



**Wisdom comes  
in sleep**



**English  
podcast transcript**

# Wisdom comes in sleep

## The empirical investigation of normal and altered states of consciousness

English transcript

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*AM: Hello and welcome to Wisdom Talks, the podcast for the METIS project, the internet portal for intercultural wisdom literature and wisdom practices at [www.metis.ethz.ch](http://www.metis.ethz.ch). “For so he giveth unto his beloved sleep”, it says in Psalm 127 of the Bible. What do we get while we sleep? And why should sleep itself be a gift? Is it because we forget our worries while we sleep? Or is there more to it than that? If part of wisdom is that we detach ourselves from life worries, then sleep seems to be very helpful in this regard. Even when making difficult decisions, we common advice is to “sleep on it”. Attention, alertness, focus have positive connotations, and are opposed to the supposed stupor of sleep. We encounter a related, and similarly rich, metaphor when assessing the effect of drugs on our consciousness. Sometimes they are said to be mind-expanding and transformative. Sometimes drugs are said to cloud the senses, to be the source of illusions and a means of escaping reality. Sleep, mental performance, different states of consciousness and drugs – a tangle of topics into which we want to bring some clarity today with Alexander Borbély. Alexander Borbély is an emeritus Professor of Pharmacology at the Medical Faculty of the University of Zurich. His research focus has been on sleep and the physiology and psychology of abnormal states of consciousness. Welcome, Mr. Borbély.*

AB: Thank you very much for the invitation. I'm very pleased to be here.

*AM: It's good to have you here. Let's start right away with the altered states of consciousness. Is "normal" when we are awake and present, and "altered" when we are sleepy, woozy, or hallucinatory?*

AB: It is. In the normal waking state of consciousness, we're present in the world and can do all the things that we normally do; whereas in the somewhat woozy states – whether they come from drugs or something else, our world is kind of restricted, but also altered. And those are different states.

*AM: So that restriction also means having a distorted relation to reality.*

AB: That's right. Depending on how strongly this is restricted, one has ideas, hallucinations that others don't see, so that communication with others naturally becomes more difficult in these states.

*AM: Is sleep a normal or an altered state?*

AB: Both.

*AM: Okay. I think you need to explain that a little bit more.*

AB: I think sleep is quite a strange state because in sleep we leave the normal waking state, and we are in a state that we don't account for. We are "unconscious" in a certain sense. Since we have no communication with others, we cannot perceive our environment, our sensory impressions are very limited, and we cannot interpret them, we cannot think during sleep. Even the sense of time is no longer present during sleep. When we sleep, we do not know how long we have slept. Although I have to say that the sense of time is not completely gone, because we can plan to wake up again at a certain time. Yes, all this differs considerably from wakefulness.

*AM: You have described the mind-altering state of sleep, characterized by a lack of self-reflection, a lack of self-awareness. What is the normal state of sleep? Or why is part of it also normal?*

AB: Sleep is normal, of course, because we are used to sleeping every night, unaware of what the whole thing is about. We just fall asleep and then wake up. Most of the time, sleep is not an issue for the average person, except when sleep is disturbed. And then it becomes an issue. Sleep as such is of course a highly interesting phenomenon, but not necessarily perceived as such. And in this sense, it simply belongs to life. Sleeping and waking are normal states, in which sense I would say they are not among the altered states. But of course, when we think about it, things immediately look different.

*AM: Is sleep a gift or rather an impractical evolutionary development? Because just by not being responsive, by not being self-aware, it seems to me to be a pretty dangerous state as well.*

AB: That's right. And of course, the question immediately arises: why did sleep arise in the first place? That's a question that always comes up: why do we sleep at all? And what do we know about it? Here you have to keep in mind that we know about many bodily functions and needs: We know why we need to eat. We know why we drink, why we breathe. However, why we need to sleep is not so obvious. Of course, if you ask yourself why, you usually reach the conclusion, to recover. But what do you recover from? What does recovery mean? That's where the difficulties of explanation really begin.

*AM: Did I understand you correctly that it has not really been scientifically explained what happens during sleep and why it is necessary for our life?*

AB: There are assumptions, speculations, like the recovery function. There are certain ideas about what should happen. But in fact, one does not know the details yet. In sleep research one can simply look at how this state is regulated, and approach sleep from this point of view. This can be done, of course, by preventing sleep and seeing what happens. In doing so, one can observe that the recovery sleep becomes deeper. If you haven't slept for a long

time, your sleep becomes more intense; not necessarily longer, but more intense. But you can also observe sleep over a longer period. With today's techniques, this can be done much better than in the past – over days or weeks – to see how the sleep-wake cycle behaves. How does it change? Especially when it is suddenly shifted, as in the case of overseas flights or shift work. This reveals how much is responsible for sleep that has not been recognized in this way before, namely the diurnal rhythm, the circadian rhythm, which is inherent not only in humans but in all living things as it reflects the rotation of the earth. The light-dark, the cold-warm, which we experience every day.

