

Oneirology Part 2 with Dr. G William Domhoff

Ologies Podcast

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Oh hi, it's still your friend's fiancé who commits everything to spreadsheets, it's Alie ward. This is Part 2 of Oneirology; we cover so many burning questions in the field of dreams with one of the world's top researchers. Go back to Part 1 and start there, what are you doing? This is Part 2, go back, start with that, come back here.

Okay, let's get to the good stuff. But really quick, thank you to everyone at Patreon.com/Ologies who submitted questions for this, it costs a dollar a month or more to join. Thanks to everyone rating, and subscribing, and leaving reviews. Also, I read every single one. There were so many lovely ones this week, but I have to shout out Tree-mendous who shared the show with their husband, who looked it up and said that I'm their mom's cousin. Here's the deal: my dad was one of 11 and my mom was one of 6; I have so many cousins, we're related to most of Montana. So, I'll be honest, I have no idea who Tree-mendous is, I don't know which cousin's child's spouse wrote that, but shoot me a text, people; we're family.

Okay, oneirology, dreams. Tuck yourself in for answers about where creativity comes, neuroimaging the imagination, creepy tooth dreams, foods and dreams, mental health and dreaming, relaxed fish, medications and your sleep, lucid dreaming, a newly discovered part of the brain, what sleep stages are important for cleaning out your brain, your dog's naps, and more with author, researcher, psychology and sociology professor, dream expert, and oneirologist, Dr. G William Domhoff.

Alie: Can I ask a few questions from listeners? From people who listen...

Dr. Domhoff: Sure, are they listening now?

Alie: No, not right now. But they know that you're coming on.

Dr. Domhoff: Oh!

Alie: I told them...

Dr. Domhoff: Jesus Christ, I'm sitting here thinking that they're-

Alie: No! *[both laugh]* Oh no, you're amazing.

Dr. Domhoff: "Hello out there! Blah blah blah!" *[laughs]* Hot mic, as they say these days.

Alie: No, not a hot mic at all.

Aside: Okay, this inquiry was burning a hole in the minds of Hannah Nuest, Dantooine, Maisie Lopez, Corey, Jess Swann, and first-time question-askers, Andy Guarnaccia, Trevor Durning, Marvette Fudge, Jess, Nan, and Travis Gibson, who all needed info on whether our dreams have any meaning. What's the point? So yes, everyone needed to know that straight out of the gate.

Alie: Okay, a ton of people want to know, essentially, Joe Mueller wants to know: Do things really have meaning in dreams? Like seeing certain objects or the recurring dream of teeth falling out? So many people have the dream that their teeth are falling out, which seems weird. Do they have any meaning?

Dr. Domhoff: First of all, people do have certain common dreams like flying under their own power, or teeth falling out, but they're very rare. In other words, in your whole dream life, and we've studied this by... like, we have two-week dream journals from students, and 1% of them, four dreams out of the hundreds will have teeth falling out, and certain individuals will have it. But if we all talk about it, this is where a whole... not being rigorous and in a lab, and not projecting things on your participants, we call it creating demand characteristics, creating expectations. And also, if you've heard a lot that people have dreams that their teeth fall out, pretty soon you think you have one. *[Alie laughs]*

They're very rare, but they are the kind of dreams that we really studied a lot to try to get to this symbolic meaning. But I honestly don't know what the symbolic meaning of that is in dreams, if there is any symbolism. There could be symbolism; for Freudians it's castration, I think, teeth falling out.

Aside: Patrons Mallory Skinner, Cat, and first-time question-askers Kristen Robb, Justin Goodhart, and Lianne Murray, as well as me, your father, have all had nightmares of teeth rotting out of our skull and falling out like overripe peaches from a tree. What does Domhoff say about this?

Dr. Domhoff: But for your teeth listeners, your teathy listeners, go on DreamBank.net, we've got it limited so the thing doesn't crash, pick two dream series at a time and put in the words "teeth" and "tooth." Put it in "or" mode, so it'll be "tooth or teeth" and in three seconds it will tell you how many dreams have a tooth in it. And it'll give you a tooth column and a teeth column. So, if you put in tooth, teeth, gums, tongue, mouth, *[Alie laughs]* you get a column for each one and you get what's called a contingency.

Aside: Let's take a little jaunt down the teeth dreams timeline of life to get to the bottom of it, shall we? I need to. Okay, so in his 1900 publication, "The Interpretation of Dreams," one Dr. Sigmund Freud said that dental dreams are mental dreams, and they represent issues with things like castration and repressed sexual urges, and the compulsive desire to pleasure oneself. So, I went to make a withdrawal from Dr. Domhoff's DreamBank.net and I looked into his archive to find that yes, the percentage of the 20,000 collected dreams that even mention "tooth" or "teeth" is very low, it's less than a percent. And some of those are just mentioning a toothbrush and not even tooth trauma.

I read one dream account from a participant identifying as Barb, who dreamt on March 2, 1981:

We go to the party; I'm wearing a long, formal gown and I have one high-heeled shoe on and one off. I walk on tiptoes with the right foot and hope no one notices my missing shoe. There is a buffet table, lots of high-class, snotty women. A tooth with a feather on it falls out of my mouth onto the table. I'm embarrassed. I say nonchalantly, "Oh pardon," very French-like and classy. I pick it up. It reminds me of an engagement ring. I feel the empty place with my tongue, I realize there had been another one that fell out sometime earlier.

Why did Barb dream this? Also, Barb, I would party with you, you sound fun as hell to be a mess with.

Now, I've heard that these dreams, these kind of oral embarrassment and horror dreams mean some fear of a loss of control, but I looked up a 2012 study to get some stats, it's called "Dream motif scale," it was published in the journal *Dreaming*, and it provided some numbers on our fucked up teeth dreams. And despite my assumption that 100% of everyone

has these dreams, the researchers report that only 39% of those studied had what they called a TD, which stands for Tooth Dream, at least once. 16% of people reported that their TD were recurrent and 8% were like, "I have these all the damn time Doctor, why, why, why?"

And thankfully for us, there is a 2018 study that answers that and it's called, "Dreams of Teeth Falling Out: An Empirical Investigation of Physiological and Psychological Correlates." Thank god. Okay, so the authors of this preface by saying teeth dreams are enigmatic because they don't fall under the rubric of the continuity hypothesis, which just means, dreaming about normal shit that happens every day. But again, why? Okay, this is huge, hold onto your molars. Their findings supported the dental irritation hypothesis, which means you dream of teeth falling out when you have a dental problem... that's it. Sometimes months before it actually gives you any problems. So, maybe you're due for a crown replacement, or you should slow down on the White Strips. But let's get to the cooler dreams.

Dr. Domhoff: But there's a better one and it's tantalizing and that is flying. Because up is good, in our thinking. When we look at all the work that's been done on meaning in waking life; up is good, down is bad, left is bad, right is good, this kind of stuff. But flying, think of all the metaphors: I'm walking on air, I'm high as a kite, I hope they don't prick my balloon and I fall. So, we express elation through height, through flying. "I'm walking on air."

Alie: Over the moon.

Dr. Domhoff: Over the moon, the whole thing.

Alie: Right, cloud nine. [*"We're so high right now."*]

Dr. Domhoff: And that's the kind of temptation... It just makes sense to think those dreams must be symbolic too. In other words, we have, what one researcher calls, a waking state bias, so it lures us into putting more into the dream that's there.

Going back to that hypothetical, if I have 150 of your dreams, I think I could know a lot about you, a whole lot. Would I know something you don't know? I don't think so. What I'd know is what I would learn from you if I could sit down with you and say, "I would like to have an anonymous interview with you, for research purposes, answer as honestly as you can." And I ask you what your feelings are toward your mother, what your feelings are toward your two sisters, what are some of your regrets, what are some of the things you worry about? I think that I would then learn from that interview what I've already learned from your dream. If I wanted to know what I can learn from your dreams, I think I'd just interview you for an hour, an anonymous, honest interview.

So, that means that dreams have meaning; dreams have personal meaning. Occasionally they'll have cultural meaning. For example, in societies that are hunting and gathering societies, they dream more of animals, lo and behold. So, that's a cultural kind of difference.

