which of two levers will result in the delivery of a reward if pressed? Discriminative stimulus effects can therefore be thought of as the ability of the right to be recognizable to the organism and therefore serve as a cue. Discriminative stimulus effects are different from reinforcing effects and have different biological bases."

So, what are they talking about there?

A. Well, this is a sort of converse of self-administration. What they're saying there is if you train a rat – you could do the same for humans as well, to detect cocaine and you give a rat amphetamine, it will often think it's getting cocaine because those two stimulants have a very similar pharmacology. If you take the cocaine-trained rat and give it psilocybin it knows it's not cocaine and therefore it doesn't press the cocaine lever to get reinforcement because it knows it's not the same. So, these experiments show that animals, as humans, can clearly distinguish between amphetamines - cocaine, opiates - and psilocybin. And the reason these experiments are done is largely to complement the self-administration. It's possible that an animal might not like taking psilocybin, but it might be that a human who's addicted to cocaine might. It's possible that the brain might change if you're a cocaine addict and you might then want to take lots of psilocybin. And the answer is of course they don't, and the animals don't either.

Q. Okay. So, I'm gonna now move to page 147, and under 2.1.2 and I'm gonna read the top eight lines and then ask you about it.

> "Psilocybin has not been examined in an abuse potential study that would meet the criteria recommended by the FDA in its 2017 guidance assessment of abuse potential.

> However, many clinical laboratory studies have been conducted since the mid-'50s in which key measures of abuse potential have been assessed. This work began in the US public service addiction research center of the National Institute of Mental Health, during the time that the methods of human abuse potential were being developed."

So, are you familiar with these clinical laboratory studies that were conducted since the '50s?

A. Yes.

Q. So, tell us about that?

A. Well, shall I first explain the FDA?

Q. Yes, please.

A. So, before any new medicine that affects the brain can get any FDA approval, there has to be estimates of its abuse liability. But they're completely new medicines, so who can tell? You know, maybe they will be abused. The way those studies are done is to take people who use lots of drugs and bring them into a clinic and then give them the new drug and see if they like it. And the best measure of liking is asking them what the street value would be if they – what would they pay for it in comparison with what they're paying for the heroin or the fentanyl or the cocaine they are using. And if the street value is very low, then it's pretty likely it won't be abused. So, that's what is required today. Now, no one has done that really with psilocybin because everyone knows it's not abused anyway. The US government discovered that back in the early parts of - or the late part of the 1950s. And there's no company in the state of getting to - why would you bother to do a study which you already know the answer to, because psilocybin is not a new drug, it's a very old drug.

However, because there is a whole business in America – I mean there are laboratories there which are set up simply

to service the FDA requirements of abuse liability, which is enormous expense, by the way, for developing new medicines, and one of the reasons we actually struggle to develop new medicines because of the cost. But the groups that have worked on developing this methodology for assessing harms have looked at psilocybin and they have come to the conclusion that any sensible person would, that it isn't abused. And one of the reasons for that is that we know from many different studies, again, some conducted by the US military, that repeated dosing of psychedelics rapidly desensitizes the brain to their effects. So, taking a drug, a psychedelic three times a day – once a day for three days, the effect is almost gone on the third day. And drugs which don't have an effect tend not to be abused.

THE COURT: So what you're telling me then is the FDA requires an abuse study that nobody wants to do because we already know what the effect is...

A. Correct.

THE COURT: ...in terms of abuse potential?

A. Exactly. Exactly.

THE COURT: But wouldn't there be a significant market – maybe not, I guess, because of the absence of an abuse potential, I was thinking maybe the market would create that necessity for companies to do that.

A. Well, as I've said, I don't believe there is an abuse potential. And there's also the interesting question is whether there's actually any close relationship between having an abuse potential and whether it's a problem on the street anyway. But that's, you know, that's a different question. It's almost impossible to know whether these procedures, even if they show abuse potential, how value – because they either stop the drug being developed at all so

no one ever finds out what happens on the street, or the drug goes on the street. And are there examples where a drug has been approved as low abuse potential become abused, the answer is there are some but usually that's by changing the route of administration which therefore changes the drug, and that's generally not – it doesn't occur until the drug's been around in the market for 10 or 20 years, that people work around – addicts work around changing the route of administration. So, I think we can say categorically though that psychedelics, even if they're given intravenously, which we have done, don't produce any more liking than if they're taken orally.