*AM: Yes, that's interesting. Because it seems that we already know a lot about the context of sleep, we can distinguish between different sleep phases, and we know how these sleep phases can be influenced. But we still don't know what exactly happens in the brain.*

AB: No, and of course it is important to note that these sleep phases were only recognized after brain potentials – the electroencephalogram – could be registered. These are potentials that can be tapped from the surface of the brain, from the surface of the skull, in the microvolt range, but with modern electronics they can easily be registered and recorded over a longer period. In the 1950s it became clear that sleep is not a uniform state but takes place in phases: REM sleep – sleep with rapid eye movements – and non-REM sleep.

*AM: So, there are two distinct phases.*

AB: Yes, those are the two phases. By recognizing this, we know that sleep is a little more complex than we had thought. What is perhaps even more interesting: not only humans, but also all higher animals show these two phases. So, sleep is something ubiquitous that cannot only be studied in humans. And that, of course, has given research a great deal of impetus. Because of course you can do experiments on animals that you can't do on humans, and thus you can study sleep in much more detail.

*AM: There are also animals that are only partially asleep, for example. I believe that dolphins can sleep with one half of their brain. Certain birds, frigatebirds, I think, can sleep during*

*flight. They're not on the ground for months because they can sleep in flight. Why are we humans so completely knocked out when we sleep?*

AB: We can't be awake with one half of the brain and asleep with the other. That would be very convenient for many applications, of course. But dolphins can do that. Dolphins, and maybe birds, have this ability to perform what's called unihemispheric sleep; that is, only one hemisphere sleeps while the other is in a state of wakefulness. Also, the corresponding abilities, which depend on this other, awake hemisphere, they are still quite intact. But these are really exceptional states. What has been recognized, is that sleep does not necessarily involve the whole brain, but there is local sleep. That is, certain parts of the brain can show a sleep-like pattern – again, characterized with EEG or electrophysiology – while others do not. So, it looks like there is not only global sleep, but also local sleep.

*AM: Can humans have this local sleep as well?*

AB: It has been demonstrated in humans as well. Namely, those parts of the brain that were particularly stressed during wakefulness. Special tasks were performed: search tasks by hand, visual perception linked to the corresponding cortex part, and we saw that when something was very stressed, the depth of sleep – the slow waves, were much more pronounced than in other parts. So, it seems that these slow waves are locally related to the need for recovery and perhaps also to the recovery function. And that's a relatively new insight. I can perhaps say that in 1994 we were the first to find a first indication empirically that there is such a thing at all in humans. And afterwards we found something very similar in animals. And since then, the term 'local sleep' has in fact become a very common sleep, which is very intensively researched in sleep research today.

*AM: Does this mean that when I sleep, certain parts of my brain sleep more than the rest? Or that when I'm sitting here with you recording a podcast, something is asleep?*

AB: No, it doesn't go that far. Yet again, you get a hint that sleep or the need for sleep is somewhat related to the prior activation intensity. Also, maybe indirectly, a recovery function kicks in when it's absolutely necessary. So that's an important finding. Perhaps I can

point out something else in connection with this: Today we talk about 'sleep homeostasis' and mean that if you have been awake for a long time, you have to compensate for the sleep, in terms of intensity. One can prove this, not only with the EEG, but also with the sleep behavior. And this is important because it has been proven that animals that do not have a brain or a comparable nervous system in the usual sense – where you cannot derive an EEG – also show this compensation of the sleep state. This made it possible to add invertebrates to sleep research, especially *Drosophila*. *Drosophila* sleep has been studied as a model for about 20 years and *Drosophila* is an animal whose genetics have been excellently studied. That is, sleep genetics was in fact founded by this finding. But it was concluded that regulation is the important thing, and not the typical sleep characteristics, which cannot be used in animals without a comparable brain.

*AM: That sounds as if consciousness is not simply switched off during sleep, not everything is shut down equally, but as if this is also accompanied by completely different processes.*

AB: Right. Yes, sleep modulates a great many processes, but doesn't fundamentally change them. And especially the involuntary processes in the body – that is, as far as breathing, circulation, metabolism are concerned – they are changed somewhat in their orientation, in their intensity during sleep, but in principle they are no different than in the waking state. There are parts of the body that are not asleep, if you want to put it that way, but are simply somewhat modulated during sleep. And that's where, again, this 24-hour rhythmicity, or circadian rhythmicity is particularly important, because that encompasses not only the brain or behavior, but all bodily processes. During sleep, we benefit from the fact that by resting and switching off communication with the environment, we enable certain processes to take place in the body better than if they would occur during activity. In that sense, sleep is actually a continuity, a continuation of the waking state.