Aside: And of course, for every member of every Indigenous society, all over the world, there is a different relationship with dreaming. But Professor Domhoff also notes in his most recent book, *The Neurocognitive Theory of Dreaming*, that his research has found, unsurprisingly, that the dreams of people in Indigenous societies more often feature them as the victims of aggression, which just mirrors the very tragic reality both historically and presently. A paper on the Plains Vision Quest Paradigm, in the journal *American Indian*, noted that in native and Indigenous contexts there's typically, "No separation between the world as dreamed and the world as lived." It continues that, "In non-Indigenous culture, the distinction between waking and dreaming is largely a consequence of culturally reinforced

theories of mind that have resulted in a bifurcated worldview for most Euro-Americans.” So, modern Western culture separates them a bunch.

Now, the nonprofit organization Worldwide Indigenous Science Network has also started doing what they call Dreamwork, which is collecting dream journals and providing a network to share the role of dreams in their lives. But what about in our futures? So, patrons Amy Narimatsu, RJ Doidge, Emily Stauffer, Cara B, Brynn, M Paiva, Victoria Oetting, Zoe, first-time question-askers, Ivanna Chumatschko, Taylor Clinton, Nan, FLRabbit, Aryana O’Connor, and Kaelyn Bennett, all wanted to know about that dreamy, nostalgia feeling, and déjà vu, and about nocturnal premonitions. What has Professor Domhoff seen in his decades of research?

Dr. Domhoff: So, dreams have meaning but I don’t think they have the profound or symbolic, prophetic, any of those kinds of meanings which have been attributed to them in almost every culture, because there’s some cultures that really don’t give a damn about dreams. But most, there’s a whole lot that do and they are ones that then we can learn from because they have “dreams are prophetic,” they use dreams to decide where to go on a hunt, and so on. You have to have certain dreams to enter certain professions, like warrior. You have to have certain dreams before you’re initiated into manhood. And of course, just like our society, they have ways to induce that dream.

Aside: And the role of consciousness-altering plant medicine goes deep, deep, deep into history and for more on that I will link a 2020 paper from *The Journal of Psychedelic Studies*, called, “The role of Indigenous knowledges in psychedelic science.” And that comes hot out of the gates acknowledging how much colonialism and past scientific research have excluded Indigenous knowledge and not given credit where it’s due. Essentially, it says that in some cultural frameworks, psychedelics aren’t just for trippin’ balls, they’re a tool used in concert with our brain’s own mechanisms to use these altered states of consciousness to our benefit and our growth. So, mushrooms, they are not just for enjoying the lights at the next meeting of the juggalos. But are dreams hallucination adjacent? First-time question-askers Kevin Parichan, Sophie Fournier, and Wendy Lockhart wanted to know.

Dr. Domhoff: What happens is that it all gets blurred, and people talk about altered states of consciousness. And so, suddenly, they’re saying dreams are like hypnotic states or like drug states, and so on. What the neuroimaging research reveals is that hypnosis is not like psychedelics, or hallucinations, or like dreaming. In other words, every one of those states has a different network supporting it and the dreaming network is different from all of those altered states of consciousness networks.

So, one of my strong claims, of course it gets me in a lot of trouble, is to say, “You can’t learn anything about dreams by studying hallucinations, or hypnotizing people, or studying psychedelic drug states.” That doesn’t teach you about dreaming. Dreaming is a normal, everyday occurrence in virtually everyone, that we know of. There may be a few people that don’t dream, and it would be great if neuroimaging would study them because I do think there might be a few. But at any rate, I think that to understand a dream we first of all have to be sure that the mental activity is not sleep talking, or from a brief arousal, or from sleep paralysis, and then study those dreams. Then we could make comparisons.

But to try to understand dreams on the basis of psychosis, which is what a famous neurologists of the mid-19th century said, “Give me the secret of dreams and I will tell you the secret of psychosis.” Of course, then Freud quoted that with great approval and famous philosophers have said that, important people have said that. So yeah, we believe it.

Aside: What about Professor Domhoff?

Dr. Domhoff: I don't anymore, if I ever did. [*chuckles*]

Alie: What about dreams and sleep quality? Victoria Oetting wants to know: If I remember a lot of my dreams one night or if they're vivid, does that mean I got good or bad sleep? And Jenna Catalano wanted to know: How do stressful dreams or nightmares affect the quality of the sleep you're getting? If you have a good cozy sleep do you have better dreams?

Dr. Domhoff: I think I can say with confidence that people that are in really anxiety states, that are really highly aroused in some way, whether through drug states, or tensions, or whatever it may be, that's going to affect sleep quality and it then may affect dreams. It's not bad dreams that are causing it, it's vice versa.

Aside: So, patron Dominique McDermott asked why they feel more tired after a night of intense dreams. But according to Dr. Domhoff, it's not your nightmares messing up sleep, it's the tension and discomfort you already have that are giving you the bad dreams. Again, sleep hygiene, coziness, temperature control, stress mitigation, can all give you better sleep which will help you have a better tomorrow. But some types of stress go way deeper than others.

Dr. Domhoff: Here's where PTSD victims, god love 'em, it's a tough thing, but when they're studied with neuroimaging or EEGs, their brains, day and night, are just really activated, they're on fire. So, the brain of a person sleeping, they're not sleeping like a non-PTSD person. Their brain is fired up, they're vigilant, one of the attention networks also has a vigilance aspect to it and that's the vigilance network. Right now, we're paying attention, we're in this particular room, we can hear sounds, but if we suddenly heard a loud noise, or if I noticed out the window that the building was falling, we would totally change. Everything in our body, our digestion would stop, this would stop, every bit of energy would be mobilized just on that particular focus and there'd be no more imagining or thinking, I'd be totally focused.

That salience part of the attention network is still on in these PTSD victims and so, it really, really does distort their sleep. And the brain is then much more activated, and they're going to have more dreams because they're more activated, and because they're incredibly deep and burned in personal concerns, they're going to dream about those things.

Now, contrary to the view that people just keep dreaming the same nightmare, they don't really. On DreamBank we have the dreams of a Vietnam vet, and he's quite a guy, that was a medic in the Cambodian highlands in 1970 or '71; he saw horrific, unbelievable human slaughter, death. His dreams are full of fright, he's one of the few people that could write them all down and he kept them all his life. He's probably 70 now. And his dreams are just constantly vigilant, constantly agitated, constantly... you know, somebody comes in and he's talking to an old friend and all of a sudden, he sees somebody out of the corner of his eye, turns and gets fiercely angry and just goes at them, or they get into conflict. So, the vigilance, it's in his dreams. But I would know that if I talked to him because he tells me, and writes stories, and he has a website, and he puts his poems and thoughts up there.

I once saw a lecture that he gave at a high school. [*small chuckle*] I laugh but it's so sad because he went in and told what it was like. I mean, it just scared the bejesus out of them, it was overwhelming. So, even the accounts we often give of these things, we soften them for people. If we really say what the horrors were like, it's so overwhelming for other people so you don't say them, but he said them. And I think PTSD is a gamble because it's so different from normative dreaming and it's more like the answers to these questions where these people are temporarily in that kind of agitated state.

Aside: Maybe your body's depression or anxiety have shown up and if so, you're not alone. Even though mental health struggles can make you feel like it, and his research supports that.

Dr. Domhoff: The interesting thing that we've found in people with any kind of diagnosis, and it's not totally certain, but the interesting finding which shows how important it is to use a scientific coding system, the main way their dreams differ is, there are no friends in their dreams; no friends, no people that they call friends. In one case or two that we studied, as well as the individual dream series, it was only their parents and their sister, they had no friends. In another study where you had dreams from, I think 106 from schizophrenics, and it's on DreamResearch.net under "Interesting Findings," in their dreams there's just all strangers, in other words, there's no family and no friends.

So, if I was reading through a dream series and I got about 5, 10 dreams into it and nobody has been mentioned as a friend, I immediately... my antennae go up. I'm wondering, why are there no friends? And now I'm coding too. I'm counting friends, animals, characters, mother, father, or you know, this guy only dreams about his father, never his mother, what's going on? And then we study it more seriously either with our coding system or we create a word string. And that's why I know people basically dream about things they're familiar with, 70-75% of the time.