THE COURT: All right.

P. LEWIN: Q. Professor Nutt, I'll take you to page 148, right side bottom...

A. Mm-hmm

Q. ...marked 2.2, factor 2:

> "It has been estimated that there were more than one thousand scientific and clinical studies of classic psychedelics including LSD and psilocybin published through the 1960s and several thousand more published since the 1960s."

When is the modern era when we talk about clinical studies? They say since the 1960s, when is the modern era?

A. Well, the modern – after the 1971 UN Conventions there was a dramatic falloff in research with psychedelics because every – I think every country in the world except North Korea endorsed them, and the modern era – the resurgence of interest began in about the mid-1990s when the pharmacology became clearer, the serotonin receptor, and then obviously there's been a phenomenal expansion in the last two decades.

Q. In modern or pre-modern psilocybin trials, to your knowledge has it ever been found that psilocybin does not produce thought-related benefits?

A. I don't know of any studies which have set out to examine that and not found it. I mean, there are studies that have looked at blood pressure and as they mentioned here, pupillary [indiscernible] etcetera, studies that have looked at the kinetics, the distribution, also the effects in the brain, but people have looked for changes in thinking processes, they have never to be found them if the dose is of the order of 20 to 25 milligrams of psilocybin.

Q. So, I'm gonna take you now to page 152, and on the right side under 2.4.1.1, the authors refer to treatment episode data sets, or TEDS...

A. Mm-hmm.

Q. ...what is that and what does it say about psilocybin?

THE COURT: Sorry, 2.4.1?

P. LEWIN: Point one.

THE COURT: Oh, 2.4.1?

P. LEWIN: Point one, point one, two ones.

THE COURT: Yes, all right.

A. Well, these are people who are seeking help for substance abuse, they are looking to get help from experts because of substance abuse.

Q. All right. And so this measures people seeking to get help for substance abuse, and what do we know about people seeking treatment for psilocybin use?

A. Well, we don't have the data on that because it's not collected, so the TEDS data is on hallucinogens, which covers LSD, psilocybin, ayahuasca, DMT, [indiscernible] DMT etcetera.

But our estimates from other studies is that LSD is – in that group of people seeking help, LSD predominates.

THE COURT: I'm sorry, I did not catch the last part there.

A. So, when people are seeking – if you look at the global conglomerate of drugs called psychedelics and then look at people who are seeking help for psychedelics dependence, hallucinogen dependence or misuse, the majority of those individuals are taking LSD, not psilocybin.

P. LEWIN: Q. And then on page 153 it looks like – this is on the left-hand side, just before 2.4.1.2, they talk about – they say, "The treatment seeking for the entire category of hallucinogens constitutes a very small fraction of reports, the TEDS", is that your understanding?

A. Well, yes. If you look at Table 3 you can see it's - hallucinogens are out of the one and a half million, there are two thousand cases, with opiates it's half a million cases, and with alcohol it's half a million cases, so very small fraction....

THE COURT: Sorry, what portion are you referring to here, Mr. Lewin?

P. LEWIN: So, initially, I referred him to under 2.4.1.1...

THE COURT: Right.

P. LEWIN: ...the TEDS data sets.

THE COURT: Right.

P. LEWIN: And then I referred him to the bottom of that paragraph which is on page 153.

THE COURT: So, continuation on the next page. All right.

P. LEWIN: Yes.

Q. So, Professor, I'm going to now take you to page 159, and I'm gonna read a longish quote, my apologies to everyone, and then I'm gonna ask you to comment on it.

THE COURT: Just give me a moment to get there. 159?

P. LEWIN: 159, right-hand column, beginning at the bottom of 159, and it's going to continue on to 161.

> "Larger population and cohort-based studies are consistent with findings from these experimental investigations. For example, Hendricks et al tested the relationships of classic psychedelic use and psilocybin use per se with psychological distress and suicidality among 190,000 adult respondents pooled from years 2008 to 2012. They found that lifetime classic psychedelic use was associated with reduced odds of past month psychological distress, past year suicidal planning, and past year suicidal attempt with these results extending to psilocybin per se. Lifetime illicit use of other drugs was by and large associated with increased odds of these outcomes."