*AM: That's very interesting. It's new to me that different areas in the brain change differently during sleep. Some hardly change compared to the waking state and others benefit from this detachment from what we perceive as reality in the waking state.*

AB: Yes, that's right. And in sleep, you're in a state that's somewhat comparable to the plant world. Because we're immobile, we're not communicating directly with the environment, but we're still present and metabolic processes continue that go in the direction of anabolism, that is, build-up. Because we don't need degradation – we are no longer in direct communication with the environment. Therefore, it has been said that we are in a vegetal state in sleep. This was especially emphasized by the philosopher Nancy, who wrote a very nice book about sleep and who also made comparisons with the plant world. There must be some evolutionary connection because there is much that is comparable.

*AM: You also compared sleep to unconsciousness before. Is this still true in this context, or does something different happen in unconsciousness – for example in anesthesia – than what happens in a natural sleep?*

AB: Sleep is a very different kind of unconsciousness. The special thing about it is that you can be awakened at any time. So, it's a reversible unconsciousness, if you will. The unconsciousness is not really unconsciousness in the sense that you can still perceive external stimuli. Especially if they are relevant. A mother who is asleep is attuned to the sounds of her child. As soon as the child starts to whimper, she wakes up. But she doesn't wake up when an express train passes outside the window, which is much louder. In sleep, one is quite selective to certain stimuli. And in this sense, of course, one is not unconscious. Because in unconsciousness, that's not the case. You also mentioned the unconsciousness that is caused by pharmaceuticals. Sedation is in fact the preliminary stage. Then there is hypnosis; when a sleeping drug takes its effect, that's a hypnotic.

*AM: Just to clarify, is this the hypnosis that uses pendulums?*

AB: That's a different kind of hypnosis...we might get to that later. A hypnotic is another name for a sleeping pill because it induces sleep – although it's not really sleep. Because it's already half an anesthetic. And depending on how many sleeping pills you take, you can go into full anesthesia. There are hypnotics that are used as anesthetics, for example midazolam, which is a benzodiazepine. You can use that for anesthesia but also as a hypnotic; depending on how you apply it and how much. Anesthesia makes you



unresponsive, which you can see in an EEG: There is no sequence of phases, and the EEG is changed differently than in natural sleep.

*AM: Can you say that more brain areas are switched off than in natural sleep?*

AB: They are switched off in a different way. You can't really compare it with sleep. Although of course even in anesthesia certain brain areas still have to function. If you're not so deeply anesthetized that you can't breathe either, for example, then you have to give artificial respiration. But in a superficial anesthesia, a short anesthesia, breathing is definitely still present. Certain areas of the brain still function properly, and the circulation is also maintained, so there is a lot of nuance.

*AM: And now back to the hypnotic states with pendulum. Are there any comparisons to sleep states there? Is it comparable, or is it something completely different?*

AB: It is something completely different. There, too, the consciousness is restricted, also somewhat channeled. The hypnotist is connected to the person who is being hypnotized, so there is still the connection. But a lot of things are faded out from perception, the environment and so on. Hypnosis is also a constricted consciousness, but it is not comparable to sleep. In the EEG you don't see the typical sleep waves, you can see certain changes in the EEG, but it is not very clear. So, you can't say there is a hypnotic state of consciousness. It not so well definable.

*AM: People suffer a lot from sleep problems. Sleep deprivation is also a method of torture. What does sleep deprivation do to the psyche and body?*

AB: Prolonged sleep deprivation leads to hallucination. Your perception of the world is altered. You see things that aren't there. You hear sounds or voices that aren't there anymore. Also, body hallucinations can occur. It is as if the dream world is no longer separated from the waking world after a longer period of sleep deprivation, and one can no longer directly distinguish between influences that occur in dreams and others that normally only occur in waking states. Emotionality is also altered during prolonged sleep deprivation.

The subjects often feel persecuted, observed. They may get paranoid. Actual psychotic states can develop after longer sleep deprivation; longer means after several days – two, three, four days. There's a famous sleep deprivation that was maintained for eleven days. A young man who was very motivated to set a record had gone without sleep for eleven days. He was monitored during that time and had to keep moving all the time because as soon as he sat down, he fell asleep. The problem was actually to prevent sleep. But of course, that was a completely different situation than when sleep deprivation is used, for example, as a method of torture. And that is unfortunately the case today. Then, of course, you're under additional stress and threat. Sleep deprivation is devastating for the psyche.