But here I should say that I am no clinician of any kind, whether psychological or medical, and if people do write to me at my website and ask about some of these things I say, "Look, you've got to go to the sleep disorders clinic and you've got to have expert medical attention. Ask them, but you shouldn't ask me." You shouldn't get your advice, I don't think, from anybody on the web, but I could be wrong on that. But you sure shouldn't get any advice from me.

Alie: But a clinician can help reduce the waking anxiety, which can help reduce the nightmares.

Dr. Domhoff: And some kinds of drugs sometimes, and certainly psychotherapies of various kinds can help people. So, we all need someone to lean on. [*"I love him."*]

Alie: Well, I wanted to ask about that because we did have a lot of folks who wanted to know about different substances, SSRIs, or melatonin, or spicy foods. Any brain medications, especially things that are sleep aids, do they change how we dream?

Dr. Domhoff: My statement on this is that anytime, if we go on a drug or if we go off a drug, in other words, we change our neurochemical biochemistry, then those things may happen and there may then be an adjustment. But again, I'm no medical expert, and you know, it's one of those things that I look at as a possible window for me into understanding dreams.

Aside: So, if you're getting some help from medication, you're also not alone, hi, let me introduce you to my own brain buddy, Effexor. But patrons Mariah McGregor, Kaitlin Schmitz, Kaitlin Ramirez, Anne, Becky Pottruff, and first-time question-asker Olympia Silve wanted to know: What is up with antidepressants and vivid dreams? And the deal is, they're not necessarily causing the dreams, but they're suppressing REM sleep. And in the case of Lexapro, Zoloft, Cymbalta, Paxil, and a few others, it can mean that you might be having these micro awakenings and remembering the dreams more. Also, stress and sadness in your waking hours can mean it's on your mind more in your sleep. So, addressing fears or concerns in therapy, or with lifestyle changes that may benefit your mental health may improve things while you're sleeping.

Also, those side effects of really vivid dreaming on antidepressants are apparently the worst in the first few weeks, but you can definitely ask a doctor about timing the medication differently, which could help. I just started taking mine at night and it's helping me function better in the morning, so there's that.

Also, melatonin may give you bonkers dreams if the dose is too high so experiment with that, Timothy Hwang, who asked. And melatonin is also connected to a neurochemical called vasotocin which kind of helps erase your memory of dreams so that you don't get confused between them and reality. So, if you're on a medication that's blurring those lines, Earl of Greymalkin asked about Chantix, that might be why. But is your bong bogarting your dreams? Maybe a little bit. I'm sorry to report that THC has been shown to repress REM sleep, Evan Davis, Ashley Adair, and Ellie Wheeler. So, if you have a medication that's affecting your sleep, first-time question-askers, Laura Raffield and Katy Jurasevich, talk to your doc about changing your timing, maybe try to cultivate the best sleep hygiene you can manage, and treat your brain well.

But enough about pills, let's talk about cheese. So, Scott Sheldon, Paul Smith, Luke LaFemina, Stephanie Leské, and Francesca Perrelli, wanted to know in Francesca's words: Is it true that eating cheese before bed makes dreams feel more intense? And I had to look into this for us, I knew you needed to know. Here's the deal. So, a 2005 study showed that blue cheese gave people vivid dreams and cheddar made them dream about celebrities. And it's not important that this was a tiny study, or that it was funded by the British Cheese Board, which is a great name for a charcuterie-related propaganda machine, The Cheese Board, I love that. But yes, so further studies have disproven that as just delicious flimflam.

Now, the reason that you may actually be swept away to dreamland in a tide of fondue is because, one, cheese in Europe is usually the last meal of the evening, so it's a scapegoat... cheese. And two, eating late at night can cause your temperature to rise and mess up your sleep making you wake up more to remember your weird dreams. And then also three, lactose, baby; not all of us can digest that shit. And guess what, having a 3AM bubbling colon is a nightmare in every fashion.

And also, Julia Fisher, the chocolate you're eating before bed isn't necessarily a dream inducer, but the caffeine may be interrupting your sleep and making you remember your dreams. Sydney Toups, Rachel Kendrick, Scott Sheldon, Christina Johnson, and Krystal Symons, try eating earlier if your evening meal or fourth meal is causing you some nocturnal stress, just consider what a 3AM El Scorcho Gordita does to your asshole. Now imagine that's your brain trying to sleep, you know what I mean?

Dr. Domhoff: I gave a couple lectures, back when I taught, on nightmares, and if for instance, people have nightmares when they have high fevers.

Alie: That was going to be my next question!

Aside: It was your question actually Pascal Perron, Miranda Harter, and Elie Zwiebel, who asked about cooking up wild brain activity.

Alie: Let's say with fever dreams, does a different part of your brain activate when the temperature is high or is that a hallucination, more?

Dr. Domhoff: Questions around brain temperature are still not fully understood so it's in the realm of, not guesswork, but it's still work in progress. And I happen to be very interested in it academically because brain temperature is related to level of activation. When we're highly activated, we're metabolizing better, cells are working more efficiently. So, that really then

relates to a lot of energy use when we're really highly activated and we're metabolizing really fast, we're using up a lot of energy and that gets to then, sleep.

Aside: A few folks wanted to know why, physiologically, we dream. I'm looking at you, Lauren Cooper, Hannah Johnson, Bethany Barlow, and Signe. Are we defragmenting our drives, is it like cleaning up after a party? In Sleepy John's words: Dreaming is how the brain cleans out the lint filter: true or false?

Dr. Domhoff: Here's the strange thing about sleep. For decades, centuries, people have looked for sleep as somehow resting something or it's getting rid of poisons and toxins, or it's time to lay in stores of energy. Those age-old concerns are still being studied but nobody has done studies that – and this is among a community of serious sleep researchers – where they all come to agree.

Aside: So, folks are working on it, but it takes a lot of research for a scientific community to stand behind something. So, we don't know if dreams specifically clean your brain, but we do know that sleep itself does. There have been plenty of studies that, during sleep, your body's cerebral spinal fluid gets into your brain's nooks and crannies and washes away beta-amyloid and tau proteins that act as plaques, which can lead to the development of Alzheimer's and dementia. So, sleepy time can save your mind.

But check this out kiddos. So, literally this week a study titled, "A mesothelium divides the subarachnoid space into functional compartments" published in the journal, *Science*, reported that there's a new part of the brain we didn't know about until this week! This is like finding a hidden room in your basement, or I guess the attic. We didn't know. There's a membrane in your brain, they're now calling the subarachnoid lymphatic-like membrane, or SLYM. I don't know if that's pronounced S-L-Y-M or "Slim" or "Slime", I hope it's slime, because the neuroscientists who discovered it think it might help separate the clean cerebral spinal fluid from the dirty stuff, and once again, help to clean your brain.

What else did they say? So, they said that deep non-REM sleep is the most important stage for brain cleaning and that sleep is critical to the function of the brain's waste removal system, and this study shows that the deeper the sleep, the better. How bonkers that this is fresh information, literally did not know last week. What?! What an exciting time to be alive and asleep.

Dr. Domhoff: And so, it's a genuine puzzle for them, but there's one thing I think we do know about sleep. Sleep is a state of adaptive inactivity, adaptive inactivity. What does that mean? Well, seeds, think of this, seeds for a tree or veg, they can be dormant for hundreds or even thousands of years. Trees lose their leaves, insects go underground, 17-year locusts, torpor, which is a kind of really beyond sleep where body temperature goes much lower.

Aside: Now, for more on nature's ability to go offline, you can see the Dendrology episode on trees, the Somnology episode on sleep, we've got a Molecular Neurobiology episode on brain chemicals, and the Thermophysiology episode on body heat, or also the Ursinology episodes on hibernating bears. Anyway...

Dr. Domhoff: What sleep does is allows us to use less energy and at the same time, not expend energy. So, every animal sleeps differently, for differing amounts of time, relating to its ecological niche. Let me give you two examples. On the one hand, bush elephants in Africa, they sleep as little as two hours in 24 and they can be moving for two, three days without sleeping. And when they stop, they don't immediately "make up" any sleep. So, they're really adapted to that little... that niche. On the other hand, opossums sleep 19 hours, and a kind of bat sleeps 20

hours. Now, the bat that sleeps 20 hours is real interesting. When does it come out? At dusk. And what's going on at dusk? The moths are flying around, its food supply is flying around. So, it does everything in four hours whereas the elephant is awake 22 hours.