And then if I just move down a little bit to seven lines down beginning with – actually, I'll pick it up from five lines down with "Moreover":

> "Moreover, consistent with pilot studies of psilocybin-assisted psychotherapy for drug dependence, Posano (ph) et al found that lifetime classic psychedelic use was associated with a reduced risk of past year opioid dependence and past year opioid abuse among 44,000 illicit opioid users who completed the NSDUH in years '08 to 2013.
>
> Finally, a growing literature suggests protective effects for criminals in the criminal justice system who suffer from

numerous comorbid psychopathologies, including depression, anxiety and drug dependence that exacerbate criminal behaviour. Hendricks et al found that naturalistic hallucinogen use predicted a reduced likelihood of recidivism among over 25,000 individuals under community correction supervision with a history of substance involvement. And Walsh et al found that naturalistic hallucinogen use predicted reduced arrests for intimate partner violence among 302 jail inmates. Of course, as hallucinogens are a broader class of substance, that includes classic psychedelics such as psilocybin in addition to other substances.

These studies were not able to test the unique relationships of classic psychedelics or psilocybin in particular with criminal behaviour. Toward that end, Hendricks et al evaluated the association of classic psychedelic use and psilocybin use per se with criminal behaviour among over 480,000 adult respondents pooled from the years 2002 through 2014. They found that lifetime classic psychedelic use was associated with reduced odds of past year larceny theft, past year assault, past year arrest for property crime and past year arrest for a violent crime. Results also were consistent with protective effect of lifetime psilocybin use for past year antisocial behaviour. Lifetime illicit use of other drugs was largely associated with increased odds of these outcomes.

Q. That was a mouthful. Do you agree with that, Professor, first of all?

A. I do.

Q. Is this your understanding that perhaps psilocybin in fact plays this positive role?

A. I don't think there's any doubt that it has a positive role at the level of protecting individuals from mental health problems and potentially helping people who have addiction problems get over those, and also individuals who have problems of anger and self-control are commonly seen in the criminal population with recidivism, helping them gain more of a measure of control over their lives. Or that might itself be related to reducing the use of other more destructive drugs though.

Q. And you take me to what I was gonna ask next. Do you have a sense of why this might be, that these various positive behaviours result from psilocybin and/or psychedelic use?

A. Well, I think there will be several factors involved but I think one of the most plausible ones is that people get a better perspective on what they're doing and thinking and therefore can begin to put into place new ways of relating to other people, new ways of relating to drugs they might misuse. It breaks bad habits, and thinking habits and behavioural habits are problematic.

Q. I'll take you to page – we'll go back a little bit, we'll go back to page 155.

THE COURT: Sorry, can I just stop you there? Just give me one moment, just going back to 159 here. Can you show me where that last quote you read at page 159?

P. LEWIN: Yes, it begins right-hand column, the bottom paragraph, beginning with the words "Larger population."

THE COURT: Yes?

P. LEWIN: And then it continues – the next page are charts, and then it continues on page 161. And I picked it up from "Moreover", so that was about

five lines down, so I guess maybe beginning with the word "consistent" which is six lines down, and then going to the end of that paragraph.

... PAUSE

THE COURT: All right, thank you. Go ahead.

P. LEWIN: Q. So, Professor Nutt, I'll take you to page 155, and this is on the left side of the page, and it's under 2.5 factor 5, and again I'm gonna read a passage and I'm gonna ask you to comment about it.

THE COURT: All right, just let me get there first. 155, right-hand side you said?

P. LEWIN: Left-hand side. I think I did say right-hand side but it's left-hand side.

THE COURT: Left-hand side, where?