*AM: That also means that after sleep deprivation we are not just very exhausted, but our condition changes quite fundamentally.*

AB: Yes, that's right. And what's amazing there is that sometimes – not always, but sometimes – one night or one sleep episode already restores all these changes so that one wakes up again almost in a normal state. Here, the recovery function of sleep from such an extreme state becomes particularly clear.

*AM: Would you describe sleep as a psychological or a physical need? Or does this distinction make no sense at all?*

AB: It is usually assumed that sleep is a psychological need. And it is also the case that the psychological changes are in the foreground – especially with prolonged sleep deprivation. The physical functions are usually still maintained. Strength doesn't disappear. However, if you look closely, it is not like that: Fine motor skills and other things are altered, limited. Athletes know that good sleep is a prerequisite for top performance. And as soon as this is no longer present, physical losses can be observed. So, it's not that it exclusively affects the psyche, but I would say that it is mainly the psyche that is affected. And as a result, the control of the body by the psyche and possibly also the emotionality.

*AM: We've been talking about sleep deprivation. What about if we sleep a lot, is that healthier and does that make us more creative?*

AB: No. It doesn't, although it's propagated that modern humanity suffers from not sleeping enough. And that if people slept more, many things would get better. Especially in the U.S., the prevailing opinion is that everyone should sleep at least seven, if not eight hours. Since most – or a great many – sleep less, bad health, bad performance and so on comes from lack of sleep. There are slogans that go in this direction. But you have to look at it in a more differentiated way, because the need for sleep and the duration of sleep is very different for individuals. It's true that when you do surveys, most people say they need seven to eight hours of sleep. And that is in fact the average. But there are long sleepers who need ten or eleven hours. And then there are the short sleepers, who get by on five or six hours – sometimes even less – and are quite productive and healthy. Especially when they could sleep, they don't sleep anymore. And that's always a sign that they are real short sleepers; and not just because they don't sleep much, but because they don't spend much time sleeping.

*AM: This ties in with the following example: If you look at Einstein, he said he always slept ten to twelve hours. Elon Musk claims that he sleeps two to six hours. Of course, this can be self-dramatization on the one hand: one is a sleepy, strung-out genius; the other is a disciplined and highly active one. What do you think of such self-descriptions in principle?*

AB: Einstein also said that he had very important insights in bed. Well, not in his sleep, but he didn't go into detail about it either. And Churchill was also someone who slept very little. But it was discovered later that he had a daytime sleep, which of course he did not talk about. So, his total sleep was somewhat longer. One can also divide sleep into different parts, you must look at it carefully. There are real short sleepers, but those who claim or boast that they can manage with little sleep must be viewed with certain skepticism because these are often people who try to make it their lifestyle to get by on little sleep. The question is always: Are they doing this without drugs, without additional help? Sometimes there are pharmaceuticals that help them do that. And that, of course, brings other problems.

*AM: So, while there are definitely different sleep needs, if they diverge greatly, you have to think about what people do in bed. And if they are short sleepers, whether they are getting additional sleep during the day, or whether they are keeping themselves awake artificially.*

AB: Right. We have also studied short sleepers and long sleepers in terms of their sleep regulation – their EEG – and saw what others have noticed: Long sleepers sleep leisurely, so to speak. They spread their slow waves, their quotas of deep sleep over a longer time, while short sleepers can concentrate this deep sleep on a short time. The intensity of their sleep is higher. They can sleep more intensely and maybe that's why they can sleep shorter. So here, too, you can see certain differences that you can also characterize with the help of the EEG.

*AM: Could you say in general that when you are well-rested – that is, you have slept as much as you need – you become wiser or can make better decisions?*

AB: I think that as long as you don't constantly sleep too little, you can confidently pursue wisdom without limitations. And be as wise as one is otherwise. But too little sleep is hindering and disturbing because one has an increased sleep tendency during the day during certain activities and one's ability to concentrate is restricted.