Aside: Which means that some animals have to fuel themselves for longer stretches just to maintain homeostasis and keep their brain and their body temperature up.

Dr. Domhoff: But think of it this way, if you had to be awake 24 hours a day, that's a lot of foraging, that's a lot of hunting, that's a lot of farming, that uses up a lot of food. It's far more evolutionarily adaptive if we take one-third (roughly one-third but it's really less) off, there can be more of us, there's more food supply and so on. So, each creature is adapted. We are actually probably adapted, and this will surprise you, to 7 hours a night.

Alie: Really?

Dr. Domhoff: How do I know? My friend knows. [*both laugh*] My UCLA sleep expert friend, he studied three different hunting and gathering societies with a whole crew of anthropologists and others that he helped organize.

Aside: Now, for more details, you can see a 2018 study titled, "Sleep variability and nighttime activity among Tsimane-forager horticulturalists," by lead author, Dr. Gandhi Yetish, who is doing a postdoc at UCLA's Centre for Sleep Research. But researchers over the years studying the sleep habits of hunter-gatherer cultures and agro-pastoralists observed that...

Dr. Domhoff: They average seven hours a night, but it's actually, they sleep seven hours a night, roughly, in the winter, but in the summer, they sleep six hours, and that's true of like reindeer. Reindeer, they're way up there in the cold, cold arctic. Hey, they're sleeping a lot less in the summer and they sleep a lot more in the winter. So, there's this ginormous complexity to sleep that has to do with ecology. And with us, what's striking about us, where dreams can come in again is that basically all other primates go to sleep when it gets dark, and they wake up when it gets light.

Alie: Yeah, why don't we do that? Why don't *I* do that specifically?

Dr. Domhoff: Yeah, well chimpanzees sleep 11 or 12 hours, whatever it is, we sleep basically 7 or 8, because we are not tied to the light-dark cycle. We are tied more to a temperature; our internal temperature cycles are not tied to the light cycles. So, when it gets dark, everywhere in the world human beings huddle together and make a fire, and they shoot the bull, [*Alie laughs*] and they talk about dreams, and they talk about their myths, and they hang out, they have a little fun and dance around, and we wake up. And then our body temperature goes way down during the night.

And here's the other part, the brain temperature can't go down, and that's REM sleep. REM sleep is a thermometer. It's most likely, my bet is on sleep researchers who say REM sleep is a way to reheat the brain periodically during sleep, that's its function. And it makes it so sleep can go on, we cycle between REM and non-REM; we go non-REM, then REM, heat up a little, non-REM, REM, heat up a little. And then towards morning, the circadian rhythm built into us, our brain temperature starts to go up independent of REM, very likely, as we approach morning. So, now we have a dual system going on that's heating our brain.

How does all this relate to dreams? If dreams are tied to the level of brain activation, then the point is that when you are an hour or two into sleep, the default network, the parts of default network that are active during sleep, there's not enough activation for it to stay

together. The network breaks apart, front part breaks off from the back part, in the simplest language. We could talk about posterior and anterior and so on, but let's not. And at that point, if we awaken people, they might have an image or, "Oh, I thought X," or say, "No, I don't remember a thing." But during the REM period, you awaken, they'll get a dream.

Here's what we know. Probably from, let's say you're an 8:00 waker-upper, so from 6:00 on, your brain is doing quite a bit of dreaming. What's important about that is that from our studies in the lab way in the past, we know that the dreams from the first REM period do not differ from the dreams in the second REM period, or the third REM period. My dissertation was one small step in that, two or three better studies came along, they confirmed a lot of what I wrote, luckily, *[both laugh]* but there were other things that I was wrong on; better data, bigger sample sizes.

So, we can collect a good sample of your dreams between, I say, 6:00 and 8:00 in the morning. And furthermore, we can get a lot of your dreams on spontaneous morning awakening. And when we do studies where we have people... I did a study in 1963, just as there are getting to be answering machines on telephones, I bought a couple of those, and I had the students phone in anytime they remembered a dream.

Alie: Nice.

Dr. Domhoff: And most of them were morning awakenings, 75% or so, and that's what's predicted in other studies too. But sometimes, you're just sitting there, like one woman in the study, she was sitting in her backyard, she was just studying in the sun, and the sun started to shift, and she started to feel a little cold, her mind drifted off, and she remembered a dream about skiing. So, we have those kinds of things that happen.

But the point is that we can get a good sample of dreams in a variety of ways. And for any future dream researchers out there, the last three pages of my new book explain exactly what we need to do but that nobody is doing, *[Alie laughs]* and it has to start with your cell phone. We got to have samples of people from about age 9 or 10, and we didn't get into this, but we don't dream often or well until we're 9 to 11 years old, which will rattle a lot of cages too.

Aside: If you have smologites, more on kids' sleep in a bit.

Dr. Domhoff: But at any rate, if we had people phone in their dreams anytime, day or night, if we had the voice-to-text, and then we had the text in a central place, and we put them on the DreamBank, and then we can search them with word strings, we can go to town, we can automate this thing and churn out so much. All we need is about a million or two million a year. *[both laugh]*

Alie: That's it?

Dr. Domhoff: For about four years, and we could figure out which theories were right, and which were wrong.

Alie: That's it, that's all you need to get more, what is it, psychopompologists?

Dr. Domhoff: Yeah, we'll escort you to the world of dreams. *[Alie laughs]*

Aside: Now, we will escort you through more of your questions in a moment but first, let's donate again to some relevant causes and this week we're going to send it to two. One is the Worldwide Indigenous Science Network that we mentioned earlier which creates spaces for ethical collaboration between Indigenous and western ways of knowing. And we're also

going to donate to the research that Dr. Bill Domhoff has dedicated his whole career to, in efforts to further understand who dreams what and why.

And also, the day after Part 1 aired, I got the sweetest text from Bill just saying that he had a great time chatting and that I did my homework well. Oh, and then he included an emoji of a bed and then said, "The emoji above is in honor of Saatva as a perfect sponsor." So, it's Domhoff approved. And on that note, those donations were made possible by the one and only sponsor of these episodes, Saatva.

And today's episode is exclusively sponsored by Saatva because one's got to sleep to dream and Saatva luxury mattresses are just like a first-class ticket to snooze town, love 'em. And usually I save my secrets for the end of the episode but, as long as we're on the topic, this one time I had a dream, once I arrived to this party and I was wearing one of those high-necked Victorian dresses that sad ladies step off of a train in a dusty mining town. And I arrived at this saloon and all of my relatives were there and they were drinking warm beer, and I leaned over to my mom, Fancy Nancy, and I was like, "Woah, what a party. What's the occasion?" And she's like, "It's your wedding."

And I looked up and my boyfriend at the time was waiting for me at the top of the aisle and I was like, shit, I don't even drink beer, or like him like that. And I was trying to figure out if there was a way I could dip out at the back and then when I woke up, in real life I was on vacation with this boyfriend and I unfortunately knew that he was not the one. So thanks, dreams! You saved this man from dating me any longer. And also, you saved us a wedding and a divorce. Years later, I'm now hitched to someone I absolutely adore, but I still don't like beer. Anyway, dreams, you gotta love 'em.

But before you can dream, you gotta fall asleep, and the best way to do that is on a Saatva luxury mattress. Every Saatva is designed for better sleep with features only found on the world's nicest most expensive mattresses, they are high, high quality. And what's more, Saatva will set up your mattress in the room of your choice and take your old one for no extra charge. And if you think you're going to get that from one of your mattress-in-a-box companies, you're dreaming. Also, just a side note, I love the people behind Saatva, shoutout to all the folks handcrafting your mattresses to order in Queens, New York and Austin, hello. So, treat yourself to a mattress worthy of your rest and get a good deal thanks to *Ologies*. Right now, save \$200 when you purchase \$1,000 or more at [Saatva.com/Ologies](https://www.saatva.com/Ologies). Thank you Saatva, you truly make me sleep easy.

Okay, let's get back to explaining the imagining advancements that help us understand the dream world.