P. LEWIN: Beginning four lines down, beginning with "Unlike":

> "Unlike LSD, psilocybin is not a new molecule entity but rather is a naturally occurring substance that has been used ritualistically for at least hundreds and likely thousands of years in Central and South America, possibly Africa and Europe, with an increased revered place in many cultures through history. By way of contrast, alcohol, cocaine, opioids and tobacco also have histories of use dating back thousands of years but these substances were recognized as addicting and harmful to the lives of many users for centuries. As discussed in the foregoing citations, many users of these classic substances of abuse develop patterns of daily use that interfered with social and occupational functioning and caused harm to users. Moreover, with these drugs abstinence often came with great difficulty and was sometimes associated with sickness. Such sickness was eventually

> recognized as part of a withdrawal syndrome that contributed to the persistence of chronic daily use."

So, first of all, do you agree with that, Professor Nutt?

A. I do.

Q. And so, something can be learned by the fact that psilocybin has been around for a very long time, is that fair to say and what do you say about that?

A. Yes, a lot can be learned, I think, not just about safety but also about utility. It wasn't around for thousands of years just to be around, it was being used therapeutically and in ways of helping people solve problems for that period as well.

Q. Are you aware of ceremonial use causing harms, ceremonial use of psilocybin?

A. I'm not aware of ceremonial use of psilocybin causing harms to the people who are taking part in the ceremonies. Of course, there's historical damage to communities by westerners seeking ceremonial harms in exploiting the indigenous peoples, but where it's been used appropriately and traditionally there is really as far as we know, only very positive reports of value.

Q. And then taking you down, over to same page but the right-hand column, and this begins – Your Honour, this is the second paragraph, beginning six lines down, beginning with the word "However".

THE COURT: Yes.

P. LEWIN: Thank you.

> "However, actual risk of dependence and harm associated with psilocybin has been estimated to be among the lowest of all major substances of abuse and dependence over the past several decades by several expert analyses and lines of evidence evaluated in this factor and other factors of the CSA. For example, in a

> comparative overview, of dependence potential and acute toxicity of psychoactive substances, Gable concluded that psilocybin carried a lower risk of dependence than caffeine and among the lowest risks of death of all major substance abuse categories, including cannabis.

Do you agree with that?

A. I do.

Q. And are you aware of Gable's work?

A. I am, it was part of the foundation for the work I developed to essentially expand it into a more fine-grained analysis of different harms with a particular focus on humans, because Gable draws on pre-clinical animal research as well.

Q. And then I note the next two paragraphs, so these are paragraphs three and four, and I am not going to read those two paragraphs, but I do note that they talk about the multi-criteria decision analysis or MCDA, and that's the approach that you designed. I'm not gonna get into it yet, but they discuss it here, I'm gonna talk about it shortly in the context of your own studies. But I will then, at the very bottom of page 155, the very bottom paragraph, Your Honour, beginning with "Lending confidence".

THE COURT: Yes.

Q. And so, I'm gonna read that portion and there's a little bit more that spills over onto the next – spills over beyond this.

> "Lending confidence to these various assessments of drug harm rankings is the remarkable correspondence among them. Specifically, using the drugs in common between studies. The correlation between Nutt et al 2007 expert rankings and the Nutt et al 2010 expert rankings were strong."

And then continuing on page 156:

> "Despite methodological differences, Nutt et al 2010, the Van Amsterdam 2010 Dutch expert rankings, and Nutt 2010 UK expert rankings were also strongly correlated. The correlation between the UK drug user rankings in the Morgan 2010 study and the UK expert rankings in Nutt 2007 were strong. The correlation between the UK drug user rankings in the Carhart-Harris and Nutt 2013 study were strongly correlated with both...

And this is continuing on page 157:

> ...correlated with both UK expert rankings Nutt 2010, user harm Spearman's RHO and the Dutch expert rankings. And they cite Van Amsterdam 2010. The rankings of European Union addiction experts showed remarkably high correlations to UK experts, Nutt 2010, Van Amsterdam 2015. Collectively, these studies suggest strong international cross-laboratory consensus across academics, clinicians and drug users themselves regarding the relatively low harm potential of psilocybin compared to other drugs of abuse.

Do you agree with that?

A. Yes, I do. And I would just say I think as the methodology has become more sophisticated, so the correlations have got closer because essentially people are using similar terminology, similar scales. So, they're coming to it with different opinions and different expertise in different countries but there's a very remarkable convergence of scoring of the comparative harms of the drugs. And psilocybin always comes at the very bottom almost always scored as the least harmful of the recreational drugs that are scored.