*AM: In Persian, dreaming can be translated as 'xāb dīdan', which means 'to see sleep'. I find that very interesting, because it suggests that not only is a certain amount of sleep relevant for our well-being or for our performance in the long run, but also that a lot can happen in sleep itself, which has potential for certain cognitive processes. There's an amusing and frequently quoted example by August Kekulé: as a chemist in the 19<sup>th</sup> century, he claims to have come upon a very important chemical insight in a dream. Namely, he dreamt of a snake biting its own tail, and then therefore came up with the idea that the structure of benzene must be ring-shaped. Can dreams actually solve problems that we couldn't solve while awake?*

AB: Well, the example of Kekulé is a nice example. And there are other similar examples in which insights have come in dreams, that dreams have pointed to something that you didn't see before. But in general, dreams are not really that productive and meaningful. I would

say: it is rather the sleep in and of itself that enables one to see things that one could not finish during the day. And perhaps to see solutions that one had not seen before. Sleep is a pause for thought, so to speak, and maybe even more. Perhaps there are processes that occur randomly during sleep that are more likely to help facilitate creative processes than a long period of wakefulness would. In that sense, sleep can bring creative elements to light.

*AM: What exactly are these creative elements that occur during sleep? Because it's quite impressive that something emerges during sleep that wasn't there before, or that you didn't perceive before.*

AB: Yes, the brain – although it looks different when you look at it electrophysiologically – of course continues to function. And perhaps precisely because it functions differently, other content can be processed, which can lead to new or different things emerging than in the waking state. These are all speculations. One knows very little about it. One can only think up such things. And to your question, you started with dreams, whether that is related to the dreaming process or not, that is also very open. I would say there are views that dreams are very important – especially psychotherapists use dreams very intensively to work on unconscious contents, which are only accessible in this way. And others just dream away, and don't put much importance on them. So again, it's very difficult to get clarity on this.

*AM: And you would rather interpret this example of August Kekulé in such a way that certain creative processes went on in his brain during sleep, which gave him the idea of the benzene ring, and that was only indirectly related to his dream in hindsight. Meaning that he interpreted his dream because he got the idea that it had to be a ring.*

AB: The snake in the dream was perhaps an indication that associations, which are loosened in sleep – ideas are no longer as ordered and rational as in the waking state – gave an unconscious hint; perhaps something, which he suspected, but could not really express. And then appeared in the dream as a snake, and of course he had to interpret that in hindsight. So again, it's hard to say how it happened. But in any case, it's a very nice example of how it could happen.

*AM: You stated that thoughts are loosened. Does that mean that one also detaches oneself somewhat from conceptual thinking, thus triggering creative processes?*

AB: That can certainly be assumed. In dreaming, the most diverse, bizarre processes, things, experiences occur, which we otherwise do not experience, and also in short intervals, with cuts, and sudden content changes. This is a different kind of experience, which is not common or accessible in waking. Psychotherapists, through free associations, try to pursue that a little bit, by asking to just give things away or have thoughts without thinking. The dissociation of rational thought in the dream, is of course one of the characteristics of the dream in general. This may be productive, but very often you have to assume that these are simply functions of the brain that are going on without really being very significant, indicating that the brain is still active.

*AM: We talked earlier about sleep problems. Sleep problems can be very distressing, especially if you suffer from them for a long time. Sleep problems can be caused by anxiety, but also by depression. Why do psychological sufferings lead to sleep problems? Particularly in these cases, one would think that a good night's sleep would be helpful.*

AB: Here, I think it is most apparent that the sleep state and the waking state are a continuum. We can't put our psychological suffering away in sleep, but it reverberates, or it's still present in sleep as well. And that's very well known; especially in depression, where sleep is typically disturbed. Depressed patients often have a hard time falling asleep. They have superficial sleep. They also wake up too early and have depressive, unpleasant thoughts in the morning. These are signs that the depression does not end with sleep. Of course, a certain forgetting of the stressful content takes place during sleep. But not in such a way that one can say a good night's sleep provides some peace. Unfortunately, this is usually not the case. On the topic of depression: if sleep is completely prevented in depressive patients, there is often an improvement. So, sleep deprivation has an antidepressant effect.

*AM: Yes, I read that in an article of yours. That's counterintuitive. I would assume that good sleep would be even more important in these cases. And yet you say that sleep deprivation over a period of time can be helpful for depression. How is that related?*

AB: It's paradoxical. And it's not understood. It was first described in the 1950s. And afterwards repeatedly confirmed and used therapeutically. Sleep deprivation therapies or wake therapies are still carried out. Unfortunately, we do not know how this works. There are theories about what could be happening, and we have also developed a theory in connection with this two-process model. But we don't know exactly what is happening. Somehow the brain is changed by the forced wakefulness at night. It can be shown that certain transmitters that also play a role in depression – glutamate receptors – are activated by this long period of wakefulness, and that this leads to an antidepressant effect. These are all hypotheses. Unfortunately, this is not a very effective therapy, because as soon as you sleep again, the depression comes back. One would like to maintain this state, but unfortunately that's not possible.