Dr. Domhoff: The 1990s changed everything because of neuroimaging and these neuroimaging studies showed, for the first time, the parts of the brain that were active during dreaming. And it wasn't really expected that parts of the brain would not be active. For example, there was one very famous theory that said dreams were just a reaction to these random electrical charges called spikes that came from the brainstem, and these electrical charges ended up in the visual cortex, and then the visual cortex saw these spikes and said, "What the hell does that mean?" And so, tried to make sense out of them, that was his theory of dreaming called activation synthesis. Well, now we know that part of the brain isn't even active. The whole theory turned out to be wrong anyhow, but the point is, that kind of neuroimaging studies just said goodbye to that theory, which happens a lot of times in science. New technologies come along, and things are solved.

Aside: Professor Domhoff recounts the work of Dr. Ralph Reitan, who along with Ward Halstead, used neuroimaging in the 1990s on people with brain injuries to develop what is known as the Halstead-Reitan Neuropsychological Battery, which is just another word for a lot of tests.

Dr. Domhoff: He had a questionnaire, and the questionnaire said, “Has your injury influenced your dreaming?” That’s all it said. If they said yes, then they said, “How is it influenced?” And then he would interview them. Some of them would say, “I don’t see the pictures anymore,” and some of them would say, “I don’t dream anymore.” He then matched that up with the kind of X-rays we had at that time, and he was able to show there are certain places that if you have a lesion in the brain, you will lose dreaming, there’s two different places like that.

And other places, this relates back to mental imagery, if you have injuries in these secondary visual cortices, you won’t see in dreams, you lose your mental imagery. [*I lost it.*] Now, that becomes exciting because we’re saying wow, that’s a connection then with... and you also don’t see images... you don’t have good mental imagery in waking either, that was done in a lab study by a great cognitive psychologist David F. Marks, who did the developmental studies.

Aside: And then around the turn of the century, a huge development occurred, and it wasn’t just having your thong underwear show over your low-rise jeans.

Dr. Domhoff: In 2000, 2001, the world changed, I think, in terms of understanding the human mind. And that is, the neuroimaging studies accidentally, in a way, discovered [*tinkling chime sounds*] the imagination network, which was called the default network. So, you’ve got the person all hooked up, they’re a participant, they’re all ready to go into the neuroimaging machine, you say, “We’re just fine-tuning things, just relax.” Then they notice, what’s the record look like when we just told them to relax? And it looked the same in everybody and it was different from what you usually see.

First, there’s a task network, that’s where we get you all hooked up so we can see whether you see a yellow lemon, or a green pig, or whatever it may be, [*Alie laughs*] or you have to pick this brown thing out of seven different colors. Our executive network is really humming and doing visual imaging, we’re always really focused. But when we’re relaxed, we go into a different network, so they call it “Well, that’s the default network, the non-task network.” Well, it’s a crummy name because it trivializes that; it’s the inner you, it’s the imagination, it’s the semantic memory bank, it’s the self-network, it’s the imagination network.

Aside: What these neuroimaging studies found on patients whose dreams had changed was...

Dr. Domhoff: If you get a lesion in your primary visual cortex, it doesn’t affect your dreaming, nor anywhere in your executive network, it doesn’t affect your dreaming at all. And so, when I realized that both the neuroimaging and the lesion network showed the same parts of the brain are necessary for dreaming, there goes... you’ve got dreams coming from the same network that creates imagination.

Aside: How exciting is this? So, the part of the brain making all this magic happen, dreams and imagination, it’s called the default network. And Bill describes it in the 2015 paper, “Dreaming and the default network: A review, synthesis, and counterintuitive research proposal.” And the default network doesn’t sound like a lot is going on, it sounds like your printer on standby but do not let the name fool you.

So, so many patrons asked something along the lines of creativity and absurdity in dreams, where is this coming from? I'm looking at you GaelicPearl, Mo Fo, Seán Thomas Kane, Mary C, Meg Ahern, Heather D VanValkenburg, Emily Stauffer, and first-time question-askers Samantha Jackson, Jona Landau, Katie Pikes, Kylie Chapman, Eliza Miller, Archie Tedeli, Kelsey Caudebec, Heidi M, Shelby and Brie Stewart, and Maxine Lewis, who in their words wants to know why their mind invented a scenario of trying to put wheels on a kangaroo using pipe cleaners and empty thread rolls?

Alie: I have a question. With that default network, is that why when we are working, working, working, or sitting at a laptop, or trying to come up with something, and then we say, "Fuck this, I'm going to go for a walk or go take a shower," and then we have, like, our best idea ever, is that the switch to the default network?

Dr. Domhoff: Yes. [*Alie gasps*] Your example is perfect. One of the people that studies this thing studies creativity and studies insights. We get insights, and he uses shower in the lecture I heard him. When you're in the shower, your executive network is attentive, but it doesn't have to be fully attentive. Your attention network is saying, "I can fall down, this water could get too hot," but it's cool, it's relaxed. And all of a sudden you think, "God damn, that's where that paragraph goes," speaking for me, "Wow, how about this for a paper?" People are studying creativity, it's a back-and-forth between the imagination network and this executive network. When they get really good at it and really refined, and it is hard work that they're doing getting the image, but then doing all the counting of all the little pixels, I mean, this is detailed work. This is back and forth, but they're going to see your mostly default network is up.

Aside: So, neuroscientists are looking in painstaking detail at what areas of your brain light up, which probably makes their own brains light up as they do it, but Professor Domhoff delivered a great metaphor.

Dr. Domhoff: I think of the human brain, including the sleeping, as a symphony orchestra. And we think of the symphony orchestra with all the different kinds of musical instruments out there that all have different roles. And we have a conductor, and a conductor is doing certain things and telling this group to sing, go down, this group to go up, this come strong. And so, you listen to it and all of a sudden there's just virtually no sound, other times, boom-boom-boom-boom, but it's in harmony and it's moving around in such a way that it's very smooth.

I always think of that because of a number of reasons from the past in research in a harmonious mind, but also in some detailed work that a great sleep researcher did where she looked at our brainstem falling asleep. When we fall asleep, it's not just an abrupt, boom-bum, it is kind of this dance almost, or this harmonious toning down and going silent. When we go to sleep, we've got a whole stage called the sleep onset stage. So, when we close our eyes then certain networks go down. At the same time, there's neurochemical things that are happening that I liken to that the conductor has looked at the clock, and it is a clock, the orchestra has looked up on the wall and seen, or subjectively thought, "Yes, it's about over." And so, the conductor starts to damp everything down and as the conductor sort of turns away, then, say, the horns go down and we're just left with the softest part of it.

What happens is then, the executive network starts to fall away, the attention networks go down a little bit, and there are studies of this, of how they disconnect from each other, and different brain waves come up. So, we're usually in a very fast brain wave state, let's call it beta, but as we drift into sleep, more alpha and theta, theta is a little less than alpha, they start to come into the picture, and they move from the back of the brain to the front of the

brain so there's this gradual transition. And then this one researcher on sleep onset has a great phrase where he calls the default network the gateway to sleep, it's the gateway to sleep. And if we do, if we waken you in sleep onset, you're having little mini dreams.

Alie: Oh, for sure! And that's so great when you start to realize that, like, "Oh, I'm falling asleep." My mom has this trick she taught me where if you need to fall asleep, but your brain is thinking about what you've got to do and stressed out, the way to help her fall asleep, she comes up with a category, like let's say it's cars, or fruit, or boys' names, or whatever. And she'll go, okay A-apple, B-banana, C-cherry, and she'll go through the alphabet and her name's Nancy, we call it the Fancy Nancy...

Dr. Domhoff: That's great because it's putting you into that more imaginative mode and back and forth, and vigilance is going down, attention networks are now saying, "She's messing around, we don't need to watch anymore," and you shift into that. And as you go to sleep, if you waken people in the first hour, sometimes you get a dream from them. But literally, when we're a couple hours into sleep, an hour-and-a-half to two hours into sleep, this network that's got a front and a back to it, those parts break apart. So, in the back and the front of the brain there are these important parts and then they're connected through these highways back and forth. But when those highways break apart then they're isolated, and then you can't dream anymore.

Alie: Oh!