Q. And how does that make you feel about your own ranking system when you understand that others are coming up with similar results, how does that make you feel about your...?

A. I think our system has now been validated.

Q. So, we're on page 157, we've got the chart, and what study is this chart from?

A. This is from *The Lancet* 2010 publication.

Q. Okay. And when they say Nutt et al 2010, that's what they're referring to?

A. Correct. This is the first of the MCDA analyses which by the way, is my most cited paper, it's been cited over 2000 times, which is unusual for a scientific paper.

Q. And where is psilocybin on this chart?

A. Psilocybin comes under "Mushrooms" at the right-hand - I'll just explain the chart, it's important. The size of the blue bars is the relative harm of each drug to the user, the person who uses it. So, the bigger the bar, the more harm to the user. And then the size of the red bar is the size of harm to society. And together is a measure of overall harm in a country, in this case it's the United Kingdom, and you can see that under "Mushrooms" on the righhand side, there's some harm to the user and that is almost all subsumed in the being intoxicated during a trip, if you're not being looked after. And there's virtually no harm, the red bar is - you can't really see it, there's no social harm, in fact, there may be social benefits as we've heard earlier on from the reduction of criminality etcetera. And that contrasts with other drugs which are controlled such as crack cocaine and heroin and methamphetamine on the left, and also with alcohol and tobacco which are not controlled.

Q. On page 158, if we turn the page, this chart is from it looks like Van Amsterdam 2015, have I got that right?

A. Yeah, so this chart was compiled by a group of European experts. After we published *The Lancet* 2010 paper the European Department of Justice approached us to convene a decision conference to see if European experts – to see what conclusions

European experts would come to using the same technology. So, they facilitated us convening a meeting, 30 European experts from 20 different countries, and the results of that analysis are shown on this graph here. And I should say that the European experts changed every ranking, they changed every rating, weighting, and they came to the same conclusion. If you look at the two graphs, there's only one drug changed position, and that correlation is .99, it's a remarkable correlation for this kind of Delphic expert-based analysis.

Q. And where is psilocybin on this chart?

A. So, psilocybin is in "Magic Mushrooms" and again it's the bottom right, least harmful of all the drugs.

Q. So, now I'm gonna – I'll take you to that *Lancet* study, so we are gonna now move on to – and this is at Exhibit D as in David of your affidavit, so it's marked "Drug Harms in the UK", and if everybody is there, so....

THE COURT: What page is it at?

P. LEWIN: Oh, sorry, it's page 104 of the application record.

THE COURT: Yes, thank you.

P. LEWIN: Q. So, how did it come to be that you created the MCDA scale in the first place?

A. From 2000 to 2009 I was a member of the government committee, advisory council on the misuse of drugs, and I was chair of the scientific committee. And one of my roles in that chairmanship was to begin to create a proper systematic transparent for assessing comparative drug harms to make sure that the *Misuse of Drugs Act*, which classified our drugs into three levels of harm, with penalties proportionate to harm supposedly, to make sure that that was correct in the face of modern scientific knowledge. And also, to evaluate what we should do with new entrants, new drugs which were coming onto the illicit market

or onto the market, we had to decide whether they should be controlled or not, and that of course would be a decision based on comparative harms.

So, since 1999 I've been part of an influential British commission that looked at the drug laws and I developed a nine-point scale of harm, which I applied through the government until 2007 when we published our data. So, this was data generated within the comparative harms of drugs, and that was published also in *The Lancet* in 2007, and it created quite a lot of interest. But particular interest came from a man called Larry Phillips who wrote to me and said 'That's not a bad attempt at a scale but you could do better. You could use this technique called multi-criteria decision analysis, of which I had not heard, but he was a professor at the London School of Economics, a professor of decision theory. I met with him and he convinced me – didn't take much convincing, that we could do it better. And the medical research council in Britain, the home office in Britain decided we would do it better, and they funded a program to develop and roll out this MCDA approach, multi-criteria decision analysis approach to the drug harms.