*AM: These seem to be biological or chemical processes in the brain, which help in the short term, but do not lead to a long-term improvement.*

AB: Yes, exactly, that's the assumption.

*AM: Now we've spoken about sleep, about the loosening of stuck thought structures and how sleep deprivation plays a role in treating mental illnesses such as depression. This topic also relates to certain drugs. Ludwig Wittgenstein once said: "Drinking is at one time symbolic and at another just boozing." I think this aptly shows the ambivalence surrounding drugs. In Switzerland, many drugs are regulated by the Narcotics Act. Drugs are primarily associated with drunkenness and escapism. But now there are also many psychoactive substances that have been and are being used to expand consciousness. And what do these two, opposing assessments say in your opinion about drugs? Drugs in the sense of substances that alter consciousness.*

AB: Such substances have always been around. You find them almost everywhere, in all cultures. Alcohol, of course, being the number one drug. And it's also the one that's best socialized. Society accepts alcohol. There are specific drinking customs. You don't just get drunk, but alcohol is enjoyed in a social context. It's a stimulant, not a narcotic. And even high amounts of alcohol, while not really tolerated by the law, are consumed here and there – unlike in other cultures where alcohol, for example, is viewed as a drug and is prohibited. Particularly cannabis is a drug that was heavily persecuted in the U.S., similar to heroin and other so-called hard drugs. Only with time did people realize that there is a significant difference between these substances. And gradually society became more permissive about cannabis preparations. Today there are more and more states in the U.S., and also in our country, where small amounts of cannabis are allowed and are no longer prosecuted. Society is changing its attitude towards drugs. Therefore, the effect and the use of drugs is not only a pharmacological problem, but also a social problem. It's interesting how attitudes change there. This was particularly striking with the psychedelics, that is, with hallucinogens, such as LSD, psilocybin and the like, mescaline, which were also among the very highly restricted and prohibited drugs in the U.S. until recently – also in our country and in England in particular. And now in the last ten to twenty years there has been a rethinking. These substances, which had a lot of publicity when they were discovered, especially LSD, became very popular with the hippies as alternative drugs, and then were banned. And now they are suddenly being rediscovered for therapeutic purposes, and to research their effect on consciousness. Until now, this was hardly possible because there was no access to the drugs. Now that is changing. That's a very interesting development, especially with psychedelics.

*AM: Yes, and also a current development, as you said. That these psychoactive substances increasingly get a framework within which they are allowed and used.*

AB: Right, yes.

*AM: Why was it not possible to use these substances before? Or can you explain why exactly these psychoactive substances were and still are so heavily illegalized?*



AB: They have very strong, striking effects on the psyche. And that, of course, is something that is scary and threatening. Especially when young people use such substances. The idea was also to prevent young people from going astray with such substances. Since especially youth movements like the hippies used such drugs back in the 60s and 70s, and the hippies seemed uncontrollable for other reasons, as they were protesting the prevailing politics, the drugs were especially threatening with them. So, if you didn't allow the drugs and prohibited them, this might also channel and restrict the whole movement.

*AM: So, it was also a political decision to ban these drugs specifically?*

AB: It was a political decision. If you look at the terrible things that have been reported, especially with cannabis, how people became mentally ill and all the other devastating effects that did not correspond to the truth at all, but which were spread in the media and in politics, then you see that such negative effects spread very quickly and have a very big influence –to the extent that further explorations of these drugs are banned. That was actually a great pity, because psychedelics in particular have incredible potential in terms of their effects. They could and should have been investigated more closely at a very early stage. But access was not possible for these reasons. Now we are in the fortunate position that this is possible again. Today, philosophy is especially concerned with the changes in consciousness.

*AM: What are the positive that can now be explored again?*

AB: Well, people have always talked about expanding consciousness. And we started with consciousness, after all. Here you see a kind of change in consciousness that is much more impressive than with many other drugs. That is, you hallucinate, and you experience the environment differently – your sensory perceptions are different – and your emotionality is also affected. Further, there are all the reports of mystical experiences.

*AM: What are mystical experiences? May I ask you to elaborate on that?*

AB: Well, that means, for example, that there is no longer any difference between me and the world and all other things, one gets insight into the unity of the world, that is, completely new insights, as the mystics apparently had without drugs. In this sense, such insights can be generated via these experiences of wholeness. Experiences, in which not only things are seen that are not there, but where one feels connected with the cosmos, and where everything merges into one. These are very fundamental and very impressive experiences. To many, these were the most important experiences in their lives. Very decisive, drastic experiences can be evoked thanks to the access to these drugs. This has been described before. It has also been used therapeutically before. But now it has been studied a little more systematically and, for example, it has been observed that one or two such experiences are enough to bring about a longer-lasting effect in depression, in addiction, or in other pathological conditions – a longer-lasting improvement occurs. This is connected to the so-called mystical experiences. A mystical index has been created in order to try and quantify this, where we see that the therapeutic effect is related to the intensity of this experience. So, a new kind of pharmacology has emerged, which is directly related to the experience and is no longer based on chemical processes, as is the case with conventional antidepressants, for example...