Dr. Domhoff: But that's also the way consciousness works. Consciousness is a property of a very big network. Dreaming is a property of portions of the default network plus the secondary visual and sensory motor cortices, that's why we can see, and hear, and smell, and taste, and run, and feel exhausted after traipsing back and forth, you know. I traipsed back and forth in a convention hall, trying to get out of it just a week ago.

Alie: *[laughs]* In your dreams?

Dr. Domhoff: At some meeting, trying to figure out which entrance, there's people going everywhere, and I go back up the steps. When I woke up, I thought, "Wow, that was exhausting." There's a whole set. And of course, that's the charm of dreams.

Aside: Does that charm wear off ever? Or does it wear on? So patrons, Erin Sorensen, Diane Doty, Christy LaForce, Argiope17, Chase Penix, Julie Dupre, Bastian Phelan, Debi Potts, and Darlene Skapura all had questions about dreaming at different ages. And Emily Stauffer, Jess Swann, and Julie Noble asked: Do babies dream? When do dreams start?

Dr. Domhoff: One great psychologist, a cognitive psychologist, did longitudinal studies in a lab of children from 3 to 15. And their results were really exciting because they showed that dreaming only develops gradually and it relates, we now know, to the maturation of the default network as well as the cognitive development of imagination, ability to tell a story, which we call narrative, to generate mental imagery, to have an autobiographical self. All of those things are gradual cognitive achievements. You can do things at 5 that you couldn't do at 4, you can do things at 6 you couldn't do at 5, and so on. Only humans have a default network, and it is only functional by age 5 to 7, and not fully mature until 9 to 11.

Alie: What about when you see your dog going *[little yelps, barks]* and moving its little feet?

Dr. Domhoff: Because his brain is activated.

Aside: A lot of us wanted to know about critters in dreamland, including Specs Owl, Jesse Hurlburt, Alia Myers, Corey, Brigitte B, Sydney Toups, SueG, Lorri Fishman, first-time askers

Jules Crofford, Sadie Vipond, Alison L, and Kate Timms who asked: I've heard a lot of people say that animals don't dream, maybe their brains just do it differently? What do you think?

Alie: When my tiny little poodle is going, [*three little yelps*] oh, it's the cutest thing in the world.

Dr. Domhoff: I know. I never usually talk about animals and dreaming because that gets people so upset.

Alie: I know, I'm just curious!

Dr. Domhoff: Well, I think that his brain is activated, he's woofing, and his paws are moving, we've all seen it. But that doesn't mean they're dreaming, it doesn't follow from that, it's a behavior.

Alie: That's fair, you're the expert.

Dr. Domhoff: Well, thank you. [*both laugh*]

Aside: And when your goblin is [*more little yelps*] and making flipper paws, that is called heaven and the best, but also myoclonus, which is a type of muscle jerking. And that plus little fluttering eyelids and eyes are associated with REM sleep, which accounts for about 12% of a dog's life. And if you're thinking, "Oh okay, that's only about half as much as a human's 25% of REM sleep, right?" No, that's 12% of the dog's *life*, not their sleep, their life. They're only awake 44% of the time, according to a 1977 study on dogs sleeping, they're living the life and they're sleeping through it. But are they dreaming?

This is where science gets divided. So, even though some researchers found that lab rats learning a maze had the same very specific brain activity during sleep, leading to the assumption that yes, the rats were dreaming about the maze, other scientists say that if you cannot take a report, you don't know who is dreaming. If only there were a book about animals when they dream. Well actually, philosopher David Peña-Guzmán published the book *When Animals Dream* a few months back so there you go. And in it, there are accounts of cephalopods changing colors during sleep states, and fish who have brain activity during sleep that looks the same as when they're singing songs underwater.

That made me learn that zebrafish sing, I guess? And they're not just performers. I went down a rabbit hole and it turns out that zebrafish are connoisseurs as well according to the 2018 paper, "The effects of auditory enrichment on zebrafish behavior and physiology." Researchers exposed a bunch of adult zebrafish to two hours of Vivaldi music twice a day, for 15 days, and overall, apparently, zebrafish exposed to such auditory stimuli were less anxious and they had lower levels of inflammatory cytokines and cortisol. So, if a fish can benefit from relaxing, please trust that you deserve peace and self-care as well. If you're like, "In my dreams," let's discuss that.

So, lucid dreaming is when you know you're dreaming and you can get some kind of control over the situations and the characters, kind of like the *Star Trek* holodeck, but free and it's in your own brain. And tons of you, such as Susan L, Tatum, Michelle Lee, Brenna Lynch, ErinHemm, Mia, MT Bee, Caylie Evans, Toby Tobias [phonetic], Shai S Walker, and Joanne E wanted to know: Is lucid dreaming legit? And who can do it?

Alie: What is lucid dreaming? Is it a different part of the brain? Is it even a real thing or is it just kind of a euphemism for just daydreaming?

Dr. Domhoff: [*sharp inhale*] Oh, lucid dreaming.

Alie: You're wincing. You're wincing like I just poured lemon juice on a cut.

Dr. Domhoff: Yeah, it's a traumatic statement. [*Alie laughs*] Lucid dreams are a very rare, maybe real, thing. They've been hyped out of sight, warped everything, hustled beyond belief. It's a painful

topic for me, you're right. I thought, "Is she going to ask me about lucid dreaming?" [*Alie laughs*] Because... I have a foot in two worlds. I certainly get along with at least most of the dream researchers in whatever they're doing and I'm curious. But I have my foot really strongly in the scientific world. If I say there's no reason to believe it, I don't believe it.

So, most of the studies of lucid dreaming are quite bad. [*"Bummer."*] The first serious studies, I can tell you, were done by a person... we'll go nameless, all people will go nameless. And in this particular dissertation, done at a prestigious university where you could, at that time in the '70s, they could create their own program and he had created his own program. He wasn't in a department, he wasn't trained in psych or anything else. At any rate, he was both the participant and the experimenter, so 14 of the 17 instances of lucid dreaming were, lo and behold, the experimenter's who was also the subject. And then he writes a popular book on it and so on. So, this is what was mostly going on, and in an article about later, he got into the dreams, turned out after he had been a hippie kind of person for a while and all these hints at maybe had used drugs and so on.

Another guy was hilarious, he had insomnia so he would go to bed and wake up, get up, have coffee, which blew my mind, and he'd finally go to sleep, 5-6 AM, and he'd have lucid dreams. Now, this woman had had scary dreams as a young kid, 5 to 7, and feared witches. Now, what that creates is a state where you're afraid of sleep, you're scared to go to sleep, you don't want to go to sleep, and that kind of thing can happen to people. So, that person is likely very vigilant during sleep. So, once this dissertation based on the person's own dreams was published, then other people tried to do studies using EEG and other participants. And they would find that there was more of an EEG state, this alpha state I mentioned, it's different from our usual waking state but it's not like what dream sleep looks like or other forms of sleep. So, they were very iffy.

Aside: So, that was in the groovy 1970s, but let's skip to the lit 2010s when neuroimaging was more widely available and now this legend of lucid dreaming could be observed.

Dr. Domhoff: And the researcher had trained a number of participants to have lucid dreams. She used out of these 30 some people, there were 5 or 6 that said that they were having... I think it was three or more lucid dreams a week at home. So, she gets them in the lab and maybe two, you have one or two instances, which is very few. But the interesting thing is that there's a lot more activity in the executive network, a lot more activity.

Then comes, finally, a neuroimaging study by a guy that was really into lucid dreaming, and he gets... I think it was 4 guys in their mid-20s, early 30s, who'd been really working at it on lucid dreaming for a long, long time. They were prolific lucid dreamers. He's got 15 nights of imaging on these guys, he gets two instances, one from each of two guys. [*"Wait, that's not... that's not... that's not a lot."*] Same thing, he has got some of these areas that are active during waking and very important for consciousness, it's believed.

Then we get to another interesting point. In the literature now, people have tried to study consciousness, they're really good, the thing is, that there are parts of, it's called a frontal pole, or the rostralateral prefrontal cortex, this particular area in the brain has been studied, and it's really a key part of the executive network, but it has two parts. One that is sort of more active toward the external world, and one that monitors our internal world.