And there are two stages to the process. The first is firstly you've got to work out what the different harms of drugs are. And that took a weekend conference, we had I think about 30 experts from the full range, ranging from forensic scientists right through to police and school teachers, so we could look at all the different harms that drugs could do. And we came to the conclusion that there were 16 different harms that can be attributed to a drug. Nine of those harms affect the individual who uses the drug and seven of the harms affect other people, and they range from damaging people because you're intoxicated and you drive, right through to international damage, deforestation of Colombia and Peru in order to get rid of the cocoa crops for instance. So, having determined there were 16

harms, we had to define each of them, which we did. And so, then we had a template for comparing comparative harms of different drugs.

And sometime later we got funding to do the study that compared the different drugs and that again was about 20 experts with wide-ranging skills. They looked at the harm of each drug on the 16 scales, and the scales are ratio scales, so drugs are scaled according to what proportion of the harm of the most harmful drug they produce. And the scales are then weighted according to the meaning or the value that each of those particular ratings is considered or the relative weightings that the expert panel think are most relevant, the most important one is determined and then the others are scaled to that. And then the final graph, which is the graph you see here was produced. But I have to say somewhat to my surprise because in the 2007 paper heroin had come out on top and in this particular paper, it is a more sophisticated analysis, alcohol came out on top, and that's because of the large social harms that alcohol produces. But magic mushroom, psilocybin again came out at the bottom.

Q. If I take you to Figure 1, this is on page 105 of the application record.

A. Yes.

Q. I see like a tree, and I see on the right 16 different factors, are those the 16 factors, harms?

A. Correct. And that is called a decision tree, by the way.

Q. Okay. All right, thank you. And it looks like on – if I am correct, you discuss this in greater detail on page 106, discussing each of these 16, am I correct?

A. Yes, those are the definitions which we use and which are used internationally now. And actually, it might be of interest to know that the British government uses this to evaluate the possible harms of any new entrants into the drug market.

Q. And then I think the chart you were talking about was on....

A. 107.

Q. 107, thank you. And I'm gonna ask you, on page 109....

THE COURT: Sorry, just give me a moment. I'm trying to copy this.

... PAUSE

THE COURT: All right.

P. LEWIN: Q. And then I'll take you to page 109, and there's a more detailed graph.

A. Correct.

Q. And could you explain that. I have a black and white copy, but I know hopefully everyone has a colour copy, what do we see here?

A. So, those histograms are comprised of a series of data....

K. BENZAKEIN: Court's indulgence please, Your Honour. I don't have a colour copy in the application record, does the court?

THE COURT: Ah, 109? Um, yes.

P. LEWIN: I think the difference is nobody got a colour copy in the application record. I think His Honour has the online copy.

THE COURT: That's what I'm looking at, yes.

K. BENZAKEIN: All right. Moment's indulgence while I just pull that up.

... PAUSE

K. BENZAKEIN: I will find it. Please go ahead.

P. LEWIN: All right. I've got the black and white one as well, for what it's worth.

Q. So, Professor Nutt, tell us a little bit about what we see here in Figure 4?

A. So, this figure shows you the contributions that each individual harm makes to the overall score for a drug.

Q. So, the simplest thing probably is to look to "Mushrooms" at the right. There were just two – literally only two variables scored anything for psilocybin. One, the big one at the top, which is the harm to user, is drug specific impairment of mental functioning. When people are having a trip, they are at risk because their brain is working differently. But beyond that there were no other harms to the user. And then there was a tiny harm to society which related to the possible risk, I think, of injury which might come from having a bad trip. But the essence of this graph is if you can see the colours, the size of each colour bar gives you an estimation of the relative harms of each of the different drugs.

So, if you go to the left-hand side, the alcohol one, if you start at the bottom, "Community Damage" was rated at about three percent, or three out of the 72, and then the next one up, "Economic Cost". Economic cost of alcohol in the UK was scored the highest because of the huge burden of drunkenness and lost work, etcetera. And then there was a smaller one for "International Damage", a larger one for "Family Adversity". So, each of those blocks is an estimate of what contribution these different harms make to the overall harm.