*AM: ...where individual, hormonal modes of action are changed in the long term and thus the improvement in depression occurs? Is that correct?*

AB: That has been the assumption until now – especially with the classical antidepressants – that the balance between the individual transmitters is changed. But recently it has been found that these theories, which were held on to for decades, are not quite correct, and that the effects are not so strong in comparison to the placebo effect, which is always connected with this effect; psychedelics are doing something fundamentally new.

*AM: So, with psychedelics not the neurotransmitters that lead to longer-term effects, but a certain experience?*

AB: Yes, that's the big question.

*AM: And how long can the effects of such a very intense experience be?*

AB: People speak about weeks, if not months. One has studied this far too little systematically. At the moment, we rely on individual findings or individual smaller studies. There are many ongoing clinical studies because the pharmaceutical industry has found a very big interest in these substances in the last years. This will show how sustainable these effects really are. It is quite interesting. The serotonin transmitter is mainly involved in neurochemical processes that are known to be evoked by certain substances like LSD and psilocybin. You can prevent the effect by blocking this transmitter. So, you can also intervene at the transmitter level and manipulate the effect. There are also other substances that do not act at this level, not via serotonin action, and yet still have a therapeutic effect. A lot is open at the moment in terms of how they work.

*AM: This experience of unity – or what you called mystical experience before –, this very deep connection, is, I think, often associated with wisdom. Mystical traditions are often read and understood as wisdom traditions. How would you say that this is connected with wisdom? Do psychoactive substances give us new perspectives?*

AB: If this is indeed, as certain people have described it, a new experience that influences life in a positive way and perhaps even changes it, then it is of course comparable with a mystical experience, which has also been described to have a life-changing effect. But again, one has to be a little careful here, because there is a tendency to quote such positive reports and to neglect the many cases in which this does not occur, or perhaps even where there are negative effects, in which states of anxiety occur, or also after-effects of a negative nature. So, you have to be a little bit careful here. At the moment, there is a certain euphoria regarding these substances, because they have finally been approved. I would also be very cautious about whether this effect can effectively be linked to wisdom. And since wisdom is also sought through meditation, I should also mention that recently these substances have been used by meditators so see if they enhance the meditation experience or not. So, there are also attempts in this respect to characterize the effect a bit more precisely.

*AM: You have now warned against overloading this experience with meanings. Nevertheless, I would be interested if you could say what conditions the acceptance of LSD or psychedelics is dependent on, or what framework is necessary for it to become a good experience that is helpful in further life.*

AB: Yes, it is very important that the circumstances in which the substances are taken and enjoyed are as positive as possible. That is, in an environment that is relaxed, in which there is a positive mood. It has been observed that music, for example, has a very positive effect on the experience itself. It's not that these substances just work, regardless of what's happening around you. Quite the opposite. I believe this to be an interesting connection between pharmacological effect and perception of the environment and environmental influences, which have to interact to really bring about a positive effect. And in the therapeutic context, this means that a patient has to feel cared for and protected in order to have a positive experience. That means that the therapist must be close by. In other words, one must not feel left alone, especially in moments of lostness or unusual experiences. But these circumstances also make the therapeutic application somewhat difficult. Because if one imagines that every such intake should be with a therapeutic accompaniment lasting for hours, it is difficult to imagine how this should be used in therapy on a larger scale. These circumstances somewhat limit the therapeutic efficacy. I find it very interesting that this interplay between environmental influences and pharmacological influences and experience are so important.

*AM: Yes, I agree, because it seems that not only neurological processes are relevant, but also a certain social framework that has to be there and that has to be right to achieve the desired outcome.*

AB: Yes. And there is the question of how this can be mapped – neurochemically, neurologically, with imaging techniques. I have some doubts that correlates can be found. We are at a level where the neurochemical, neurophysiological approach is very limited, and maybe we have to approach things differently.

*AM: So, for the use of drugs, that would also mean that as soon as they spread – that is, are approved – it is important to create social frameworks, or frameworks in which they are embedded, as they are not in and of themselves very bad or very good.*

AB: Right. And so, of course, the question of whether to allow them, and how to allow them, remains. The same question arises with somewhat less conspicuous drugs, like cannabis. There, too, there are many voices of warning that say that complete liberalization would be associated with great risks.