And so, I just wrote a paper that's going to be published in March in which I, humble dream researcher, have the nerve [*both laugh*] to write about dreaming and consciousness, in which I say, dreaming happens in a certain area in the hierarchical network that leads to

consciousness. And what differs is, in lucid dreaming, I put forth the hypothesis that in lucid dreaming the internally oriented part of the executive network has been reactivated. Because if our brain is constantly fluctuating in its activation levels, which I believe it is, our networks right now are changing a million times. If I suddenly notice a sound or if I notice out the window, I notice, "My goodness it stopped raining, it's sunny," you know, that changes our brain all the time. And so, coming out of sleep like that, momentarily, we could have that particular network.

Aside: And when it comes to lucid dreaming, it's pretty rare but some research, like the 2018 paper titled, "Frequent lucid dreaming associated with increased functional connectivity between the frontopolar cortex and temporoparietal association areas," [*small sigh*] found that though we don't understand the neurobiological basis of lucid dreaming, evidence shows that there's involvement of these areas called the anterior prefrontal cortex and the parietal cortex, and people who are able to lucid dream frequently had significantly higher resting state functional connectivity between these areas. "Mumbo jumbo!" you're screaming at your windshield, you're like, "I don't know what you're talking about, how do I make out with the weird horny green M&M in my dreams? That's all I care about." And I understand you.

So, I scoured the internet to give you these unproven tips, but some people say: good sleep hygiene, a comfortable room and sleeping setup, including temperature. Remember go cold, don't get too hot under there. Start dream journaling, during waking hours check in with yourself to make sure you're in reality, look at your hands, poke stuff to make sure it's real, so that you do it in your dream and say, "Holy shit, this is a dream." Also, before you go to sleep, set an intention and think to yourself, [*speaks softly and hypnotically*] "Tonight when I dream, I'm going to remember I'm dreaming, I'm going to do it." And you can also try sleeping five or six hours, and then getting up and reading or doing something active, and then go back to bed for an hour and see if you get that sweet, sweet in-between-worlds lucid dreaming reward. So, I hope that helps, Tony Vessels, Specs Owl, Art_By_Di, and Leah Morris. But don't get too desperate for it, you're better off just dreaming normally and then playing a video game when you're awake, or something.

Dr. Domhoff: Now we get, what's the heavy part? And maybe we will say, you've got to censor this. I don't know. What I am uncomfortable with is, people go around and say, "I can teach you to lucid dream. I can give you techniques to lucid dream. There are technologies that can help you lucid dream." And I used to have a flier that I passed around in my class from a guy that was a doctor I guess, down just the little town below Santa Cruz. He had a machine, and he's standing there, and he said he could come down and he'd have you lucid dream with this machine. I mean, this gets into hustles, this gets into maybe grift even, I don't know. So, it gets uncomfortable for me. But what the problem is, what's difficult to say is, look, if lucid dreaming is atypical and there's a study out there that says none of the technologies and methodologies have improved lucid dreaming for those who do not lucid dream, may I dare ask the question of, can we possibly study the life histories of those people? [*Alie laughs*] I mean...

Alie: It's too much pressure for people. People keep thinking, "I can lucid dream if I work hard enough." And that's just not true, huh?

Dr. Domhoff: Yeah, and you can fly if you work hard enough, and all the things we're told to try harder, "You can do it if you try." [*Alie laughs*] There was a great book on psychotherapy that talked about that we end up, if we're not careful... and we do this in our society tremendously.

There's a great book by this title called, *Blaming the Victim*. And so, if you didn't prosper in my psychotherapy, what the hell is wrong with you? [*Alie laughs*] I mean, it's not my fault, you didn't try, I told you the instructions! Things get turned around. Kid comes to school, they are not nourished, there's no books in their house because their family has been unfairly treated, and then you say to the kid, "You're not concentrating! You're not trying hard enough! Why don't you develop your vocabulary?" So, you're already blaming the victim. And here we're talking about social class, and race, and gender, and et cetera but we blame the victims. What the hell is the matter with you because you can't lucid dream? So, that happens in all of this kind of stuff.

Alie: Well, that was going to be my very last question. I just had to ask because I've got you here, what would you do if you found out, physicists, Cal Tech, put out a paper next week saying, "Holy shit we figured out multiverses are real, there are parallel universes, time travel is possible, we figured out that dreams are actually a parallel universe." What would you do?!

Dr. Domhoff: If I trusted the physicists I'd believe it, I've changed my mind before. I did give a lecture that actually got listened to. I want to plug it, 39,000 views. That's big time for an academic, especially a dream researcher called, "The Awesome Lawfulness of Your Nightly Dreams." I was in dead-serious mode. But at any rate, the interesting thing that I ended with, it's similar to what you said is I said, we actually lead two lives. We lead a life that's waking, we lead another life that's dreaming. And I said, they differ because in the waking life, we pick up right where we left off but in my dreaming life, it starts over each time, we have a different dream life each night.

But if I have lots of dreams from you, and I have actually 4,000 from Izzy, the young woman where I have her dreams from 12 to 25, you see that her life has all these episodes. She's, you know, seeing one of these crushes, or she's at a horror movie, or she and her brother are arguing in some way. And it can be, in a certain sense, very thematic.

We have the dreams, Dorothea, she named herself, we often would let people pick their own pseudonyms, but it got out of hand. [*both laugh*] And I thought, I'm not putting that goofy stuff up there. So, at any rate, but Dorothea was something; very educated woman, born probably in the 1890s, but we had 600 or 700 or those dreams, I forget what it is. But in 72% of those dreams, there's one of seven things happening. This is poignant in her. 20% of her dreams, she's either buying, preparing a meal or eating a meal, something to do with a meal, so that was her biggest theme. There was also, I'll get to the poignant part in a minute, which was her last dream that she mailed us before the home in Hawaii wrote and said she was dead. She also would often dream of missing the bus or the train, but she also had dreams about 5 to 10%, I forget which is which, she's trying to go to the bathroom and there's people, people in the bathroom, and it's a problem.

Aside: Hey, who hasn't been there, right? Renee Q and Ariel.Vanzandt have and you're probably just sleeping with a full bladder, and by you, I mean we. Anyway, less toilet, more poignant.

Dr. Domhoff: So, toward the end of her life, she retired to Hawaii, and she lived in a real nice place, she swam every day, she seemed to be in fitting health, she would mail periodically these dreams to, in this case, to my mentor Calvin Hall, and then I inherited all the files and put them on DreamBank. The last dream before she died, which if you didn't know that 20% of her dreams were about food, you would say, "Oh my god, it's a premonition of her death."

Aside: But in her last dream...

Dr. Domhoff: She's sitting around the table with her siblings, she had several siblings, and she used a phrase, very proper phrase, she said, "Mother had dished too liberally to my brothers and sisters and there was nothing really left for me to eat. And then I saw a ham bone sitting at the end of the table or sitting on the floor." That was the dream. So, you say, my god, premonition, death, I mean, only a bone, she's not getting to eat. But no, this was always happening to her in her dreams with these siblings. She's always this sort of, "I get kind of hind-tit of all of this, I'm sort of the left out one in the litter." So, she has a separate life, it's a second life.

Aside: If there's any *Rick and Morty* fans out there, you might be haunted by the episode, "Night Family" in which Rick uses a machine to have his nocturnal self do the chores of his waking self, including getting a ripped set of abs. But then the ultimate conclusion that they come to is that we, as waking people, are just the servants of our sleeping selves. Creepy, I loved it, I think about it constantly.

Alie: Well, last questions I always ask is, what is hard about your work? What's the hardest thing about dreams?

Dr. Domhoff: Well, there's a million things that are difficult about dreams. Because scientists like to observe, you can't observe dreams, you can't make them happen, in other words you can't do experiments where you do this or that, they don't work, we tried it. Drop water on people, whisper in their ear, tape their eyes open and flash the light, tell them stuff during the day. It doesn't really work. It's the mind doing its own thing. I used to call it the 'spin of the cognitive Rolodex except nobody has a Rolodex anymore.

Alie: [laughs] I remember what they are.

Aside: It was a desktop address book, you can ask your grandma. Anyway.