P. LEWIN: Q. All right. Has this *Lancet* study been influential?

A. Well, as I said, it's been cited massively. It's been quoted in decision-making about harms in many legislatures. It's been used in the Dutch legislature, in the Finnish legislature, in the Norwegian legislature, it's influenced decisions on levels of punishment for both cocaine and methamphetamine in New Zealand,

and it also had quite a big influence in Australia, which some of you may know recently down-scheduled psilocybin. In Australia they have a reverse scale, rather than have one as the most harmful, they have nine as the most harmful. And recently their TGA which is their equivalent of the FDA, decided based in part on this very low level of harm of psilocybin to move psilocybin out of the highest schedule into a schedule which allows it to be used as a medicine.

Q. You mentioned Australia – actually, before I go to Australia, the Van Amsterdam study which we talked about Van Amsterdam 2015, that's one of the ones that was emailed, so that would be Van Amsterdam, Nutt, Phillips, and that would be "European Ratings of Drug Harms".

A. Mm-hmm.

THE COURT: Give me a moment. What exhibit are we up to now?

COURT CLERK: This will be exhibit 26, Your Honour.

K. BENZAKEIN: Actually, I believe this is already Exhibit 5? I wonder if the clerk can confirm that, European Ratings of Drug Harms, Van Amsterdam, Nutt, et al from 2015. I believe it was made an exhibit because Professor Walsh referred to it.

THE COURT: Just give me a moment, I'll see if I can find that.

K. BENZAKEIN: Of course.

COURT CLERK: Exhibit 5 is labelled as "Canadian Substance Use Survey".

K. BENZAKEIN: Okay. I take it back.

THE COURT: All right. So, this will be exhibit 20...

COURT CLERK: Six, Your Honour.

THE COURT: ...six.

COURT CLERK: And sorry, what's the name of it?

THE COURT: Give me a moment.

WITNESS: Van Amsterdam.

COURT CLERK: Van Amsterdam, thank you.

THE COURT: That'll be exhibit 26, Van Amsterdam, Nutt et al.

WITNESS: Yes.

EXHIBIT NUMBER 26: Van Amsterdam, Nutt et al study - produced and marked.

P. LEWIN: Q. And you've discussed Van Amsterdam – so, you know what, we've got it before the court and you discussed the chart in Van Amsterdam, I'm not gonna take you to it, you actually already referred to it in the context of the other study, so you know what, I'm gonna move on.

THE COURT: All right. It's now 4:30, Mr. Lewin.

P. LEWIN: Okay.

THE COURT: What time is there in the UK, 10:30?

WITNESS: Nine-thirty.

THE COURT: Nine-thirty. All right. Well, probably

WITNESS: It's late enough if that's all right.

THE COURT: I believe that to be the case, Professor. Thank you very much. So, we'll have you back tomorrow at ten o'clock our time.

P. LEWIN: Actually, Your Honour, I think it's 10:30.

THE COURT: Oh, 10:30, I apologize 10:30. We'll have a later start, so you get to sleep in. All right, thank you.

WITNESS: Good night, everyone.

THE COURT: All right, we'll see you all tomorrow. Thank you.

... PROCEEDINGS ADJOURNED TO FEBRUARY 25TH

FOR CONTINUATION

FORM 3

ELECTRONIC CERTIFICATE OF TRANSCRIPT

(Subsection 5 (2)) *Evidence Act*

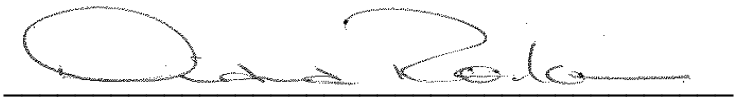
I, DIANA RORKE certify that this document is a true and accurate transcript of the recording of

R v. Samer AKILA

in the Ontario Court of Justice, held at 80 Dundas, London, Ontario,

taken from Recording 2311_CrtRm3_20250224_083937__6_ORSINIGE.dcr

which has been certified in Form 1 by Christina Smith.



March 7, 2025

Date

Authorized Court Transcriptionist -- ID 1633428714

Ontario, Canada

Transcriptionist's Note:

Zoom proceedings present challenges with transcription given that they are recorded on only one channel resulting in an inability to isolate speakers when parties are speaking over one another. This, along with occasional audio glitches, make portions of the proceedings inaudible or indiscernible, which have been noted accordingly.

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