MIND FOUNDATION

Conscious breathing and psychedelics

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> "It's really important to accept that these feelings have a right to be there—to accept that you have carried them with you. You're now conscious of them, but they were there thirty minutes ago as well."

In the MIND Bioblog series, we present personalities who have influenced the development of psychedelic therapy, research, and the culture surrounding the psychedelic experience. Dr. Martha Nari Havenith is a Max Planck research group leader at the Ernst-Strüngmann Institute for Neuroscience. Her research revolves around the notion that most brain activity is in fact not tied to external events, but rather internally generated. When she is not doing neuroscience, Martha also offers coaching in Connective Breathwork. The following conversation covers Martha's personal and professional interest in conscious breathing and psychedelics, her work as a neuroscientist and facilitator, and how she came to know MIND.

Saga Briggs: Martha, how did you become interested in conscious breathing as a practice?

Dr. Martha Havenith: For me it was really a personal thing. I had a reasonably traumatic childhood and had some stuff to clear up, so to speak. I had done the typical things: I studied psychology, did some therapy, meditation, and so on. That was definitely helpful, but I got to a point where I felt that I understood my trauma but wasn't really feeling better—or not significantly better, at least. That was frustrating, and a hindrance for everyday life. So I started looking into things that might get me out of the cognitive understanding and more into the feeling. That's how I got into more body-centered approaches for emotional processing. By being in that general sort of culture, I met some people who did conscious breathwork. For me, this was really a revelation because it made it possible for me to get in touch directly with the trauma, to feel how it actually felt, and to process that. Finally, I started feeling like it had been accepted, but also overwritten. The physical

feeling changed. That's how I got experienced as a practitioner. And then I got to the point where I felt like I wanted to pass it on and became a facilitator.

SB: This was all very separate from your day job at the time, right? Are you now doing research on breathwork? And how does it all tie into your interest in psychedelics?

MH: In my lab we do fundamental neuroscience research into how the brain works, without direct applications—psychedelics can be interesting tools for this. In the course of the body-centered work in my own personal life, I obviously also came across psychedelics. I'm not just a breathwork guide; I'm also an ayahuasca guide. I had seen what psychedelics can do for people. And I thought, well, now is a good time to start connecting that with my own research and finding out a little bit more about the basic neural mechanisms of how that happens.

I got to know the MIND Foundation through a group Zoom call for neuroscientists who are interested in psychedelic research because I wanted to start connecting the research that I do in my lab with understanding psychedelics better. It then turned out that the MIND Foundation really wanted to expand its breathwork group. They wanted to start doing research with it, but also use it as a training in the APT framework [Augmented Psychotherapy Training], and they needed some more people for this. So, I joined the breathwork group, and we just held the first experiments in October and November. It's going to be really exciting to find out a what happens during a breathwork session for people and how much of it depends on the fundamental physiology and the breathing, and how much of it depends on the setting.

SB: On that note, what do we know about the different brain regions and physiological processes involved in conscious breathing? Is there any evidence for interoceptive regions, such as the insular cortex, being involved?

MH: The neuroscience of breathwork is really in its infancy right now. And problematically, when people do breathwork, they tend to move a lot. So, all the typical things that you use in humans like EEG, MEG, MRI don't really work. There's one study that managed to do EEG with people doing breathwork and you can tell from the way they analyze the data that they had a hard time taking the little snippets of data that were noise-free and stitching them together. That's one of the big reasons why we don't have more neural data apart from the fact that it's not yet a mainstream practice.

The best studies so far have used the Wim Hof breathing method. In the Wim Hof method, you do regular breath holds in between the more intense breathing. As a result, the O2-CO2 balance, and therefore your blood pH — which change due to this intense breathing — normalize again intermittently. This seems to generally prevent people from entering fully into an altered state of consciousness (or at least slows down the process massively). Which also suggests that the physiological changes evoked by circular breathing (O2 saturation, CO2 depletion, less acidic blood pH) do play a crucial role at least in initiating the altered states of consciousness that can be reached with breathwork.

The Wim Hof method specifically seems to increase conscious control of the insular cortex and PAG in the long run, and during physical challenges. Which means that if, for example, you go into an ice bath, you can consciously regulate the distress signals you receive (PAG), you can focus your perception on different aspects of your body awareness (insular cortex), and you can even activate the muscles around your ribs via the sympathetic nervous system to keep your core body temperature stable. So, you have a more conscious, intentional way of perceiving and reacting to physiological signals like temperature changes. This has been shown for the Wim Hof method but may also happen via other forms of breathwork—we don't know that yet.

Apart from that, what seems to happen when you do this kind of very intense breathing, where your O2 goes up and your CO2 goes down in your blood, is that this reduces blood flow to the cortex, especially to the frontal regions. That's quite interesting because these frontal cortical regions are the more "cognitive or metacognitive" parts of the cortex—the ones that typically, let's say, filter your experiences. So it makes sense that if blood flow to those regions slows down, the other regions can maybe act a little bit with less top-down control from those mediating regions. Unfortunately, these studies did not look at the insular cortex specifically, but my guess would be that since it's way under the cortical surface it may be less affected. That is guesswork, though. What does seem to be clear is that, generally, sub-cortical signals from the brainstem and thalamus, which obviously carry a lot of sensory and interoceptive information, might have an easier time coming through when the parietal and frontal cortex are quieter.

SB: This reminds me of theories of psychedelic drug effects on the brain, such as the REBUS model, which emphasizes that the perceptual changes produced by psychedelics stem from the relaxation of higher-level, top-down expectations, allowing sensory processing to influence cognition in a less constrained manner. But I wonder what inspiration psychedelic research might draw from breathwork research in terms of the causal chain of effects here. Maybe in some cases, an altered flow of sensory information happens first, which then influences the top-down?