Dr. Domhoff: So, semantic memory banks are being stirred up but it's hard then because we can't experiment, we can't observe, and we're at the mercy of you telling the dreams. So, we've done this elaborate study, we awaken you in the middle of the night and say, "Would you report your dream," and you say, "I can't remember." Which is maybe true, but it could not be true. So, you're at the mercy of the participant. If you like certainty, any scientist wants to control variables, and if you can't control the variables you're going to say, "That ain't my field!" [Alie laughs] So, that's one of our problems.

The other problem is that because the work on dreams did not lead to, as was early thought by some people in the late '50s and early '60s, might be a key to mental health. There really was that belief and some key psychoanalysts of that era who were MDs and very big deals, they helped some of the early dream researchers to get grants. So, there were grants for dreaming. But when dreaming turned out to be not going to be useful in terms of medications or studying psychosis or so on, the money did dry up. And I understand it, and I appreciate it, and I believe it. In other words, I'm not out scolding anybody, "Why aren't you studying dreams?" There's Alzheimer's, there's people's attention deficit disorders, you know, and all of these things of waking command our attention, and there's PTSD. These are things that command the attention of the federal government. As far as foundations, they of course want to make themselves look good and so they find topics that are relevant that would make their name even more lustrous than the millions they made. And so, dreaming does not fit into that category.

But the hardest thing of studying dreams in the past was being up all night. [both laugh] I mean, if you had a sleep dream lab, somebody's going to have to wake up and wake up those

participants. So, you have to learn what it's like to be a participant and it ain't fun to be awake at 1 or 2 AM and then jostle two hours later, and so on. So, participants don't necessarily last. I mean, that's enough of that. [*That's it. I'm outta here.*] And if you just get... I mean, our first night, one dream in the set of dreams I studied, the guy dreamed that the machine was electrocuting him. [*both laugh*] The EEG. Look, he had all these wires on him, and it's called electroencephalogram, so he thought the machine was zapping him, you know. It has its little problems.

Alie: What about your favorite? Favorite thing about what you do? you've been doing this for years, and years, and years, what's the best?

Dr. Domhoff: Well, I like to discover new things. I didn't want to just add to the details on vision or learning, I wanted to know the royal road to the unconscious, the meaning of life, why we are crazy, why we believe the things we believe, why we fight with each other so much, I mean all those things have been part of my research life in one way or another. So, I was interested in using the best methods, the most serious quantitative methods, the most objective methods to study the toughest questions. Just the challenge of dreams and when you have a great mentor that's done so much and has enthusiasm for it, and I might say, we've replicated his work again and again and his coding system has been used all over the world, carrying that on, it had some meaning.

He was also a person that said, "I think you're okay." We all need to have a mentor that says, you're right for this field. When we go to college, we're looking for something that we like, that likes us. So, if you say, "I love psychology" and you haven't done so well in statistics or experimental psych, and then somebody has to say, "Maybe you ought to go into some more qualitative field." So, they like something that didn't like them. It's like finding any match, right? So, you find something you really like, where it likes you. So, dream research was that for me. You asked me, "What keeps you going about dreams?" For all their negativity, and they are often negative, there's some real fun in studying dreams and reading dreams.

Aside: Patron Scott Sheldon asked: Thoughts on dream journals? And I think by now we know Professor Domhoff is a fan. But would he read yours?

Alie: Can they sign up and fill up your dream coffers and the DreamBank?

Dr. Domhoff: No, no, no. [*laughs*] We're very wary, we only use... I mean the thing is, I don't- You've heard of all the pranks that have been done on researchers. The Piltdown Man, fake bones in a British museum that fooled people. So, I am very sensitive to that in terms of, I know people can make up dreams, I know they can change them, so we don't collect any dreams over the web, I'd never take a dream off the web. These are people that write me and then I say, "Send me a photocopy, or when did you start writing them down?" I got a set of dreams that have a timestamp on them, so I know that that person wrote those dreams down in the past. Just write them down, don't look at them, just write them down every day for a month or two and that gets you into it. If you stop and you analyze and think, then you start to project onto it. Just write them down. If you can study your own dreams and you want to, just write them down, put them in a drawer, don't even look, just keep them. But the more you do it, the more you get in the habit...

Alie: Well, I'm going to start writing mine down, I will. I'll let you know how it's going too.

Dr. Domhoff: You did start writing them down?

Alie: No, I'm going to start. I'm going to start.

Dr. Domhoff: Why don't you voice them?

Alie: I'll do voice-to-text on my phone that way they're digitized, and I can later, if I need to analyze them, I can.

Dr. Domhoff: Voice-to-text works well. I've been trying to tell dream researchers for 10 years to get a voice-to-text.

Alie: Well, this is a call to the universe, get with it dream researchers, we got a plan here!

Dr. Domhoff: Yeah, we've got a plan of how to get the dream [*Alie laughs*] and we're going to... I now know a person who can analyze them.

Aside: And if I do submit them later to his research?

Alie: Can I pick a cool name, like Jimminy Diamond or something? That would be my pseudonym.

Dr. Domhoff: Just don't go too far.

Alie: I won't do Jimminy Diamond. I'll do like, Lynette or something... Rhonda, something like that. This has been an absolute dream of mine fulfilled. I have been wanting to interview you for years and this did not disappoint.

Dr. Domhoff: Well, it was a good time it turns out.

Alie: Thank you so much for doing this, you're the best.

Dr. Domhoff: My pleasure. I hope it's serious enough, I mean...

Alie: I hope not. No, this is perfect, this was the best.

So, there you have it, ask smart people sleepy questions and just know that that's the best way to learn anything. Bill and I had just such a lovely time chatting, we talked for over 3 hours on this rainy Tuesday in his office. I'm just so glad I asked him if I could ask him your questions. His new book is called, *The Neurocognitive Theory of Dreaming*, it's linked in the show notes if you want to know more, all the details are in there, alongside his research site DreamResearch.net. I also have a ton of links on my site at AlieWard.com/Ologies/Oneirology, which is linked in the show notes.

We're @Ologies on Instagram and Twitter, I'm @AlieWard on both. I'm also at @Alie_Ologies on TikTok now, I'm givin' it a shot, ya'll. Thank you, Erin Talbert for adminning the *Ologies* Podcast Facebook group with help from Boni Dutch and Shannon Feltus. Thank you, Emily White of The Wordary, for making professional transcripts and Caleb Patton for bleeping episodes. Those are up for free at AlieWard.com/Ologies-Extras. Susan Hale handles merch and so much else, and Noel Dilworth does our scheduling. Thank you to everyone supporting on Patreon.com/Ologies. Thank you, Zeke Rodrigues Thomas and Mercedes Maitland for working on kid-friendly shorter versions of classic episodes, those are called *Smologies*, they're up at AlieWard.com/Smologies. Kelly R. Dwyer makes our website, and she can make yours. Nick Thorburn made the theme music and lead editor for this episode was Mercedes Maitland of Maitland Audio, thank you so much you are wonderful, we heart you. Additional editing by Jarrett Sleeper of Mindjam Media, who I would marry in a saloon with warm brewskies.

And if you stick around, I tell you the secret, but I already told you one in the middle of the episode so, right now, I'm going to just go over to Gremmie, I'm literally recording this on my bed, [*whispering*] I'm going to see if Gremmie's going to make any barking noises in her sleep... Okay, she's awake, she's just breathing at me. That was uneventful, but when she does bark in her sleep it

sounds like this, I'll do my best impression. [*several little yelps and breaths*] She sounds kind of like a chicken. Okay, berbye.

[*To Jarrett*]

Alie: That wasn't a very good secret.

Jarrett: That's good.

Alie: No, it wasn't.

Jarrett: I thought that was cute.

Alie: She was sleeping right before then. Can I do a different secret?

Jarrett: If you want, you're still recording.

Alie: [*laughs*]

Jarrett: What?

Alie: That's really funny that it's still recording.

My other secret is that it's raining really hard in California right now and I just got out of the shower, and I was not wearing clothes and it was raining and I dashed out onto the porch because I've never been nude in the rain. But now I have. So, you're armed with that knowledge. Sorry, everyone. Berbye!

Transcribed by Aveline Malek at TheWordary.com

Links to things we discussed:

Dr. G. William Domhoff's book: [The Neurocognitive Theory of Dreaming](#)

His website: [Dreamresearch.net](#)

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A donation will be made toward dream research at UC Santa Cruz

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