*AM: Many people have experimented a lot with drugs, especially with psychedelics, including Huxley and Jünger. There are also many reports of artists who use drugs for their artistic work. Do drugs generally make people creative, or does that only apply to certain people who somehow have a predisposition to respond to certain substances and translate that into an activity?*

AB: Well, Huxley and Jünger were already creative without drugs. And since they used drugs and had very positive attitudes towards drugs, they of course attributed special creativity to these drugs. It is very difficult to say how great the effect of the drugs actually was. But the positive recounts they gave about drugs naturally contributed to the fact that the interest in the drugs became greater. I can't say whether their creativity was that great. There are also reports of artists who had incredibly deep insights during an LSD experience, but then when they came out of that experience, it was intangible. Transporting such insights into the real world may not always be easy.

*AM: So, it's not a given that you can integrate the effect of a psychedelic experience or intoxication into everyday life, or that you can do anything with it.*

AB: Yes, that is a problem that must also be addressed in some way. Because you can't look at it as two worlds and completely dissociate it.

*AM: We have already spoken about creativity in relation to sleep. Now when you talk about creativity in terms of psychedelics, are those related processes of loosening up thought processes that trigger new ideas? Or would you say that these are different?*

AB: I can imagine that there is some similarity there. But I also don't see any way to clarify that further.

*AM: Is there any research on psychedelics and creativity, for example?*

AB: I'm not aware of any. Right now, people are just trying to describe and characterize this experience in and of itself. But as far as creativity is concerned, maybe there are already some attempts. I'm not aware of any.

*AM: Here, too, the question would be: do I feel more creative because my self-image changes following an experience, or is it in fact new wiring in my brain, for example?*

AB: Yes. And are they only limited to the time under which I am drugged or does something lasting change? These are questions that we need to look at a little bit more closely.

*AM: I have never been tempted to take psychedelics. I always find it very interesting when others talk about it. You have also had experience with LSD yourself. Can you briefly say what kind of experience that was? Was it a muddle, was it intoxication, was it an expansion of consciousness for you?*

AB: I had an experience with LSD before 1965 – a long time ago. Namely, at the pharmacological institute of the University of Zurich, where I worked. Young assistants, if they were interested, could experience LSD themselves under supervision. I did this at the psychiatric clinic in Rheinau under the supervision of Professor Stoll, who had an interest in LSD. I took a moderate dose of LSD, which caused hallucinations and a so-called trip during a few hours. A colleague was with me, who was constantly next to me. So even there I was not alone. I had taken music with me and so the circumstances were very positive. And I was impressed first of all by the changed color perception, but also by the hallucinations; my

colleague's face changed, he looked like he was from the South. My own body perception was changed. Suddenly my feet were very far away when I stood up. I was smoking a pipe at that time, and the pipe in my mouth was bending. These are all things – altered body perception, altered visual perception – that pointed to that. I was in a dreamlike state and the perception of time was altered. I didn't know how long I had been in it. But I always knew what it was. So, it wasn't like I completely lost touch with reality. I knew I was on LSD. But things didn't interest me anymore, there was a certain indifference. I was supposed to do certain tests that Professor Stoll gave me to see test my capacity. But I was distracted by the patterns on his bald head, which were so fascinating that I forgot about the test items. It's things like that that engage you. I'm just reporting on my own experience now. It was a positive experience, an interesting experience, but not a mystical experience in any sense; and it was not something that I necessarily wanted to repeat. I was glad to have experienced it once.

*AM: And it wasn't anything life-changing either?*

AG: No, no. It changed my life insofar as my interest in psychopharmacology became even greater because I experienced for myself how strongly a very small dose – one microgram per kilogram of body weight, i.e. a minimal dose – can change psychological functions. That is really very impressive. That was the beginning of my scientific career. That was a change in that sense.

*AM: So, a big, long-term influence after all.*

AB: Yes, although then I got into other things, not just pharmaceuticals. So, in that sense, maybe I would say, yes, it was like that.

*AM: That already brings us to the end of our conversation. Thank you very much, Mr. Borbély, for coming.*

AB: Thank you also for the interesting questions.

*AM: We would also like to thank you, dear listeners, for staying tuned. If you have any questions or remarks, please leave us a comment, or share your thoughts on wisdom with the METIS community through our portal. On the METIS portal, we publish articles on various wisdom topics such as reports on experiences or more general reflections. We are looking forward to your texts or other creative contributions. For more info on the submissions and today's podcast, see the show notes below.*

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