MH: I would love to see more research on that. I think that's very true for two reasons. First of all, with breathwork, for example, facilitators will often start a session by saying, "Focus on feeling into your body." And this makes it much easier to go into an altered state. Secondly, after breathwork people often report things like "I noticed a heavy feeling in my belly, and once I focused on that, emotions and insights came up." So, people feel that there are messages coming from the body that they usually don't notice. I think that this "opening the gates" to perceiving more on a sensory level is a really big part of this. It would be lovely to investigate the neuronal processes mediating such increased sensory flow.

For example, I'd be interested in looking at people not during the session, but to compare, for instance, resting state brain activity of people who have done a couple of breathwork sessions with people who haven't. If the resting state becomes more perceptive, and there is more connectivity with sensory areas, I think that would be a really good start already.

SB: What do we know about the psychological effects of breathwork, either acute or long-term?

MH: [In terms of long-term effects], people have done studies giving out questionnaires over one month, three months, that kind of thing. Typically, the group sizes were reasonably small and sometimes the control groups could have been better. Sometimes the control group is just people doing nothing. A couple of these studies found positive psychological changes for things like depression and anxiety. Also fear of death seems to be reduced. Empathy seems to be increased, self-awareness, openness—many of the things that also tend to get associated with psychedelics.

SB: As a breathwork facilitator, what are some challenging types of experiences you've observed that commonly come up for clients?

MH: There's two types of challenging sessions: one is when people dig in too little, and one is when too much comes up at once.

Sometimes, people run into their own defenses and the conscious mind does not want to let go. They're basically fighting themselves, and that can be quite hard to break through. In this case, it's important to try to accept those defenses in the moment and look at them, because they're the message of the session, right? This difficulty is usually where people get into a vicious cycle where they don't want to be defensive, but also

don't want to face their defenses. You just keep fighting yourself. One of the big lessons of doing breathwork is to stop fighting yourself.

The other type of challenging session is when a lot of stuff comes up. A lot of emotions, for example, a lot of physical sensations. If you have a good facilitator, that should be fine. Also, we all have pretty effective filters in our consciousness that don't let stuff come up that would be too much to handle. So, even if it's intense, you can mostly trust your system that it's not going to bring up more than you can handle. But sometimes it really gets to the edge. That's one of the reasons why I generally tell people that unless you're really experienced, don't do sessions alone at home. Because being alone in a state like this, when you really need support, can be retraumatizing. What's important in such situations is to trust when a really intense thing comes up and to make sure in advance that you have support there. Of course, it depends a little bit on what comes up, but basically, it's really important to accept that these feelings have a right to be there—to accept that you have carried them with you. You're now conscious of them, but they were there thirty minutes ago as well. You've been carrying them for however many years. Usually when it's intense, it's probably been a lot of years.

SB: What can you as a facilitator do during challenging sessions like these?

MH: I would say that it's really important to not be squeamish about strong emotions. It's very, very important that your client feels that you're comfortable with this. That's also why you need quite a bit of training to be a facilitator, because a lot of the time you will need to do body work at that point: You will need to hold that person or give them something. For example, if someone is very angry, you need to give them some resistance so that they can push against something or beat against something so that they can actually express themselves. You will need to be in physical contact with the person and make sure you do it in a supportive way that does not cross any boundaries. So, a lot of the training goes into becoming comfortable with physical contact but also to gain awareness of where the boundaries are.

SB: And in terms of integration?

MH: If it's a really intense session, you want to make sure that the person returns to their everyday self. So, for example, if they've regressed into a childhood or infancy stage, you want to make sure that you support them in returning to their grown-up self. You want to make sure that they accept the feeling of the child they once were, but that they're not in that state anymore.

SB: There's a lot of overlap between what you just described and facilitating a psychedelic session. Do you think there's anything that doesn't quite match up? What aspects of facilitating a breathwork session would not be appropriate for facilitating a psychedelic session?

MH: Breathwork is interesting in the sense that because you're breathing, you're always in control of your own session. But also, because you're breathing, you stay in your body. With some psychedelics, you're quite far away sometimes, right? With breathwork, you generally stay in your body because you're using your body the whole time; that also means that in sessions, you're more likely to have physical processes: people moving, screaming, singing.

I would generally say that in psychedelic sessions you're more letting the psychedelic do the work. As a guide, you're there as support, as people say, "to hold space," but a lot of the time you don't interfere a lot. With breathwork, I find that it tends to be a little bit more. You have to help people to keep breathing until they break through their conscious defenses.

SB: But there's a difference between interfering and interpreting, right?

MH: That's one thing I really appreciate about the MIND Foundation, actually: this mix of being open-minded but not trying to put a very specific interpretation on these types of experiences. I think it's very important to respect the experiences that people have in altered states of consciousness and not feel the need to say, "This is why this happens. This is what this means." In a lot of the more spiritual realms, people often impose rigid interpretations like, "You have now met your guardian angel" or whatever it might be. Maybe you have, maybe you haven't. I personally prefer to not decide that. So, I really appreciate this open-mindedness of saying, "We don't know, and we don't have to know. Let's try to find out the things we can actually find out, which is, for example, what's happening in the brain at this time."

The breathwork study is basically one of the first steps to do exactly this, to show that, in breathwork sessions, people can have really deep experiences and we don't have to interpret that. But we can find out what the process is. Is it the O2/ CO2 balance? Do you need a certain level of change in the pH value of your blood? Do you just need a supportive group around you? We don't have to interpret what comes through, but we can find out which processes open the door.